

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.

The best results are obtained by the Imp. Eureka Turbine wheel and Barber's Pat. Pulverizing Mills. Send for descriptive pamphlets to Barber & Son, Allentown, Pa. Steam Tug Machinery, Engines, Boilers, Sugar Machinery. Atlantic Steam Engine Works, Brooklyn, N.Y.

Fuller & Stillman, Chemical Engineers and Assayers, 40 Broadway, New York.

The New Economizer, the only Agricultural Engine with return flue boiler in use. See adv. of Porter Mfg. Co. page 78.

Holzner & Windstanley will sell two thirds interest of their right and title of the Coal Hod Improvement. Address Holzner & Windstanley, N. W. corner of Walnut and West Streets, Louisville, Ky.

Philadelphia Hydraulic Works, Philadelphia. Pumps and Hydraulic Presses.

Wanted for Cash.—A useful novelty or toy that can be sold through the mail for 25 cents. F. R. Avery, Chicago

I wish to purchase a patent for some good article of manufacture. George Cosper, Winton Place, Ohio.

The Electric Light in its Practical Application. By P. Higgs. Numerous Illustrations. \$3.50. Mail free. E. & F. N. Spon, 446 Broome St., N. Y.

Wanted—Second hand 2 or 3,000 lb. Steam Hammer. Address Forging Company, Hamilton, Ont.

For Sale—The legs and feet of a Mastodon. Mounted on Walnut Stands. C. W. Williamson, Wapakoneta, O.

The Asbestos Roofing is the only reliable substitute for tin, it costs only about one-half as much, is fully as durable, is fire-proof, and can be easily applied by any one. H. W. Johns Manufacturing Company, 87 Maiden Lane, N. Y., are the sole manufacturers.

New 8 1/2 foot Boring and Turning for sale cheap. A first class tool. Hilles & Jones, Wilmington, Del.

We want to make some heavy, patented machinery, on royalty or otherwise. Vulcan Works, Toledo, O.

Wright's Patent Steam Engine, with automatic cut-off. The best engine made. For prices, address William Wright, Manufacturer, Newburgh, N. Y.

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

H. Prentiss & Co., 14 Dey St., New York, Manufs. Taps, Dies, Screw Plates, Reamers, etc. Send for list.

For Screw Cutting Engine Lathes of 14, 15, 18, and 22 in. Swing. Address Star Tool Co., Providence, R. I.

The Horton Lathe Chucks; prices reduced 90 per cent. Address The E. Horton & Son Co., Windsor Locks, Conn.

Lincoln's Milling Machines; 17 and 20 in. Screw Lathes. Phoenix Iron Works, Hartford, Conn.

A Cupola works best with forced blast from a Baker Blower. Wilbraham Bros., 238 Frankford Ave., Phila.

Presses, Dies and Tools for working Sheet Metal, etc. Fruit & other can tools. Bliss & Williams, B'klyn, N. Y.

Linen Hose.—Sizes: 1 1/2 in., 20c.; 2 in., 25c.; 2 1/2 in., 28c. per foot, subject to large discount. For price lists of all sizes, also rubber lined linen hose, address Eureka Fire Hose Company, No. 13 Barclay St., New York.

Workshop Receipts for Manufacturers and Mechanics. Illustrated. \$2 00 E. & F. N. Spon, 446 Broome St., N. Y.

Nickel Plating.—A white deposit guaranteed by using our material. Condit, Hanson & Van Winkle, Newark, N. J.

The Lathes, Planers, Drills, and other Tools, new and second-hand, of the Wood & Light Machine Company, Worcester, are being sold out very low by the George Place Machinery Agency, 121 Chambers St., New York.

Hydraulic Presses and Jacks, new and second hand. Lathes and Machinery for Polishing and Buffing Metals. E. Lyon & Co., 470 Grand St., N. Y.

Bradley's cushioned helve hammers. See illus. ad. p. 29

Partner wanted. See adv. on page 30.

Excelsior Steel Tube Cleaner, Schuylkill Falls, Phila., Pa.

Machine Diamonds, J. Dickinson, 64 Nassau St., N. Y.

Band Saws a specialty. F. H. Clement, Rochester, N. Y.

Sheet Metal Presses, Ferracute Co., Bridgeton, N. J.

Vertical Burr Mill. C. K. Bullock, Phila., Pa.

Eclipse Portable Engine. See illustrated adv., p. 62.

Yacht Engines. F. C. & A. E. Rowland, N. Haven, Ct.

Split Pulleys at low prices, and of same strength and appearance as Whole Pulleys. Yocom & Son's Shafting Works, Drinker St., Philadelphia, Pa.

Noise-quieting Nozzles for Locomotives and Steamboats. 50 different varieties, adapted to every class of engine. T. Shaw, 915 Ridge Avenue, Philadelphia, Pa.

Stave, Barrel, Keg, and Hoghead Machinery a specialty, by E. & B. Holmes, Buffalo, N. Y.

Solid Emery Vulcanite Wheels—The Solid Original Emery Wheel—other kinds imitations and inferior. Caution.—Our name is stamped in full on all our best Standard Belting, Packing, and Hose. Buy that only. The best is the cheapest. New York Belting and Packing Company, 37 and 38 Park Row, N. Y.

For Shafts, Pulleys, or Hangers, call and see stock kept at 79 Liberty St., N. Y. Wm. Sellers & Co.

Wm. Sellers & Co., Phila., have introduced a new Injector, worked by a single motion of a lever.

Steam and Gas Fitters' Tools a specialty. Send for circulars. D. Saunders' Sons, Yonkers, N. Y.

Ornamental Penman's Pocketbook of Alphabets. 32 plates, 20c. Mail free. E. & F. N. Spon, 446 Broome St., N. Y.

Elevators, Freight and Passenger, Shafting, Pulleys, and Hangers. L. S. Graves & Son, Rochester, N. Y.

Holly System of Water Supply and Fire Protection for Cities and Villages. See advertisement in SCIENTIFIC AMERICAN of this week.

Cutters shaped entirely by machinery for cutting teeth of gear wheels. Pratt & Whitney Co., Hartford, Conn.

Deoxidized Bronze. Patent for machine and engine journals. Philadelphia Smelting Co., Phila., Pa.

Having enlarged our capacity to 96 crucibles 100 lb. each, we are prepared to make castings of 4 tons weight. Pittsburgh Steel Casting Co., Pittsburgh, Pa.

NEW BOOKS AND PUBLICATIONS.

LABORATORY TEACHING. By Charles Loudon Bloxam. Fourth edition. Illustrated. Philadelphia: Lindsay & Blackiston. 12mo., pp. 261.

In the ten years since this useful manual was first published its fitness as a guide to the beginner in practical chemistry has been amply demonstrated. The present edition differs from the last chiefly in giving the formulæ for the compounds to be studied. The book is well printed and has a good index.

FOUNDATIONS AND FOUNDATION WALLS. By George T. Powell. New York: Bicknell & Comstock.

A work for the house builder rather than the engineer, strictly practical, and obviously of much value to all having to do with foundation work.

ZEITSCHRIFT DES ARCHITECTEN UND INGENIEUR VEREINS ZU HANNOVER. Edited by W. Keck. Band 25, No. 1 and 2. Hannover: Schmorl & von Seefeld. 1879.

A technical journal, edited under the auspices of the Architects and Engineers' Society at Hanover, and of a very high standing in Germany. The first two numbers of 1879 contain, among other scientific and technical information, a paper on driving spiles by means of a jet of water; a statistical table showing the different observations on this subject; plans and descriptions of the Point Bridge at Pittsburgh and of the proposed East River Bridge at Blackwell's Island; a carefully prepared description of the great railroad repair shops at Hanover, and a new theory for the computation of the strains in joint arch bridges.

RESULTATE AUS DER THEORIE DES BRUCKENBAUS. Von R. Krohn. Aachen: J. A. Mayer. 1879. (Results in the Theory of Bridge Building.)

In this work the author, Mr. R. Krohn, Civil Engineer and Professor at the Royal Rhenish Polytechnic School at Aachen (Aix la Chapelle) Germany, has collected and arranged the latest developments in the "Theory of Bridge Building," and has explained their application by numerous examples in an excellent manner. The work will be complete in two parts, the first of which has appeared and is now before us. It treats of iron truss bridges, their construction and calculation, the formulas, the derivation of the same, and the advantages of the several variations in the arrangement of the elements. The author has adopted the analytical and graphical method of calculation, and has based the computations of the strains on the experiments of Wohler and on the Daunhardt Weyrauch formulas. The distribution of the load and the strains arising therefrom are admirably demonstrated. The second part will treat of iron arched bridges and combination arched and truss bridges. The work is carefully illustrated and handsomely printed.

Notes & Queries

HINTS TO CORRESPONDENTS.

No attention will be paid to communications unless accompanied with the full name and address of the writer.

Names and addresses of correspondents will not be given to inquirers.

We renew our request that correspondents, in referring to former answers or articles, will be kind enough to name the date of the paper and the page, or the number of the question.

Correspondents whose inquiries do not appear after a reasonable time should repeat them.

Persons desiring special information which is purely of a personal character, and not of general interest, should remit from \$1 to \$5, according to the subject, as we cannot be expected to spend time and labor to obtain such information without remuneration.

Any numbers of the SCIENTIFIC AMERICAN SUPPLEMENT referred to in these columns may be had at this office. Price 10 cents each.

(1) Olivia writes: We have a 10"x30" improved Allis Corliss engine, 95 revolutions per minute, and makes indicated h. p. as follows:

Log. π (3.14159)..... 0.497150 } Area of piston  
Log. 25..... 1.397940 } in inches.  
Log. steam pressure (60lb.)..... 1.778157  
Log. piston dist. 47 1/2 ft..... 2.676694

Log. 33,000..... 6.349935  
..... 4.518514

Log. indicated h. p..... 1.831421 ∴ 67.83 h. p.  
Less friction, etc..... 17.83

Actual h. p..... 50

We are told that the engine will not develop over 30 h. p. by parties who claim to know. Have we figured correctly? If not, please correct us. A. Yes, if 60 lb. is the average pressure on the piston. But we suppose it is the pressure in the boiler. If so, there is your error.

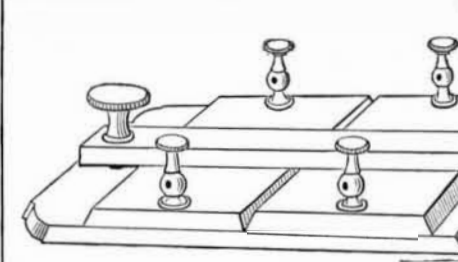
(2) C. W. W. asks if there is any difference between a plumb and perpendicular line; if so, what. A. A plumb line is always a vertical line; a perpendicular line is one at right angles to some other line or surface, and may itself be vertical or horizontal, or at any angle with either.

(3) W. D. M. asks: 1. How many square inches are there in a safety valve 2 1/2 inches in diameter? A. 4.90 inches. 2. What pressure to the square inch would it require to raise a weight two feet from the center of valve and 2 1/2 inches from the center of the valve to the end attached to the outside of valve? A. See reply to F. J. R., p. 267, volume 40.

(4) J. L. C. asks: 1. Is it possible to become a good mechanical draughtsman without studying

geometry? A. Possible, but a knowledge of geometry is very essential. 2. If so, what book or books would it be best to get on the subject, and where could I get them? A. "MacCord on Mechanical Drawing," for sale at this office. 3. Is it possible to get as good satisfaction in point of economy, out of a throttling slide valve engine, as you can from a cut off engine? A. No. 4. Which is best to do in cleaning out a boiler, to blow it out under pressure, or let the water run out after the pressure goes down? A. If there is time, let the boiler cool, the deposit will then be left comparatively soft.

(5) C. A. P. asks (1) how to make an effective lightning arrester to be used on a short line (400 feet) of telegraph. A. The engraving shows a common form of lightning arrester. It consists of two small brass plates mounted on a larger metallic plate and separated from it by a sheet of mica. The upper plates are put in the circuit, the lower plate is connected



with the ground wire. An overcharge of electricity passes through the mica and finds its way to the earth. 2. Do I infringe on any one's rights or break any law relating to patents when I make a pair of telephones like those (using horseshoe magnets) described in your SUPPLEMENT, No. 142—would I be doing so if I sold them? A. See Rights of Investigators, p. 128, volume 39, of SCIENTIFIC AMERICAN.

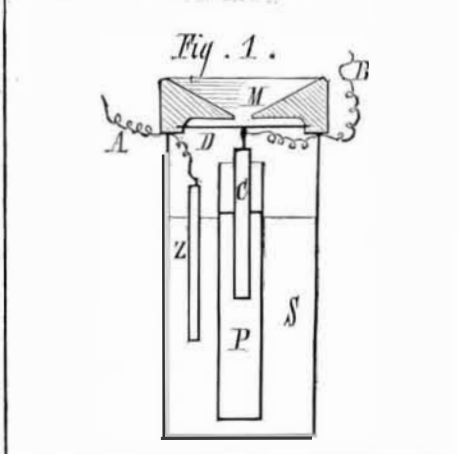
(6) C. E. B. says: I am using a small compressed air boiler, and I am troubled with a few leaks at the hub on the side: will two or three coatings of lead on the inside check it? If not, what will? A. Stop the leaks by calking if possible. If you do not succeed in this you may apply the white lead.

(7) W. H. R. writes: I have a cylinder, 6 inches diameter and 1 inch long, filled with water at 100 lb. pressure per square inch. 1. How many tons, acting on the 6 inch piston that works in the cylinder, would be required to compress the water 1-16 inch? A. That is equivalent to 1-96 its bulk; no liquid is susceptible of that amount of compression. 2. Is there any other liquid less compressible than water that will not affect either iron or brass? Is mercury less compressible? A. Mercury is less compressible than water, and does not affect iron. It will, however, affect brass.

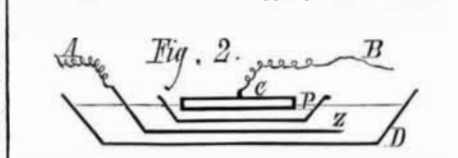
(8) A. B. J. asks how to use ultramarine blue for a wash blue, that will not spot in hard water. A. We know of no practical way of overcoming this, as the blue does not form a true solution. For this purpose Nicholson's blue (blue aniline) is preferable to ultramarine.

(9) W. J. asks: What is the horse power of an engine required to ascend a grade of 7 (seven) inches to the foot on a cogged rail for center of track, cog wheel to fit in same not to exceed 12 inches diameter, the weight to be taken up exclusive of the engines, and boiler's weight about 35 hundred weight? A. You do not give the speed at which you wish to run, but assuming 4 miles per hour, the power required would be, with engine, weight, say 20,000 lb. and other weight 3,800 lb., total 23,800 lb., 151 horse power, and to this add 25 per cent for friction and other losses. If weight or speed be increased, increase the power in proportion.

(10) H. W. F. writes: I have lately been making some interesting electrical experiments, and have arrived at very satisfactory results, some of which I would like to make known. Fig. 1 represents the



section of a telephone, which I think has one novel feature, the production of the electric waves at the source of the electricity. S is an ordinary battery jar, filled with salt and water, in which the zinc, Z, is suspended, P is a porous cup filled with ordinary battery solution of bichromate of potash. In this is suspended a piece of carbon, attached to a vibrating diaphragm, D. The wire, B, extends from the upper part of the carbon.



When a sound is made in the mouth piece, M, the diaphragm vibrates, the carbon is alternately immersed and drawn out of the fluid, the result is a series of electric impulses which act on an ordinary telephone receiver. In this way I have been able to transmit articulate speech with distinctness. Fig. 2 shows a section of a very powerful and cheap battery. D is the

containing vessel, either a pie or soup plate. Z is a piece of amalgamated sheet zinc, with the wire, A, attached. P is a flower pot saucer which takes the place of the porous cup. C is a flat piece of gas carbon with the wire, B, fastened on the upper side, so as not to be eaten off by the acid. The plate, D, is filled with salt and water; P, with battery fluid. This makes a very good battery for three reasons; first, it is powerful; second, it is easily made; third, it is cheap.

(11) J. C. K. writes: I beg to differ from your answer to L. C. R. (36), in issue of 12th July. I remember that 45 years ago nails were made by hand and sold by count, and not by the pound—fourpenny at 4 pence per 100, sixpenny at 6 pence per 100, and so on through the different numbers; the term penny or number of pence was the retail price for 100. I notice the penny is pretty generally dropped now, and the simple numbers substituted, as 6's, 8's, 10's, etc., instead.

(12) H. J. P. asks how strong a battery is necessary to show the repulsion of bismuth from the poles of a magnet. I intend to try it with three cells of Leclanche, but do not think that will be enough. A. Use a magnet about 4 inches long, and 4 cells of Bunsen battery.

(13) A. Y. asks: 1. Is charcoal hammered No. 1 boiler plate always marked C. H. No. 1? A. For steamboat boilers, yes. 2. May plate not so marked be C. H. No. 1 iron to fill specification? A. No.

(14) H. J. C. asks for a detailed description of an "induction coil," suitable to be used with "Lyons transmitting telephone" which you described in SUPPLEMENT, No. 163. Please give diameter of central core, diameter and length of coil. No. and length or weight of both primary and secondary wires. The whole to be used on a circuit, two miles long, with ground connections. A. The core consists of a bundle of No. 18 iron wire 4 1/2 inches long, 1/4 inch diameter. The spool upon which the primary and secondary wires are wound is as thin as it is possible to make it. Two layers of No. 18 silk covered copper wire are wound on the spool for the primary, and about eight layers of No. 36 silk covered wire are wound upon the primary, the several layers being separated by pieces of thin writing paper.

(15) W. A. M. asks how to prepare the so-called fish food used in fresh water aquaria, and what amount to use in an aquarium of about six gallons capacity, with from eight to twelve small fishes. A. We do not know to which preparation you refer. Seth Green says in relation to gold fish: "Feed them all they will eat and anything they will eat, worms, meat, fish wafer, or fish spawn, but take great care that you take all that they do not eat out of the aquarium."

(16) G. B. F. asks for the simplest and best process for estimating the amount of potassic iodide in a known quantity of co. fluid extract sarsaparilla. A. If the solution contains no chlorides, evaporate to dryness in a porcelain capsule, and heat cautiously to redness to destroy the carbonaceous matters. Moisten the residue thoroughly with silver nitrate dissolved in water, warm, throw on a tared filter, wash with water, dry in the dark, and weigh. One part of this is equivalent to 0.706 KI. nearly.

(17) W. M. asks: 1. Will a ten horse power boiler run a ten horse power engine, or is the boiler more than equal to the power at which the engine is rated. 2. What is the reason that a person weighs as much before as after eating? A. Try the experiment of weighing yourself before and after eating. If you find you do not weigh more after eating we would be pleased to know what kind of food you eat. 3. In speaking of perpetual motion, do you not mean a machine that will act the same as an engine, that is, to drive other machinery? A. Any machine or apparatus that would keep in motion without any external aid would be called a perpetual motion.

(18) W. W. asks (1) how to make a small still on a cheap scale. A. You may use an ordinary iron retort capable of holding say 3 pints, and a small glass or block tin worm; place the worm in a tub or bucket, the lower end passing through a cork fitting a hole bored for its reception near the bottom of the vessel. Adjust the beak of the retort to the upper end of the worm. During the distillation conduct a stream of cold water to the bottom of the tub or bucket, and draw off the heated water near the top. See No. 110 of SCIENTIFIC AMERICAN SUPPLEMENT. 2. Please give a receipt for making a first class vinegar for family use. A. See p. 267, (19), volume 39, SCIENTIFIC AMERICAN.

(19) J. F. B. writes: 1. I have a 4x4 engine, and will 129 feet of 1/2 inch pipe give heating surface sufficient to run it; if not, how much more do I want? A. No, if your engine works up to 200 revolutions per minute, 1/2 inch pipe will be very likely to stop up; use the same length of 3/4 inch pipe. 2. Is there any patent on a simple coil boiler? A. No.

(20) W. E. P. asks for the dates on which Mars came to opposition in the years 1858, '60, '62, '64, and '67. A. About as follows: 1858, May 15; 1860, July 22; 1862, September 29; 1864, November 23; 1867, January 30.

(21) F. P. K. asks: 1. Where can the fine red clay used in the manufacture of imitation lava ware be procured? A. Consult the report on "Clay and Clay Deposits of New Jersey," Professor George H. Cook, New Brunswick, N. J. 2. Is there any chemical that, by mixing with white clay, will in the burning turn it to a red color? A. Moisten it with strong aqueous solution of sulphate of iron, common copperas. 3. What can I mix with clay, to strengthen and toughen it? A. Try one or two per cent of fluorspar. The clay should be properly washed.

(22) G. A. F. asks: 1. How are scorification assays of gold and silver ores made? A. The powdered ore is mixed and covered with about ten times its weight of pure granulated lead in a small dish of refractory clay (scorifier) and introduced into the muffle of a cupellation furnace. If the ore is at all basic a few

fragments of anhydrous borax (borax glass) are added to the contents of the scorifier. As soon as the lead has melted the door of the muffle is opened and the scorification proceeds until the ring of slag closes over the lead button. The scorifier is then removed and poured into a smoked iron mould. If, after breaking away the slag, the button is found to be small enough, it is immediately cupelled; if not it must be returned to the scorifier and reduced in size by scorification. The cupellation is the same as with the crucible beads. 2. I inclose clipping from an exchange which does not correspond with processes given in your paper from time to time for the manufacture of nitroglycerine: who is correct? A. The statement that nitroglycerine is a compound of glycerine and prussic acid, is incorrect.

(23) S. E. asks: For what is realgar used, and what is it worth? Is there a good market for it? A. It is used in the manufacture of certain pyrotechnic preparations, such as Bengal lights (niter 27, sulphur 7, realgar 2); also in the manufacture of orpiment and other arsenical compounds. It is quoted at 20 cents per lb.

(24) W. H. C. writes: 1. I have finished the two sections of the secondary coil of an induction coil, 1/2 size of that given in SUPPLEMENT, No. 160. Connecting one Watson cell I find no result from the secondary wire, no spark or feeling when I touch the terminals with my tongue. The fine wire broke three times by accident; each time I soldered, using muriatic acid as a flux. I should think that, though I have no insulating medium between the two sections, I would have some results. A. Use battery enough to vibrate the interrupter strongly. Two cells of Grenet would answer. If you do not then get a spark you should examine the connections and test the insulation. Possibly your condenser may be at fault. 2. Ought not one Watson cell to be enough? A. One Watson cell is not enough. Use at least four.

(25) H. P. asks: What are the proportions given to the air chamber of a pump? A. From 4 to 8 times the capacity of the pump.

(26) A. D. writes: Referring to the phonograph described in SCIENTIFIC AMERICAN SUPPLEMENT, No. 133, will you give more definite instructions regarding the construction of this little wooden spring, size, force, and kind of wood? A. The accompanying

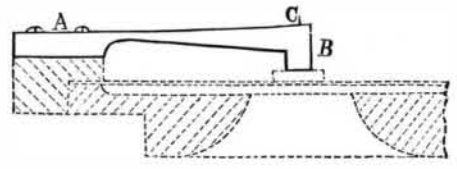


diagram gives the exact size and proportion, A being the portion attached to the mouth piece, B the portion that rests upon the diaphragm, and C the needle. The width should be about 3-16 inch and the end, B, should rest with some pressure on the small soft rubber block placed against the diaphragm. Any wood that springs well will answer. Holly is perhaps as good as anything.

(27) H. S. W. writes: 1. I contemplate building a small stern wheel steamer, dimensions: length, 50 feet, beam 9 feet, deck 12 feet, between decks 6 feet, height of cabin 7 feet, center 8 feet. She will be sharp forward instead of round, as our larger vessels are. Her boiler is 42 inches diameter, height 7 feet, engines 6 inches diameter, 24 inches in length. Are my proportions right? Is my boiler large enough for the boat? A. Your boiler is ample to drive the boat, and having about 180 feet surface should supply the engines. 2. Are my cylinders too large or small? A. Cylinders not too large; you might make them 6 1/2 inches. 3. Would it be possible for such a boat to make the trip from New Orleans to the Suwanee River, in Florida? A. Yes with care and prudence.

(28) C. C. W. writes: I have a clinker built boat, 18 feet long, beam 4 feet 6 inches, draught at stern 18 inches; about 12 inches of this is extra keel. I have two high pressure engines, plain valves, set on the quarter; cylinders 2 inches by 4 inches working in 1/4 expansion, carry 40 lb. steam, revolutions of engines 125. What would be the correct size of screw to run in shallow streams, and what would be a correct pitch of screw? A. 24 inches diameter and 2 feet 8 inches pitch. 2. I wish to know on what principle does the boiler injectors and aspirators work, or rather, how can an injector feed a boiler under 80 lb. steam, as they have to inject water into boiler against a pressure of 80 lb., and have only the same force to do the work? A. We cannot explain clearly the principle of the injector within the limits of "Notes and Queries." Consult some good book on engineering; that it does feed boilers with their own pressure there is no doubt.

(29) M. W. C. asks: 1. What knowledge of mechanics or machinery is requisite to the obtaining of an engineer's certificate to run a steam launch 20 or 25 feet long? A. Sufficient theoretical to understand the principle of operation of the steam engine and sufficient knowledge of the use of tools to be able properly to adjust the parts. 2. Is it necessary that a pilot license should be had to run such a launch? If so, what requisites are necessary to the obtaining of the same? Can one person take out both licenses? Are such licenses necessary for running a steam canoe such as was described in the AMERICAN a short time since? A. For reply to your other queries apply to the steam boat inspectors in your city.

(30) E. P. asks (1) for a cheap method of waterproofing cotton factory cloth suitable for a tent. A. See SCIENTIFIC AMERICAN, volume 39, p. 331 (9). 2. In the sentence "port the helm," does it mean to put the tiller to the port side? A. Tiller to port side.

(31) G. F. P. asks: 1. In the improved forms of dynamo-electric machines now made for producing the electric light, is the same current that supplies the carbons made use of to excite the fixed electro-magnets, or is it usual to have two series of armature coils? A. Usually, but not always. 2. Would a resistance of five ohms introduced in the working circuit of such a machine, by causing the current to traverse a

considerable length of wire in the coils of the fixed electro-magnets before reaching the carbons, impair to any extent the brilliancy of the light with a machine capable of consuming rods 3/4 inch square? A. Of course the introduction of resistance into the circuit will impair the light, and the greater the resistance the more will the light suffer.

(32) F. & Co. ask: Can you give us any information of a way of bleaching resin? A gentleman informs us that proto-chloride of tin will do so. Is there anything injurious in introducing it into soap, it being first dissolved in water? A. Brown resin may be converted into yellow resin by simply boiling it with water for about 10 minutes. Its appearance may be somewhat improved by adding to the water about one per cent of stannous chloride. The trace of the latter adhering to the resin, after washing, will not prove injurious in soap.

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

A. J.—Mr. M. von Lill, of Vienna, has lately analyzed some wolfram steel, generally known as Muschet's special steel, and has found it to contain: Iron, 87.120; manganese, 1.043; copper, a trace; wolfram or tungsten, 9.9888; carbon, 1.239; silica, 0.330; phosphorus, 0.039; sulphur, 0.008; total 99.767.—H. A. F.—The rock contains no precious metals, lead, or copper. It has no economic value.

COMMUNICATIONS RECEIVED.

- On Small Propellers. By P. H. W.
On Alum Baking Powder. By E. B. F., Jr.
On the Microphone without a Battery. By A. C. R.

[OFFICIAL]

INDEX OF INVENTIONS

FOR WHICH

Letters Patent of the United States were Granted in the Week Ending

July 1, 1879,

AND EACH BEARING THAT DATE.

[Those marked (r) are reissued patents.]

Table listing various inventions and their patent numbers, including Agricultural implement, Automatic gate, Axle, vehicle, and many others.

Table listing various inventions and their patent numbers, including Earring, W. E. Greene, Ejector, J. H. Irwin, Elevating or draining wheel, J. Joutet, and many others.

Table listing various inventions and their patent numbers, including Screw heads, etc., machine for burnishing, C. D. Rogers, Scrubber, floor, J. Epting, and many others.

TRADE MARKS.

Table listing trade marks and their associated patent numbers, including Butter, P. H. Van Riper & Co., Certain medicinal preparations, H. H. Warner, and many others.

DESIGNS.

Table listing designs and their associated patent numbers, including Cigar boxes, Kaufmann & Herz, Clock case front, C. L. Brown, and many others.

English Patents Issued to Americans.

Table listing English patents issued to Americans, including Bolting screens, W. W. Huntley et al., Silver Creek, N. Y., Buckles, A. E. McConnell, New Orleans, La., and many others.