- (40) W. W. writes: Can I get any more heat from steam at 50 or 60 pounds pressure (for heating houses or factories) than at 5 or 10 pounds pressure? It so, what is the difference? A. You can get more heat at the high pressure by nearly the difference in temperatures of the steam at the two pressures. Temperature at 5 pounds pressure, 228°; at 10 pounds. 241°; at 50 pounds, 301°; at 60 pounds, 311°.
- (41) J. B. asks for a good receipt for a preparation to keep water out of a coat. I am a fireman and my coat is made of canvas; it is oiled and coated with some sort of black mixture, but whenever I go to a big fire the water goes through it. A. Try the follow ing treatment: Soap, 2 ounces; glue, 4 ounces; water, 1 gallon. Dissolve the glue and soap in the water by heating. The cloth or garment is boiled in this for a quarter of an hour and then rinsed out and allowed to nearly dry; then it is allowed to lie in the following solution for six hours: Alum, 13 ounces; salt, 15 ounces, water, 1 gallon. After which it is wrung out, washed with water, and allowed to dry slowly, when it is ready for use. 2. Give a mixture to rub on boots that will keep out water and keep them soft. A. Use pureneats-
- (42) J. W. asks for a simple and easy plan of procuring sample of water from bottom of a well 1,300 feet deep, 4% inches in diameter. A. You may get a fair sample of water from a deep well by using the sand bucket, if you can make a leather valve on the upper end, and also make the bottom valve tight with a leather lining Or, if you wish to make one. take a piece of iron pipe-say 2 inches-one or two feet long, screw a coupling upon one end, make a hard wood plug to screw into the coupling with a hole in it three-quarters of an inch diameter, and a soft leather clapper, loaded with a piece of iron or lead nailed upon the inside the same as a common pump bucket. At the other end of the pipe make a bale of one-quarter or three-eighths iron, and arrange a leather valve upon a block of iron, so as to fit tight upon the end of the pipe and have the bale as a guide. Let the bale have an eye for fastening a line, and also be heavy enough to carry down the line if you have a great depth of water to pass through. The bucket in descending will allow the water to pass through freely, but when you pull up the valves, close and confine the water. The bucket not be allowed to have any motion backward aring the whole ascent while in the water, or you will lose the charge and take a new one at the point of change.
- (43) F. J. C. asks for information about the reversing gear on Maxim's steam launch Flirt. I would like to apply it to an engine of mine, about 21/2 horse power, as I think it cheaper and as good as the regular reversing gear. A. The eccentric is fitted on a sleeve which works longitudinally on the shaft on a feather parallel with the shaft. On the outside diameter of this sleeve is a spiral feather fitting in a spiral groove in the eye of the eccentric. As the sleeve is moved necessary for the proper lead when working ahead or
- (44) J. S. asks: 1. What is the area of a safety valve 4 inches in diameter, and how many square inches does it contain? A. 12:50 square inches, lever 28 inches long, the ball weighing 50 pounds-how many mches back on the lever must the ball be put so as to blow off at 50 pounds of steam? A. You do not give the distance from the fulcrum to the valve.
- (45) S. C. writes: 1. I am running a steam pump; the size of steam cylinder, 8 inches bore; water cylinder, 216 inches bore; 10 inches stroke; discharge pipe, 11/2 inches; suction pipe, 21/2 inches. Could I draw water from a well 75 feet deep, providing my plunger, water valves, and pipe were all tight, having foot valve on suction pipe, if I were to first fill my suction pipe and pump full of water, having pressure of steam to move piston? A. No; you cannot "draw' water more than 29 or 30 feet if everything is perfectly tight. The pressure of the atmosphere limits the height. 2. What is the greatest number of feet that water can be lifted by suction with an ordinary steam pump? A. You would not be safe to attempt more than about 28 feet.
- (46) F. S. asks: 1. In calculating the horse power of compound engines, how is the pressure in the large or low pressure cylinder obtained? A. The pressure is generally obtained from the indicator card, 2. What are the duties and pay of oilers on steam vessels? A. About \$40 per month; sometimes less.
- (47) T. D. M. asks: 1. What action would electricity have on a fur-bearing animal killed by it? A. None. 2. I would like to know about sulphurous acid gas in reference to the same purpose. A. Sulphurous acidgas would not injure the fur.
- (48) J. A. asks: Where can I obtain the latest and best information on the reduction of silver ores? A. Obtain Percy's "Metallurgy of Gold and Silfrom the booksellers who advertise in our columns.
- (49) C. E. B. writes: 1. You refer in issue of Nov. 18, 1882, page 329, of Scientific American, to ether spray as a cure for neuralgia in the face. Is it safe for an inexperienced person to apply? A. No. 2. How is it applied? A. By means of an atomizer.
- (50) H. C. A. asks for a receipt for removing lard oil stains from linen table covers. A. Lard oil is soluble in 36 parts hot alcohol. White goods may be washed with soap or alkaline lyes.
- (51) C. W. asks for a receipt for making the cement for putting gum soles on shoes. A. (1) Dissolve 10 parts of caoutchouc, in small pieces, in 280 parts of chloroform by maceration, melt 10 parts more of finely cut caputchouc with 4 parts of resin; add 1 part turpentine, and dissolve the whole in 40 parts of oil of turpentine. Then mix the solutions. For use dip a piece of linen in the cement and apply it to the article, which should also receive a layer of the cement before and after the application of the linen. (2) A cement is made by dissolving india-rubber in carbon disulphide, chloroform, or benzine. Apply as above.

- (52) W. H. R. asks how to wash or erase ink from paper, ledger books, etc? A. Writing may be erased by washing it with a solution of chloride of lime and acetic acid. In the SCIENTIFIC AMERICAN for November, 1881, pyrophosphate of soda is recommended. It is best to first apply tallow to the ink spot, then wash in a solution of pyrophosphate until both tallow and ink have disappeared. Solution of potassium oxalate is sometimes used.
- (53) F. R. H. asks for a process for treating parytes with oil of vitriol and steam to purify it. A. Barytes may be prepared artificially for use as a pig-ment by adding dilute sulphuric acid to a solution of barium chloride, when a white precipitate is formed, this is washed and dried. Also, it may be prepared by heating the native mineral, grinding it to powder, and washing it, first in dilute sulphuric acid in order to 1emove any traces of iron, and afterward in water: the white powder is then thoroughly dried. Such is the process at Matlock Bath, Derbyshire, England.
- (54) P. H. L. asks: 1. If a phosphorus lamp of any degree of light can be made by pouring boiling hot sweet oil into a bottle with a small piece of phosphorus in it, and then hermetically sealing. so, how can I boil the oil? A. To make a phosphorus lamp or bottle dissolve 24 grains oil. The two should be mixed in a thin vial (flask), which should then be placed in hot water. When the phosphorus melts, cork the vial and shake vigorously vntil nearly cold. Upon being uncorked, it emits considerable light. This is a difficult and dangerous manipulation. 2. Give process for erasing or absorbing writing ink after it has become dried on the paper. And if it can be made in a solid form to use as a rubber eraser is used for leadpencil writing. A. For this purpose a solution of oxalic acid may be used into Drop Forgings. Billings & Spencer Co. See adv., p. 413. which the paper is dipped and then allowed to dry quickly. While the paper should be saturated with this solution, its pores should not be clogged, and in usingit, it should be applied to the spot to be removed with gentle pressure. Remember oxalic acid is poison
- (55) E. N. H. asks: What is the composition of Seidlitz powders, and in what proportions? A. The blue powder contains 1 drachm bicarbonate soda and 2 drachms Rochelle salts intimately mixed. The white powder is one-half drachm tartaric acid.
- (56) E. S. asks how to electroplate articles that are non-conductors of electricity, such as leaves. fishes, insects, etc.? A. The leaf is carefully dried, and laid upon a smooth piece of milled lead, which is placed between two steel plates and passed between rollers; these press the leaf into the lead, and produce a complete mould. Copies from this may be taken with gutta-percha or electrotype, Roseleur describes the copying of nettle and other leaves so perfect that all the hairs on their surface were to be seen. One of the back and forth, the eccentric is revolved to the extent sides of a fresh leaf was covered by means of a brush with a thin paste of plaster of Paris, and after the drying of the first coat other layers were applied, until a resisting block had been obtained with the leaf uppermost. The free side was then covered with several coats always with a brush or pencil of gutta-percha dissolved in carbon bisulphide, and lastly with melted guttapercha. The mould was removed from the leaf, metallized, and immersed in the galvanoplastic bath. To cast reptiles, embed the subject in a mould made of four par s of plaster of Paris, one of unburnt lime powder, and one of Flanders' brick dust. Dry the mould carefully in an oven, then make it red hot, and burn the subject out of it, taking care to free the mould from the ashes. Fusible metal may be cast in this mould, or a wax model may be taken of the object, pouring the wax in just before setting. The whole is now placed in water, the lime causes the mould to dissolve or break up, and the figure modeled within it may be taken and covered with copper and the wax afterward melted out. Flowers, insects, lizards, or other small animals may be typed in this manner.
 - (57) G. M. asks for a method of crystallizing tin plate. A. Heat the plate until the tin begins to melt, and dip it into a solution of 1 part of bichromate of potassa in 3 parts of water, 2 parts of muriatic acid, and 1 part of nitric acid. After rinsing well, muriatic acid is poured over the tin plate, and then a solution of 10 parts hyposulphite of soda in 120 parts of water. The crystalline flowers produced thereby display a great variety of colors according to the time of contact. Rinse well with water, then with alcohol, and lastly lacquer.
 - (58) E. H. B.: The following is a good fireproof cement: 1. Iron filings, 140 parts; hydraulic lime, 20; quartz sand, 25; sal ammoniac, 3. These are formed into a paste with vinegar, and then applied. The cement is left to dry slowly before heating. 2. Iron filings, 180 parts; lime, 45; common salt, 8. These are worked into a paste with strong vinegar. The cement must be perfectly dry before being heated. By heating it hecomes stone hard.
 - (59) J. C. asks If there is any process known by which we can dissolve india-rubber or gutta-percha? A. Use bisulphide of carbon: be careful not to use it near a light or fire.
 - (60) D. H. V. asks for the best method of cleaning bronze statuary or other bronze ornaments, in the fine lines of which dust has collected? In the ordinary process of dusting I have not been able to remove the dust so collected, and which causes such ornaments to assume a gray, dingy appearance. A. Use weak soapsuds or agua ammonia.
 - (61) O. N. N. asks how to soften tin that has been hardened by being heated too often, so that it will not injure its plating properties? A. Melt it again and add a little antimony

MINERALS, ETC.—Specimens have been received from the following correspondents, and examined, with the results stated:

M. M.—The sample you sent is composed of iron pyrites (sulphide of iron) in clay, and has no value, containing no gold or silver.

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

Rare Chance. -'To rent, brick building, 38x80, located on one of the leading railroads. New England city 20,000 inhabitants, twenty-five manufactories, no practical machine jobber in city; offers facilities for establishment of first-class business to right man. For par ticulars address Box 923, Meriden, Conn.

What would poetry or prose be without a pen, and what is a pen worth without the name of Esterbrook stamped on it? Don't forget to ask your stationer for

Wanted to purchase, a Patent of Merit. Chas. Bab son, Jr., dealer in patents, 24 Congress St., Boston. Mass.

Contracts taken to Manuf, small goods in sheet or cast brass sheet steel, or iron. Estimates given on receipt of model. H. C. Goodrich, 66 to 72 Ogden Place

25" Lathes of the best design. G. A. Ohl & Co., East Newark, N. J.

Pure Grain Nickel, Rolled and Cast Anodes, Pure of phosphorus in an ounce of olive or cotton seed Nickel Salts. Greene, Tweed & Co., 118 Chambers St., New York.

> Mfr's desiring a first-class specialty in hardware, on royalty, address W., Drawer 23, Goshen, Ind.

Physicians acquainted with Dr. Elmore's Rheumatine Goutaline pronounce it the only real remedy for rheumatic disorders ever discovered, and the best remedy for dyspepsia, kidney and liver disorders. Hundreds of city references. Sent anywhere by express. \$2.25 & \$1.50 per bottle. Elmore, Adams & Co., 105 William St., N. Y.

For Pat. Safety Elevators, Hoisting Engines. Friction Clutch Pulleys, Cut-off Coupling. see Frisbie's ad. p. 414. Mineral Lands Prospected, Artesian Wells Bored, by Pa. Diamond Drill Co. Box 423. Pottsville, Pa. See p. 412.

C. B. Rogers & Co., Norwich, Conn., Wood Working Machinery of every kind. See adv., page 414. For Power & Economy, Alcott's Turbine, Mt.Holly, N. J.

4 to 40 H. P. Steam Engines. See adv. p. 412. "How to Keep Boilers Clean," Book sent free by

James F. Hotchkiss, 84 John St., New York. Scientific Books. See page 396. Catalogues free.

E. & F. N. Spon. 44 Murray Street, N. Y. Engines, 10 to 50 horse power, complete, with govern-

or, \$250 to \$550. Satisfaction guaranteed. More than seven hundred in use. For circular address Heald & Morris (Drawer 127), Baldwinsville, N. Y.

Brass Finishers' Turret Lathes, 131/2 x 4, \$165. Lodge, Barker & Co., 189 Pearl St., Cincinnati, O.

Wanted.-Patented articles or machinery to make and introduce. Gaynor & Fitzgerald, New Haven. Conn. To stop leaks in Boiler Tubes use Quinn's Patent Ferrules. Address S. M. Co., So. Newmarket, N. H.

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

Assays and Analyses of ores and all commercial products. Advice given and investigations made in all branches of chemical industry. Send for circular. N. Y. Assay Laboratory, 40 Broadway, New York.

Guild & Garrison's Steam Pump Works, Brooklyn, Y. Steam Pumping Machinery of every descrip-

Combination Roll and Rubber Co., 68 Warren street, N. Y. Wringer Rolls and Moulded Goods Specialties. First Class Engine Lathes, 20 inch swing, 8 foot bed, now ready. F.C. & A.E. Rowland, New Haven, Conn.

Improved Skinner Portable Engines, Erie, Pa

Ice Making Machines and Machines for Cooling Breweries, etc. Pictet Artificial Ice Co. (Limited), 142 Greenwich Street. P. O. Box 3683, New York city. Lace Cutters. A useful little tool for cutting lace

leather without waste. Greene, Tweed & Co., New York. Steel Stamps and Pattern Letters. The best made. J. F.W.Dorman, 21 German St., Baltimore, Catalogue free. Split Pulleys at low prices, and of same strength and

appearance as Whole Pulleys. Yocom & Son's Shafting Works. Drinker St., l'hiladelphia, l'a.

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

Machinery for Light Manufacturing, on hand and built to order. E. E. Garvin & Co., 139 Center St., N. Y. Presses & Dies. Ferracute Mach. Co., Bridgeton, N. J. Cope & Maxwell M'f'g Co.'s Pump adv., page 12.

Curtis Regulator, Float, and Expansion Trap. See p.12. Steam Hammers, Improved Hydraulic Jacks, and Tube Expanders. R. Dudgeon. 24 Columbia St., New York.

Diamond Saws. J. Dickinson, 64 Nassau St., N. Y. 50.000 Emerson's Hand Book of Saws. New Edition. Free. Address Emerson, Smith & Co., Beaver Falls, Pa.

Eagle Anvils, 10 cents per pound. Fully warranted. Gould & Eberhardt's Machinists' Tools. See adv.,p. 12. For Heavy Punches, etc., see illustrated advertise

ment of Hilles & Jones, on page 12. Barrel, Key, Hogshead, Stave Mach'y. See adv. p.12. Magic Lanterns and Stereopticons of all kinds and prices. Views illustrating every subject for public exhibitions, Sunday schools, colleges, and home entertainment. 116 page illustrated catalogue free. McAllister,

Manufacturing Optician, 49 Nassau St., New York. Fine Taps and Dies in Cases for Jewelers, Dentists, Amateurs. The Pratt & Whitney Co., Hartford, Conn. Woodwork'g Mach'y, Rollstone Mach. Co. Adv., p. 14.

For best low price Planer and Matcher, and latest improved Sash, Door, and Blini Machinery, Send for catalogue to Rowley & Hermance, Williamsport, Pa.

The Sweetland Chuck. See illus. adv., p. 14.

The Porter-Allen High Speed Steam Engine. Southork Foundry & Mach. Co.,430 Washington Ave., Phil.Pa. Knives for Woodworking Machinery. Bookbinders, and Paper Mills. Taylor, Stiles & Co., Riegelsville, N. J.

Advertisements.

Inside Page, each insertion - - - 75 cents a line. Back Page, each insertion - - - \$1.00 a line. (About eight words to a line.)

Engravings may head advertisements at the same rate per line, by measurement, as the letter press. Advertisements must be received at publication office as early as Thursday morning to appear in next issue.



WANTED.-A First-Class Eastern Mechanic, who has a practical knowledge of the manufacture of who has a practical knowledge of the manufacture of Strap and T linges and Buts, cas beer of a good posi-tion by applying to Lock Box 1459, Pittsburg, Pa,



Sample and Circular Free by mail. 11. S. MINERAL WOOL CO., 22 Courtlandt St., N. Y.



SEND TO LONDON BERRYXORTON BEST BAND SAW BL

WINTED.—Party representing some house and selling local and General Machinery, Trade Mills, Factories, and Machine Shops, to take agency of a new and fast selling Specialty on Commission. Must furnish good references. State trade solicited. Address O. C., care of Lord & Thomas, Chicago, Ill.



WANTED.

A man well accustomed to the manufacture of Engines and Flour Mill and Saw Mill Machinery, as Foreman at the Grand Rapids Iron Works. Apply to BUTTERWORTH & LOWE, Grand Rapids, Mich.

IRON PYRITES: ITS FORMATION AND Decomposition. By Prof. F. Sandberger, Ph.D. An exhaustive study of the chemistry of this important mineral product. Chemical composition of iron pyrites. Decomposition by heat. Formation of iron pyrites. Decomposition of pyrites. New compounds formed rrom the decomposition of pyrites by oxygen. Remarkable facts. Contained in SCIENTIFIC AMERICAN SUPPLEMENT, No. 341. Price D cents. To be had at this office and from all newsdealers.

THE BIGGEST THING OUT Illustrated Book Sent Free.

E. NASON & CO., III Nassau St., New York.



MESSRS. MUNN & CO.. in connection with the publication of the SCIENTIFIC AMERICAN, continue to examine Improvements, and to act as Solicitors of Patents

In this line of business they have had thirty-five nears' experience, and now have meanaled 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 intrusted 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 pro cure them; directions concerning Labels, Copyrights, Designs, Patents, Appeals, Reissues, Infringements, Assignments, Rejected Cases, Hints on the Sale of Pa-

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,

261 Broadway, New York. BRANCH OFFICE -Corner of F and 7th Streets, Washington, D. C.