

CAUTION. DR. SCOTT'S ELECTRIC HAIR BRUSH.

Advertisement for Dr. Scott's Electric Hair Brush, featuring a large illustration of the brush and various testimonials and medical claims.

Advertisements. Inside Page, each insertion --- 75 cents a line. Back Page, each insertion --- \$1.00 a line.

WOOD WORKING MACHINERY. PLANING, MATCHING, MOLDING, MORTISING, TENONING, CARVING, BAND & SCROLL SAWS, UNIVERSAL VARIETY WOOD WORKERS, J.A. FAY & CO. CINCINNATI, O. U.S.A.

GAS AND ELECTRICITY AS HEATING Agents. By Dr. C. W. Siemens, F.R.S.—An interesting lecture on the production of heat-energy, wherein the eminent author endeavors to prove that for all the ordinary purposes of heating and melting, gaseous fuel should be employed; but that for the attainment of extreme degrees of heat, the electric arc possesses advantages which are unrivaled by any other known source.

MINERAL WOOL. This fireproof and indestructible material successfully prevents loss of heat by radiation, keeps frost from water pipes, and sound by the mass spread of it in walls, partitions, floors of dwellings, etc.

MAGIC LANTERNS. And STEREOPYCIONS, all prices. VIEWS illustrating every subject for PUBLIC EXHIBITIONS, etc. A profitable business for a man with small capital. Also MAGIC LANTERNS for home amusement. 116-page illustrated catalogue free.

SIMPLE SINGLE-ACTING STEAM ENGINE. By G. M. Hopkins.—Description, with six illustrations, showing details of construction of a simple steam engine, the different parts of which may be turned on a very ordinary foot-lathe by the amateur mechanic.

EARLY PRACTICE OF MEDICINE BY Women.—By Prof. H. C. Bolton. A history of the entrance of women into the medical profession, prior to the establishment of medical schools for the female sex. Female gynecologists among the Egyptians. Female sorceresses and healers of the sick during the middle ages, and among the Celts. The first educated female practitioner. Female physicians among the Romans. Female practitioners of modern times. Contained in SCIENTIFIC AMERICAN SUPPLEMENT, No. 273. Price 10 cents. To be had at this office and from all newsdealers.

THE WHITE IS KING. It has the most perfect wood-working machine in the world. Its cutting is so perfect that it will cut without removing shavings, without light work or attachment, and simple in construction and light in weight, that a child can use it. WARRANTED FOR FIVE YEARS. Agents can make more money handling the White than any other. Address, for particulars, WHITE SEWING MACHINE CO. CLEVELAND, OHIO.

To MANUFACTURERS AND INVENTORS. Unequaled opportunity for the exhibition of new manufactures, machines, and inventions in New York City. THE NEW MACHINERY HALL, Added to the Exhibition Department of the INVENTORS' INSTITUTE, Cooper Union Building, New York City. Will be ready for the reception of goods on the 15th of October, and will be opened daily from 9 A.M. to 9 P.M., FREE TO THE PUBLIC. As a Permanent Exposition of Industrial Progress. Exhibitors will be charged a moderate rental for space. The expense will be small, the advantages great. For speech or information, address THE INVENTORS' INSTITUTE, NEW YORK CITY. GREAT LABOR SAVING TOOL.

THE CABLE STREET RAILWAYS OF San Francisco, with fifteen engravings. By A. S. Halliday, M.E. A full description of the several street railways of San Francisco, with engravings of the apparatus, and other machinery; also description of all the mechanism, dimensions, grades, results of operations, etc., is given in SCIENTIFIC AMERICAN SUPPLEMENT, No. 279. Price 10 cents. For sale at this office and at news stands throughout the country. These railways have been worked in San Francisco since 1878 with success, having displaced horses for the propulsion of street cars.

INVENTORS. There has never been a better time to sell good inventions or to secure capital for the purpose of developing them. Money is unusually plenty and capitalists are actively seeking good investments. We undertake the sale of patents, entire or in part, secure partners, and form joint stock companies. Highest references given. Circulars free. E. L. RICHARDS & CO., 782 Broadway, New York.

THE VALUE OF A VACUUM.—AN article of interest to the engineer, wherein the author very ably discusses the maximum value of condensers, points out that there are circumstances under which it is more economical to exhaust steam directly into the air than to condense it, and proves that the use of condensers, under such conditions, hence works more injury than benefit. Contained in SCIENTIFIC AMERICAN SUPPLEMENT, No. 276. Price 10 cents. To be had at this office and from all newsdealers.

GRIMSHAW ON SAWS. History, Development, and Action; Classification and Comparison; Manufacture, Care, and Use, of Saws of all kinds. Quarto, Cloth, with 234 illustrations. Price \$2.50. E. CLAXTON & CO., 380 Market St., Philadelphia, Pa.

THE PROGRESS AND DEVELOPMENT OF THE MARINE ENGINE. By F. C. Marshall, M.E.—A paper lately read before the Society of Mechanical Engineers, London. Decidedly the most useful, reliable, and valuable recent contribution upon the subject, showing the history and progress of marine engineering, describing the most approved types of engines and boilers now employed, the materials and mode of manufacture, performances and economies, the consumption of fuel, results of the screw propeller, suggestions for improvement. Contained in SCIENTIFIC AMERICAN SUPPLEMENT, No. 278. Price 10 cents. For sale at this office and at all news offices throughout the country.

Agents and Buyers Wanted for fine Gold and Silver Waltham Watches. Liberal terms to active agents. A single Watch sold below factory prices. Watches sent by express to be examined before paying money. Catalogue free. N. H. White, Jeweler, Newark, N.J.

IRIDIUM: THE HARDEST METAL KNOWN. Not attacked by acids or alkalis; not oxidized in the air; almost infusible. Manufactured under John Holland's process (patented May 10, 1881) by THE AMERICAN IRIIDIUM CO., S. E. Corner Pearl and Plum Sts., Cincinnati, Ohio.

ATMOSPHERIC ELECTRICITY.—BY David Brooks.—A remarkably interesting paper, in which are brought together and explained the most prominent phenomena connected with the electricity of the atmosphere. How electricity is generated. The two theories held by scientists. Evidence that electricity is produced at the poles. The aurora borealis. The part played by thunderstorms. The part played by mountains. The curious phenomena of a thunderstorm. Waterpots and whirlwinds. Lightning rods, and how they should be constructed. Oil tanks, how exploded by lightning; how they should be protected. Sheet lightning. Heat lightning. Contained in SCIENTIFIC AMERICAN SUPPLEMENT, No. 252. Price 10 cents. To be had at this office and from all newsdealers.

EUROPEAN SYSTEM OF INSTRUCTION IN ENGINEERING. \$30 per annum. For descriptive pamphlet, address PROF. WATSON, 107 Marlborough St., Boston.

WANTED.—A SECOND-HAND LOCOMOTIVE Saddleback, weighing from seven to nine tons, 3 ft. gauge. Address C. H. SOUTHER, Box 3144, Boston, Mass.

WATER ELEVATOR, OR STEAM JET PUMP. Has no valves or moving parts. With 60 lb. steam pressure will elevate hot or cold water 50 ft. will force water through pipes and hose for fire purposes. Cheapest and Best Pump made. A 1 1/2 in. pump, price \$7.50, will throw a 96 stream of water 40 ft.; 2 1/2 in. pump, price \$14, at 50 lb. pressure, elevates 3,000 gal. 28 ft. per hour. All pumps guaranteed. Send for catalogue of Eng'rs' and Machinists' specialties. VAN DUZEN & TIFT, Cincinnati, O.

OUR DOMESTIC POISONS. BY HENRY Carl M. Inst. C.E.—A paper read before the London Society of Arts, designed to draw attention to certain poisonous materials which are heedlessly introduced into, or intentionally used for some special purpose in our domestic fabrics. Arsenic the great poison. Its presence in wall papers, cotton fabrics, artists' water colors, ordinary paint, tin plate work, artificial flowers, lamp shades, paper collars and cuffs, fancy papers, confectionery, etc. The symptoms of poisoning by arsenic. Cases of poisoning from the emanations from arsenical wall papers. Why arsenic is used by paper stainers. Discussion of the facts contained in the foregoing lecture. Contained in SCIENTIFIC AMERICAN SUPPLEMENT, Nos. 219 and 220. Price 10 cents each. To be had at this office and from all newsdealers.

Chase's Improved Pipe Cutting and Threading Machine is the very best made for cutting off and threading Steam and Gas Pipes, Boiler Tubes, Round Iron, Bolts, Nuts, and making Nipples, from 1/2 to 2 inches. No pipe splitting. No bevel inside or outside. No other has automatic cut-off. A boy, with this machine, can do more work than two men with old systems. Send for circular. CHASE MACHINE CO., 120 Front St., New York.

SEND TO LONDON, BERRY & ORTON PHILADELPHIA FOR THE BEST BAND SAW BLADE

THE VISCOSITY OF GASES AT HIGH Exhaustions. By William Crookes, F.R.S.—Abstract of a paper read before the Royal Society, wherein the author describes an elaborate series of experiments undertaken by him to ascertain the amount of viscosity, or internal friction, possessed by various gases in high vacua. The following topics are discussed: The viscosity of air; of oxygen; of nitrogen; of carbonic dioxide; of carbonic oxide; and of hydrogen. The spectrum of hydrogen. Influence of aqueous vapor on the viscosity of air. Discussion of results. The ultra-gaseous state of matter. Contained in SCIENTIFIC AMERICAN SUPPLEMENT, No. 277. Price 10 cents. To be had at this office and from all newsdealers.

An engine that works without Boiler. Always ready to be started and to give at once full power. SAFETY, ECONOMY, CONVENIENCE. Burns common Gas and Air. No steam, no coal, no ashes, no fires, no danger, no extra insurance. Almost no attendance.

THE NEW OTTO SILENT GAS ENGINE. Useful for all work of small stationary steam engine. Built in sizes of 2, 4, and 7 H.P. by C. H. SCHUBERT, SCHUMM & CO., 3045 Chestnut Street, Phila., Pa. A. C. Manning, 38 Dey St., New York, Agent.

RONCALLI'S MELOGRAPH.—DESCRIPTION and illustration of an apparatus for recording musical notes when playing. Contained in SCIENTIFIC AMERICAN SUPPLEMENT, No. 274. Price 10 cents. To be had at this office and from all newsdealers.

THE DEBAY PROPELLER.—DESCRIPTION of one of the most efficient propellers that has thus far been constructed, with details of experimental trials to test its practical working. Illustrated with thirteen figures, showing stern of the steamer Cora Maru with the Debay propeller; sectional elevation of the propeller gearing; details of the screw-blade connections, and the propeller as fitted to the ship. Contained in SCIENTIFIC AMERICAN SUPPLEMENT, No. 250. Price 10 cents. To be had at this office and from all newsdealers.

DRAUGHTSMEN'S SENSITIVE PAPER "BLUE PROCESS" THOS. H. McCOLLIN PHOTOGRAPHIC SUPPLIES, PHILADELPHIA, PA.

PATENTS. MESSRS. MUNN & CO., in connection with the publication of the SCIENTIFIC AMERICAN, continue to examine Improvements, and to act as Solicitors of Patents for Inventors. In this line of business they have had thirty-five years' experience, and now have unequalled facilities for the preparation of Patent Drawings, Specifications, and the prosecution of Applications for Patents in the United States, Canada, and Foreign Countries. Messrs. Munn & Co. also attend to the preparation of Caveats, Copyrights for Books, Labels, Reissues, Assignments, and Reports on Infringements of Patents. All business entrusted to them is done with special care and promptness, on very reasonable terms. A pamphlet sent free of charge, on application, containing full information about Patents and how to procure them; directions concerning Labels, Copyrights, Designs, Patents, Appeals, Reissues, Infringements, Assignments, Rejected Cases, Hints on the Sale of Patents, etc. We also send, free of charge, a Synopsis of Foreign Patent Laws, showing the cost and method of securing patents in all the principal countries of the world. MUNN & CO., Solicitors of Patents, 37 Park Row, New York. BRANCH OFFICE.—Corner of F and 7th Streets, Washington, D. C.