HENRY CAREY BAIRD & CO., INDUSTRIALPUBLISHERS, BOOKSELLERS & IMPORTERS, INDUSTRIALPUBLISHERS, BOOKSELLERS & IMPORTERS, S10 Walnut St., Philadelphia, Pa., U.S.A. IT Our New and Revised Catalogue of Practical and Scientific Books, 92 pages, 800.: a Catalogue of Books on Metallingy, Maining, Prospecting, Muneraloy, Geology, A saying, Analysis, etc.; a Catalogue of Books on Stern and the Steam Engine, Machinery, etc.; a Catalogue of Books on Sanitary Science, Gus Fitting, Plumbing, etc., and our other Catalogues and Circulars, the whole concring every branch of Science applied to the Arts, sent free and free of postage to anyone in any part of the world who will furnish-kis address.





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 This is for our information and not for publication.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.

bis tern. Buyers wishing to purchase any article not adver-tised in our columns will be furnished with addresses of houses manufacturing or carrying

the same. 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 suppl. 4 on receipt of price.

price. Minerals sent for examination should be distinctly marked or labeled.

(8617) H. N. Co. ask: Can you furish us with information in regard to dipping mall articles in tin (½ tin, ½ lead). Α. for tinning small articles, making them bright and smooth, we advise an alloy of 2 parts tin 1 part lead. The articles should be freed rom grease or oil in an alkali bath. washed lean, and dipped in a solution of muriate of inc and ammonia, made by dissolving zinc to atnration in muriatic acid diluted with half ts bulk of water. Add as much sal amuoniac is the solution will dissolve. This solution may be further diluted with water according o the kind of metal by experience. Then dip n the melted solder quite hot, so that it will rip freely. Withdraw slowly and plunge in ean hot water.

(8618) W. L. W. writes: Referring an article on page 353 of the May'17 issue the SCIENTIFIC AMERICAN, concerning power ost in flywheels, I beg to offer some suggesions that would better do away with the iction of the atmosphere referred to. As understand it, this wheel is simply a balance heel, and is not used as a pulley also. This being the case, would it not have been better make an airtight casing inclosing the wheel ntirely, with an airtight joint at the shaft, nd then pump out the air, creating a vacuum n which the wheel would revolve without any atmospheric friction whatever, and the only added friction would be the slight pressure of he packing boxes on the shaft. The same plan ould be adopted where the wheel is used as a pulley also by inclosing both the driving and lriven pulleys together with the belt in the irtight case. A. The great difficulty of inuring the maintenance of a vacuum in a arge space would probably prevent the sucess of your plan to incase a driving wheel n a box from which the air is exhausted.

(8619) A. B. and others: Several of ur esteemed correspondents call attention to he fact that we only allow the calf, in the roblem of which we published a solution uner Query No. 8606, to graze in one direction; out as the inquiry was how much can the alf graze over, we answer this also. The alf can graze over three-quarters of a circle with 400 feet radius. It can then graze over sector on each side of this of almost 60 leg., or two areas each nearly one-sixth of a circle of 300 feet radius. There remains a igure formed by two sides of the barn and he radii of the last arc, 300 feet. Draw a liagonal of the barn, completing a triangle with these radii. The length of this diagonal found by the rule for the right triangle. It is a little more than 141 feet. The three ides of the triangle are now known, and the area may be found by the rule as follows: rom half the sum of the three sides subtract each side severally; multiply together the nalf sum and the three remainders, and exract the square root of the product. The area of this triangle is about 22,500 square feet. from this take 5,000 square feet, or half the area of the barn, and add to the remainder the wo circular parts noted above. When the problem is solved with the aid of trigonomtry, the result is a total of nearly eleven acres. No two are likely to obtain exactly the same results, since the retention or rejection of decimals will affect the result. The high-est exactness in the result is to be obtained by



ELEVATING - CONVEYING MEG HEFT MEX MBUS. CO. POWER TRANSMISSION MACH'Y 0 **COAL WASHING MACHINERY**

VOLNEY W. MASON & CO., Friction Pulleys, Clutches & Elevators PROVIDENCE, R. I.

METAL POLISHES.—FORMULAS FOR Putz Pomades. Pastes. Liquids. Powders and Soaps, for obishing metals, are contained in SCIENTIFIC AMERI-AN SUPPLEMENT Nos. 1283, 1285 and 1289. Price 10 cents each from this office and all newsdealers



REVERSING STEAM TURBINE.—PARson's recently perfected turbine for boats. Illustrations showing details. Contained in SCENTIFIC AMERICAN SUPPLEMENT, NO. 1155. Price 10 cents, by mail, from this office, and from all newsdealers.s.

BURNISHINE. The most marvelous metal polish in the world.



Publishers of the Scientific American,

Catalos **Coal Mining Machines** ELECTRIC MINE LOCOMOTIVES COAL HANDLING MACHINERY OPECIAL MANUFACTURING, SPEC. MACHINERY, MODELS, DEXPERIMENTALWORK, DIES AND STAMPING, PROMPT GLOBE MACH. & STAMPING CO. 970 HAMILTON ST. CLEVELAND, O. Cement Books. How to Use Portland Cement.t. Cement and Engineering News, 162 La Salle St., Chicago Experimental & Model Work ir. & advice free. Wm. Gardam & Son.45-51 Rose St., N.Y MODELS CHICAGOMODEL WORKS ESTABLISHED'1867 WINTED CATALOGUE OF MODEL SUPPLIES HORNS FOR TALKING MACHINES Crane Bros., Mfrs. Westfield, Mass MATCH Factory Machinery. W. E. WILLIAMS, Mfr., 217 South Clinton St., Chicago, U. S. A. STATESTA AND STATESTATISTICS AND STATESTA ICE MACHINES, Corliss Engines, Brewers' and Bottlers' Machinery. THE VILTER MFG. CO., 899 Clinton Street, Milwaukee Wis. MODELS & EXPERIMENTAL WORK. Inventions developed. Special Machinery. E. V. BAILLARD, Fox Bidg.. Franklin Square, New York.

Magical Apparatus. 25c. Parlor Tricks Catalogue. Over 700 engravings, MARTINKA & CO. Mfrs., 493 Sixth Ave., New York.

NOVELTIES & PATENTED ARTICLES Manufactured by Contract. Punching Dies, Special Ma-chinery, E. Konigslow & Bro., 181 Seneca St. Cleveland, ().

LINC ETCHING ENGRAVING DA IRR



Anyone sending a sketch and description may quickly ascertain our opinion free whether an invention is probably patentable. Communica-tions strictly confidential. Handbook on Patents sent free. Oldest agency for securing patents. Patents taken through Munn & Co. receive special notice, without charge. in the



mploying the methods of the calculus.

(8620) J. H. H. asks: 1. Could No. 2 wire be used for the secondary coil in blace of No. 30? A. No. 32 wire would be etter than No. 30 in the secondary of an inluction coil. 2. If so, would the same weight f wire produce a stronger current? A. The ame weight of No. 32 would make more turns n the spool and hence give a longer spark han could be made by No. 30. 3. Could a 08-volt incandescent current in the primary oil be used with good effect? A. 108 volts yould be too high a pressure to use in the rimary of an induction coil. If such a curent is employed, it will be necessary to use rheostat or choking coil to cut down the urrent taken by the primary. 4. What size wire should be used to carry the secondary urrent around a room, to be used in initiatory work in a lodge? A. A wire of the same size s the secondary will carry the secondary curent anywhere it is desired to produce an effect.



A complete treatise on the subject of Compressed Air, comprising its physical and operative properties from a vacuum to its liquid form. Its thermodynamics, compression, transmission, expan-sion, and its uses for power purposes in mining and engineering work: pneumatic motors, shop tools, air blasts for cleaning and painting. The sand Blast, air lifts, punping of water, acids and oils; air blasts for cleaning acration and purification of water supply: railway propulsion, pneumatic tube transmission, refrigera-tion. The Air Brake, and numerous appliances in which compressed air is a most convenient and economical vehicle for work—with air tables of compression, expansion and physical properties. A most comprehensive work on the subject of Compressed Air tion most convenient and



MUNN & CO., 361 Broadway, New York.