

TIMELY SUGGESTIONS.

Every Employer should present his workmen and apprentices with a subscription to the SCIENTIFIC AMERICAN for the coming year.

Every Mechanic and Artisan whose employer does not take the SCIENTIFIC AMERICAN should solicit him to subscribe for 1872.

Now is the Time for old subscribers, whose subscriptions expire with the year, to renew.

Now is the Time for new subscribers to send \$3 and commence with the new year.

Now is the Time for forming clubs for the new year.

It will pay any one to invest \$3 for himself, his sons, or his workmen, for one year's subscription to the SCIENTIFIC AMERICAN.

It is easy for any one to get ten subscribers at \$2.50 each, and for his trouble obtain the splendid large steel plate engraving, worth \$10.

It is easy for any old subscriber to get a new one to join in taking the paper. Those who do will receive a bound volume of the "Science Record" for 1872. See description of this work on page 353, SCIENTIFIC AMERICAN, issue of December 2d.

It is no more trouble to remit \$6 for two subscribers than \$3 for one.

If any mechanic whom you ask to subscribe says he cannot afford it, tell him he cannot afford not to.

If any one wishes specimens of the paper to examine before subscribing, tell him to write to the publishers and they will cheerfully mail them.

If any one wishes an illuminated Calendar for 1872, to hang in his office or shop, he can have it sent free on sending a request to this office.

If handsome illustrated posters and prospectuses are wanted to assist in obtaining subscribers, send to the publishers of this paper.

It is the intention of the publishers of the SCIENTIFIC AMERICAN to make the paper next year better and handsomer than any previous year during the last quarter century it has been published.

It is the intention of the publishers to illustrate, by superb engravings, all new and practical inventions and discoveries that may be developed during the year.

For Prospectus and terms to Clubs see last page.

An ingenious Frenchman has invented a process for treating common woods, which makes them of a closer texture, harder grain, and greater density, and so enables the cheaper kinds of wood to take a polish. The mode is as follows: The surface is first planed perfectly smooth, and then rubbed with diluted nitrous acid. An ounce and a half of dragons blood, dissolved in half a pint of spirits of wine, and half an ounce of carbonate of soda are mixed together and filtered; and the liquid is then laid on the wood with a soft brush. The treatment should be repeated after a short interval, and the wood will then possess the outward appearance of mahogany. If the polish is not sufficiently brilliant, rubbing with cold drawn linseed oil will improve it.

MR. A. A. LOW, treasurer of the New York Chamber of Commerce Chicago fund, acknowledges the receipt thus far of \$906,310.67—nearly a million dollars.

YOU cannot escape from anxiety and labor; they are the destiny of humanity.

NEW BOOKS AND PUBLICATIONS.

THE SCIOPTICON MANUAL. Explaining Marcy's New Magic Lantern, and Light; including Magic Lantern Optics, Experiments, Photographing and Coloring Slides, etc. By J. L. Marcy, Optician, No. 1340 Chestnut Street, Philadelphia, Pa.

This little work, which may be obtained of the author, is calculated to assist those who need instruction in the use of the sciopticon or magic lantern. This instrument, in its improved form, affords a means of much instruction and amusement; and the above work, while in itself interesting and instructive, will be found an invaluable guide to the use of the most entertaining apparatus yet invented by opticians.

ELEMENTARY PRINCIPLES OF CARPENTRY. By Thomas Tredgold. Revised from the original edition, and partly re-written by John Thomas Hurst. London: E. & F. N. Spon, 48 Charing Cross. New York: 446 Broome Street.

Mr. Tredgold lived to revise the second edition of his original work on Carpentry; but the time that has elapsed since his death has increased the general knowledge upon the strength of materials, and has also given birth to new inventions and appliances, which have made another revision imperative, in order to bring the work up to the improvements of the time. The large and increasing use of iron, in connection with wood in bridge building and in general architecture, is one of the advances made since the second edition was published. On this account, the editor of the present edition has entirely re-written the chapters on pillars, bridges, and timber, and has added sections to the chapters on coffer dams, scaffolds, etc., besides making such alterations, wherever needed, as will adapt the work to present needs. A very comprehensive work in its revised form, it supplies a want long felt, and will, we have no doubt, meet with a large sale. The carpenter will find a great variety of useful information in the chapters treating of the equality and distribution of forces, resistance of timber, construction of floors, roofs, domes or cupolas, partitions, scaffolds, staging, and galleries; construction of centers for bridges, coffer dams, shoring and strutting; wooden bridges and viaducts; joints, straps, and other fastenings, timber, etc. To these chapters are appended twenty-one useful tables, calculated to facilitate computation in all departments of carpentry, and a copious index, which renders every thing in the book available for easy reference.

The work contains 517 printed pages, and 48 full page plates, besides numerous smaller engravings throughout the text. It is printed in excellent style, and is handsomely bound in cloth.

ANNALS OF THE DUDLEY OBSERVATORY. Vol. II. Albany: The Argus Company, Printers. 1871.

The most important and interesting feature of this volume is the record of the meteorological observations made during a period of five years, from 1862 to 1871, under the supervision of G. W. Hough, A. M., Director of the Dudley Observatory. Nothing like such a continuous and accurate series of observations for so long a period has ever before been published or made. In fact, they could not have been made with any less perfect and automatically registering and printing instrument than the "Automatic Registering and Printing Barometer," invented and perfected by Professor Hough, and used by him during the period named. This instrument not only traces a continuous curve of the varying height of the barometric column, but so proportionally magnifies the fluctuations of the column that even the smallest variations become apparent. The importance of this will be appreciated when we state that frequent fluctuations of the column, though almost imperceptible, seem to always precede, for some time, the occurrence of violent disturbances in the atmosphere, and that this fact has been discovered by the use of Mr. Hough's instrument. In his remarks upon this point, Professor Hough says:

Some years since, we pointed out the intimate relation existing between the barometric disturbance and the weather. We remarked that this element of disturbance was a better guide in prognosticating storms, than the mere change of barometric height. An examination of the mean daily and mean monthly curves for barometric disturbance shows that this opinion is founded in nature.

It will also be seen, by an inspection of the tables exhibiting the mean daily disturbance, that storms are invariably accompanied with excessive barometric fluctuation. In fact, a pretty correct history of the weather may be determined by an examination of this element alone; and when taken in connection with changes of pressure, it indicates, in a very marked manner, the atmospheric phenomena.

Some hours previous to the arrival of a great storm, the "barometric disturbance" increases, amounting, in some cases, to seven times the change of pressure in a given interval of time. It is our opinion that the waves of pressure are propagated in the upper regions of the atmosphere, some hours before the storm reaches any given locality at the surface of the earth.

The record is made for each hour during the five years, and the curve of hourly disturbance, when compared with the weather record accompanying, clearly sustains the views expressed by Professor Hough. Diagrams are given, showing the mean hourly barometric disturbance, the mean monthly disturbance, simultaneous barometric curves at different points, mean hourly velocity of the wind, mean monthly temperature for nine years, etc. A most interesting part of the report is the account of observations at the time of the total eclipse of the sun in 1869. The book contains, also, much other important and interesting matter pertaining to the regular work of the observatory. It is, probably, the most important contribution to meteorological science yet published.

A REPORT OF SURGICAL CASES TREATED IN THE ARMY OF THE UNITED STATES, FROM 1865 TO 1871. Washington Government Printing Office. 1871.

This is a large quarto with illustrations, the character of which is set forth in its title. Its importance will, however, only be apparent to physicians and surgeons, who will find in it statistics of great value. The minute details given of operations which, a few years since, were scarcely known to surgery, are especially important as guides in the treatment of similar cases hereafter. The compiler and editor of the work, George A. Otis, Assistant Surgeon U. S. A., has done his work with scrupulous ability.

The Thanksgiving Number of HEARTH AND HOME, published by Orange Judd & Co., 245 Broadway, New York, is an evidence of the liberality and good taste which have secured for this journal a well-deserved popularity and large circulation. As a family paper, for large and small, it has purity of tone, originality, and beauty, to recommend it, while it is edited with intelligent appreciation of what the masses of rural and city readers like to read. Its illustrations are excellent: in short, we shall have sufficiently described each of its features when we say they are all, of their kind, excellent. The more such papers are circulated, the better it will be for the mental and moral health of the rising generation.

THE ELEMENTARY MUSIC READER. A Progressive Series of Lessons, prepared expressly for use in Public Schools. Book First. By B. Jepson, Instructor of Vocal Music in the New Haven Public Schools. New Haven, Conn.: Charles C. Chatfield & Co., 458 Chapel Street, opposite Yale College.

We have long been impressed with the importance of substituting the reading of music for the rote singing practiced very generally in public schools. The importance of a knowledge of musical notation, and the power of reading it with facility to satisfactory progress in music, needs no argument. The system of teaching this branch of the art, generally employed in this country, is, in our opinion, very defective, its chief fault being the transposition of the syllables used in solfeggio exercises, with the transposition of the scales, instead of maintaining them, without regard to key, in one position on the staff, as in the Italian method. We are sorry to see that, in Mr. Jepson's work, this error is retained—the more so, as it is in all other respects a capital book for the field it is intended to occupy, giving evidence that its author is a practical and thorough teacher.

HALF HOURS WITH MODERN SCIENTISTS. Huxley—Barker—Stirling—Tyndall. New Haven, Conn.: Charles C. Chatfield & Co.

This is one of what the publishers style, the University Scientific Series of Publications, designed to place, in a cheap form, the advance thought in the scientific world. It contains the following essays: "On the Physical Basis of Life"—Professor T. H. Huxley. "Correlation of Physical and Vital Forces"—Professor G. F. Barker, M.D. "As Regards Protoplasm—Reply to Huxley"—James Hutchison Stirling. "On the Hypothesis of Evolution"—Professor E. D. Cope. Scientific Addresses, by Professor John Tyndall. "On the Methods and Tendencies of Physical Investigation." "On Haze and Dust," and "On the Scientific Use of the Imagination."

The names of these celebrated scientists and authors are so well known, and their popular style of discussion is so favorably appreciated, that it is hardly necessary to say this work possesses an interest and value, second to no other of its size ever issued from the American press. It is a medium octavo, plainly bound, but handsomely printed, and will meet with an extensive sale.

SERVING OUR GENERATION, and GOD'S GUIDANCE IN YOUTH. Two Sermons, preached in the College Chapel, Yale College, by President Woolsey. New Haven, Conn.: Charles C. Chatfield & Co.

This is a beautiful little volume, printed on tinted paper, and neatly bound in cloth. As the work of one of our most celebrated scholars and divines, it will be eagerly sought by those who delight in pulpit literature.

THE CIVIL ENGINEER'S POCKET BOOK OF MENSURATION Trigonometry, Surveying, Hydraulics, Hydrostatics, Instruments and their Adjustments, Strength of Materials, Masonry, Principles of Wooden and Iron Roof and Bridge Trusses, Stone Bridges and Culverts, Trestles, Pillars, Suspension Bridges, Dams, Railroads, Turnouts, Turning Platforms, Water Stations, Cost of Earthwork, Foundations, Retaining Walls, etc., etc. In addition to which, the Elucidation of Certain Important Principles of Construction is made in a More Simple Manner than heretofore. By John C. Trautwine, Civil Engineer. Philadelphia: Claxton, Remsen & Haffelfinger, 819 and 821 Market street.

The above comprehensive title relieves us of the necessity of an analysis of this work, and the name of its author is a sufficient guarantee of the value of its contents to any engineer and mechanic. The book is bound in morocco, with clasp, in the pocket book style, and is copiously indexed. It is in every way, in matter, style of publication, and binding, worthy of commendation, being in itself a complete compendium of engineering science, by the use of which much time and labor can be saved to any practical mechanic.

Declined.

Communications upon the following subjects have been received and examined by the Editor, but their publication is respectfully declined:

DIMENSIONS OF BOILERS.—J. McC.

PROTECTION OF BUILDINGS FROM FIRE.—R. B. B.

RAILROAD ACCIDENTS.—G. T. F.

SLIDE VALVES.—F. A.

SPIRITUALISM.—J. L. V.

ASTRONOMICAL DISCOVERY.—L. B. D.

BOILER EXPLOSIONS.—K. H.

DISEASE AND DIET.—F. H. B.

MODERN SURGERY.—N. F. W.

WASTE OF WATER.—H. B. P.

ANSWERS TO CORRESPONDENTS.—F. D. C.—F. S. C.—R. V. P.

W. J. W.

QUERIES.—L. D.—O. S.—R. V. P.—T. E. L.—W. H. G.

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.

Francis Schleicher, Consulting, Analytical and Man'g Chemist. Laboratory, Newark St., bet. Jackson and Harrison St., Box 173, Hoboken.

Makers of pat'd articles send terms to Otis Day, St. Louis, Mo.

A young man speaking English and German, a good draughtsman, and practical machinist, desires a position in either capacity, or both. Best reference given, address F. M., P. O. Box 331, New York.

Improved Mode of Graining Wood, pat. July 5, '70, by J. J. Cal low, of Cleveland, O., enabling inexperienced grainers ("without the long required study and practice of heretofore") to produce the most beautiful and Natural Graining with speed and facility. Send stamp for circular.

For Sale—A First Class Engine, 40 Horse Power, two years in use. To be seen working at 102 Attorney Street, New York.

Patent Iron Rim Moulders Riddles and Sieves. Send for Circular. Horton & Mable, Peckskill, N. Y.

3 Hydraulic Presses for sale on reasonable terms. Apply to Whitneyville Armory, Conn.

Metallic Molding Letters, for Pattern Makers to put on patterns of Castings, all sizes, etc. H. W. Knight, Seneca Falls, N. Y.

The Pew Hat Rack. State and County Rights. E. S. Blake, Pittsburgh, Pa.

The best and cheapest Self Oilers are manufactured by Holland & Cody, 8 Gold Street, New York. Send for price list.

Tested Machinery Oils—Kelley's Patent Sperm Oil, \$1 gallon; Engine Oil, 75 cts.; Filtered Rock Lubricating Oil, 75 cts. Send for certificates. 116 Maiden Lane, N. Y.

Use Soluble Glass for fireproofing Wooden Pavements, Shanties, R. R. Bridges—also as common hardening Mortar and Cements, makes most durable Stove and Foundry Putty, Iron Cement. Apply to L. & J. W. Feuchtwanger, Chemists, 55 Cedar street, New York.

Portable Farm Engines, new and beautiful design, mounted on Springs. Compact, light, and efficient. Send for descriptive circular, Mansfield Machine Works, Mansfield, Ohio.

For the best 15 inch Eng. Lathes, Bench Lathes, or Friction Pulleys, address John R. Abbe, P. O. Box 345, Providence, R. I.

Kelley's Chemical Metallic Paints, \$1, \$1.50, \$2 per gallon mixed ready for use. Send for cards of colors, etc., 116 Maiden Lane, N. Y.

Stencil Tools & Steel Letters. J. C. Hilton, 60 W. Lake st. Chicago.

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

Shoe Peg Machinery. Address A. Gauntt, Chagrin Fall, Ohio.

Builder's Scaffold—Patent for Sale—For further particulars, address Redick & Kunkle, Butler, O.

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

Kelley's Pat. Petroleum Linseed Oil, 50c gal., 116 Maiden Lane.

Turkey Boxwood pieces for Sale, suitable for engravers and fancy turners' use. Address Stephens & Co., Riverton, Conn.

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

The best lubricating oil in the world is Winter pressed Sperm. Sold in bottles, cans, and barrels, by Wm. F. Nye, New Bedford, Mass.

Brown's Coal-yard Quarry & Contractors' Apparatus for hoisting and conveying material by iron cable. W. D. Andrews & Bro., 114 Water st., N. Y.

Presses, Dies, and Timmers' 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.

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, Andrews' Patent, inside page.

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.

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.

Chard & Howe's oils, of 134 Md'n Lane, neither gum nor chill.

Diamond Carbon, of all sizes and shapes furnished for drilling rock, sawing and turning stone, conglomerates, or other hard substances also Glazier's Diamonds, by John Dickinson, 61 Nassau st., New York.

Glynn's Anti-Incrustator for Steam Boilers—The only reliable preventive. No foaming, and does not attack metals of boilers. Price 25 cents per lb. C. D. Fredricks, 587 Broadway, New York.

The Greenleaf Grate Bar saves fuel and lasts much longer than the ordinary bar. Address Greenleaf Machine Works, Indianapolis, Ind.

Peck's Patent Drop Press. Milo Peck & Co., New Haven, Ct.

Safety Store Elevators. Provision against Rope, Bolt, and Engine breaking. One third the cost of others claiming to be safe. Andrews Bro., 414 Water Street, New York.