Brake beam, J. M. Shook...... Brake hose support, air, E. M. Roberts. Brake shoe, W. D. Sargent.....

a perfectly smooth dead black varuish for brass, etc.? A. A good black for brass consists of thin seed lac varnish (made by dissolving seed lac in alcohol) and refined lamp black. The varnish must be quite thin to insure a dead black, and it should be strained after the addition of the lamp black, to remove all lumps. 2 How to make a transparent dip varnish or lacquer for silver plated and gilt work (on metals)? A. Use a thin shellac varnish, made by dissolving white shellac in alcohol

(4036) J. B. says: Kindly answer through when steam is turned on? Give scientific explanation and remedy. Why would not it be a good idea in order to increase the speed of our fast boats, to have oil forced out at the bow and keel? This would naturally rise and envelop the hull, forming a film of oil for the boat to ride on, thereby reducing the friction of the water. Give a scientific explanation of how electricity makes a motor revolve. Give suggestions of some simple way of heating water closets in this cold climate. A. The noise in the pipes is caused by water hammer. The steam is rapidly condensed in the cold pipe, and is thrown against the pipes, elbows or bends by the velocity of the steam through them. The water also accumulates in small masses, which are dashed against each other; this in a confined space like a pipe produces a hammering noise. Your suggestion is good, but expensive. Air has been tried on a steamboat in New York Bay, but did not meet expectation. A motor is driven by maintenance of poles in the armature attracted or repelled by the field magnet poles. We suggest that you move the water closet into the house, or put up a

(4037) W. L. asks: 1. Would a bar magnet be as strong magnetically if tempered hard only at the ends (say one-fifth of the length at each end) as it is often alloyed with copper. 3. Action and reaction being equal, will a dirty gun "kick" any worse than a clean one, with the same charge? Also why do some powders produce less noise than others? A. No. Some powders burn progressively with less oise than suddenly detonating ones. 4. Isnot linseed oil a good substance for water-proofing canvas boats? A. Yes. 5. Is the process of raising bread by means of hydrochloric acid and soda economical or healthful? A. It is not a safe one for unskillful or careless hands. 6. Is there any easy method of deodorizing skunk skins? A. It can be done by burying the skins in the earth.

(4038) E. D. asks: 1. Will an amperemeter register equally as well on the positive as on the negative wire? A. Yes. 2. Will the same number of amperes that are delivered on the positive return on the negative? A. Yes. 3. What per cent of slip on dynamo belts is good practice? A. No slip.

(4039) E. E. W. asks: Will you please answer the following question: Is there anything (about 1-32 inch thick) I could place between a staple shaped magnet and a flat piece of steel to keep it from drawing? A. No insulator of magnetism has been discovered. Perpetual motionists have been looking for a thing of this sort since magnets were known. We fear they are doomed to disappointment.

before it reaches the atmosphere, or is it produced by transmission through the air? A. The atmosphere sound travel equally in all directions, or in a straight line from a common center? A. It depends much on the manner of producing the sound and the condition of the propagating medium. The sound from a bell hung in a clear space and surrounded by a quiescent homogeneous air can be heard equally well in all directions. 3. Is a person in an audience at twice the distance from a speaker able to hear better than one sphere, or does all light possess the quality of heat? A. The atmosphere is heated when acted on by ether waves, especially when it contains moisture. 5. Is the form of vibration of heat-producing light materially different from non-heat-producing light? A. They are probably the same, but there is no conclusive proof that they are. 6. Is all light convertible into heat on passing through a suitable lens? A. This is an undecided question

manganese? For what purpose is it used, and what is its value? A. It is a compound of manganese and oxygen; its formula is MnO₂. It is used in batteries to a certain extent as a depolarizer, but its principal use is in the manufacture of bleaching powder. Its value depends on its purity and quality. It retails by the barrel at from 4 to 7 cents per pound, but in gross lots would bring far less than this.

phuric acid and distilling off the hydrochloric acid. It can be used for producing the current of a medical is also found native. A By double decomposition of salt battery. 5. How are the flues arranged in vertical is also found native. b. By double decomposition of salt and magnesium sulphate at low temperatures. c. By roasting iron or copper sulphide with salt. d. By calcining a mixture of sodium nitrate and magnesium sulphate. e. It is a by-product of petroleum refining. paily used? A. Principally in the manufacture of glass, ultramarine, and soda ash. 3. How much is annually works? A. Sometimes in wool dyeing.

(4043) F. T. K. writes: 1. I made a battery of the Chaperon-Lalande type, by plugging a piece of two inch gas pipe in one end and fitting a cap to the other, through which I put the zinc (a % inch x 6 inch

(4035) V. L. C. asks: 1. How to make wrong? A. Your trouble is due to the use of cupric hydrate instead of oxide. Make the oxide by heating thin copper plates to red heat in the air, and after cooling beat off the oxide and reheat until it is all oxidized. 2. At the railroad shops I am employed at they have a gas plant of the Pintsch system for lighting the passenger coaches. The gas for use in the coaches is compressed to about 14 atmospheres, and during compres sion there is a liquid condensed from it which the man in attendance calls hydrocarbon, which has wou quite reputation as a cure for rheumatism. What is this liquid and what do you think of it as a cure for rhenmatism? A. The residue is a hydrocarbon of the ole-Scientific American what causes clicking in pipes fine or paraffine or some similar series. We doubt its therapeutic value.

(4044) T. H. B. H. says: We have a 20 horse engine, 30 horse boiler, run two 60 saw gins, jet and pump, and until recently a frictiou pulley press We have put in instead a "direct steam press," 30 inch cylinder. In pressing the bale, we make four charges, i.e., put into the press a certain amount of cotton, run up the press," and "dogs" for the purpose hold up the cotton thus presend until more cotton is put in. and another charge or run-up is made. When making is the last or fourth charge, often the water is drawn out of the boiler from two gauges to less than one. What the danger, and how to prevent? The press factory sent a man here to adjust the press, and he condemns the dome system, Ours is 24 inches by 24 inches. His plan is to have a pipe 11/4 inch in diameter and four or five feet long inside of boiler, perforated with a number of 1/4 inch holes, and to take steam from boiler by said pipe instead of by dome, arguing that the small boles in the pipe would not permit the water to escape from the boiler to the engine and press, as the large orifice, now in boiler for the dome, does. A. There is would be if tempered for the full length? A. Yes. 2. the water in the boiler. This is bad, and dangerous What are the ordinary impurities of aluminum? A. It | practice. Go a little slower in opening the valve, and no more than enough to fill the cylinder slowly. 1¼ inch pipe from the top of the dome to the cylinder, with a 11/2 inch valve, would be preferable to a larger steam pipe and valve--anything to throttle the sudden ontrush of steam which causes the lifting of the

> (4045) E. E. B. asks: If a man with a rifle and one with a cannon are placed any distance apart within range, and both fire at the same time toward each other, the cannon ball to travel twice as fast as the rifle ball, the rifle ball penetrating the cannon ball all the time until it is brought back to the place it started from, does therifie ball at any time come to a dead stop? Second, if a man is on a moving train. and he starts from the front and walks toward the rear can it be said that he is going in two directions at once? Third, if anything is started in any direction, is it possible for it to return to the starting point on the same line, without stopping first? Fourth, does the pendulum of a clock stop in swinging back and forth? A The rifie ball stops at the instant its motion is reversed. The man moves only in one direction. All reversing motions have a dead stop. The same with the pendu-

(4046) H. M. asks: 1. What pressure per square inch is exerted by illuminating gas com (4040) C. H. F. asks: 1. Is light | pressed to one-tenth its original bulk? A. Gas compressed will give about 135 pounds gauge pressure. 2. What is the limit of gas compression? A. There is plays no part in the production of sunlight. 2. Does no limit above the point of liquefaction. 3. Would one-sixteenth inch steel plate be strong enough to stand the pressure referred to in question one? A. Yes, if not over 1 inch diameter. 4. What is the difference in strength and also in weight between steel and aluminum? A. Aluminum has about one-third the tensile strength of steel, depending upon their quality. 5. As one horse power steam engine equals 33,000 foot pounds per minute, would this be the same as 550 pounds per back of him (the speaker)? A. Yes. 4. Is heat prosecondone foothigh? A. Yes. The best results are about
duced by the transmission of light through the atmo21 cubic feet gas per hour per horse power. 6. What is the weight of a 100 horse power gas engine (Otto for instance) and how much gas per hour does it consume? A. Address the Otto Cas Engine Co., Philadelphia, Pa

(4047) V. M. asks: 1. Are engineers licensed as to grade?-for instance, a man might be capable of tending boiler and the common slide valve en gines, but not the high grade of Corliss. Could he procure license? A. There are no provisions for the granting of valid license to engineers, except under muni-(4041) E. F. L. asks: What is black cipal regulations in cities. 2. What is a blister on a boiler sheet? How caused and where found? A. A blister arises from a scab or defective weld beneath the surface of the plate. This prevents the heat passing into the boiler at that point. The surface becomes overheated and expands the film of iron over the defective place, and in a short time raises a blister. It usually occurs on the fire sheet. 3. How is a pop eafety valve adjusted? A. A pop valve is regulated by (4042) A. B. C. asks (1) from what a screw at the top. 4. What is the best form of bat-Glauber salt is obtained. A. &. By treating salt with sulboilers? A. See "Steam Boilers and their Construction," by Wilson, \$2.50 mailed.

(4048) B. R. W. asks the construction of a battery in which saltpeter is used for the depolbut is not always utilized. 2. For what is it princi- arizer. Is it agood closed circuit battery, or is it only suited for open circuit? What is the voltage and amperage? A. It is the ordinary Grove combination. A used in this country? A. No reliable statistics are porous cup is used for the sodium nitrate solution, procurable, as a great part is made directly by those, which is best acidified with sulphuric acid; in this cup who use it. 4. Is it used for dyeing and in print is placed the negative plate. The positive plate of zinc, amalgamated, is in the outer vessel, which contains dilute sulphuric acid. There is nothing new in the combination. It gives 1.7 to 1.9 volts, and 18 an excellent open circuit battery.

(4049) L. S. G. says: Would like to know rod) insulated from the pipe. Not being able to procure if you could let me know of some way to give small the oxide of copper, I made some by precipitating a so- steel wire springs a good spring temper? Wire about lution of sulphate of copper with canstic soda. I the size of a 40 drill and 1% inches long. A. If you placed the oxide of copper in the tube to the depth of have a number of springs to temper, place them in a about an inch. The battery would ring a small bell for small sheet iron box with a little pulverized charcoal a few seconds, and then all action would cease. What is on the bottom and over the springs. Heat to a cherry

red and tip the springs into the water. Dry and spread them on a wire sieve and dip in boiling linseed oil for 2 or 3 seconds and again cool in water. Another way is to slightly polish the springs after hardening and lay them in a flat pan and heat until a full blue color come and then quickly cool in water.

A. Y. O. aslas how to fine wine. - L. B. K. asks how to color brass a fine blue.-S. L. A. asks for a hair tonic or hair invigorator.-J. W. wants an iron paint.-Old Sub. asks: Will you oblige by giving the receipt for making the beautiful gloss that is found on collars and cuffs?—A. D. J. E. asks for receipts for making various kinds of matches .- H. D. H. says: How can I make a hektograph?-F. C. H. wants to know how to make hektograph ink.—C. H. asks (1) for a silver plating fluid for brass and steel. (2) A collodion for covering corns.-F. H. W. asks how to make a good glue mountant suitable for mounting photographs.-F. J. S. asks how to cure corns and bunions.-J. E. W. asks (1) for a good cement to splice belts with. (2) for a rust preventive.-B. V. H. wants to know a remedy for chapped hands.—M. D. asks for a lasting perfume, also for blonde hair dye .- R. H. W. wants to know how to make a depilatory for removing superfluous hair .- J. E. T. asks (1) for ink to use on typewriter ribbons, (2) carbon paper.—C. R. A. asks for a receipt for a hair invigorator.—J. F. F. says: Can you inform me how horu is dyed or stained in various colors?-H. M. A. asks the nature of the preparation used to clean wall paper. -G. A. M. says: Will you please give me (1) a formula for a combined toning and fixing solution, (2) for a hydrochinon developer, (3) how to preserve albumen paper ? -A. P. asks: Can you inform me through the query columns of your valuable paper how to make a paste or glue for use in book binding, or how to use common glue nothing wrong in the dome. The 11/2 inch pipe is too so that it will not crack, as I have found it to do?-H. E. small, and would be nearer the water than the dome. J. asks: Will you kindly inform me in what number I You probably open the steam valve too wide and lift can find a receipt for the ordinary writing fluids used at the present time, or send me a formula ?-C. D. asks; Would you have the kindness to advise me what publication to purchase that contains the information how to prepare solutions to do bronze, nickel, and silver plating with an electric dynamo?-H. R. S. asks: 1. Please give me a recipe for a waterproof glue to be used in putting the patch on a shipping tag. 2. Also a recipe for taking rust off fine steel tools.—C. N. F. says: Will you tell your subscriber how to make Roman candles ?-J. J. says: Could you give me a sure cure receipt for perspiration of the feet. Sometimes in my daily walks they annoy me very much and the odor is very offensive. If there should be a cure for such au ailment, I know you would benefit me as well as others that may be afflicted with it.-L. B. says : Please be so kind as to give one of your steady readers a recipe to make glue so that water will not act upon it after it has been applied on wood or any other articles.-M. M. asks: What preparations are used in making typewriter ribbons ?-A. A. F. says: I write to ask if you can suggest anything which, applied to one's hair, will take the stubbornness out of it.

Answers to all of the above queries will be found in the "Scientific American Cyclopedia of Receipts, Notes and Queries," to which our correspondents are referred. The advertisement of this book is printed in another column. A new circular 18 now ready.

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February 9, 1892,

AND EACH BEARING THAT DATE

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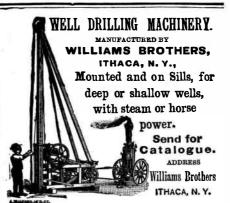


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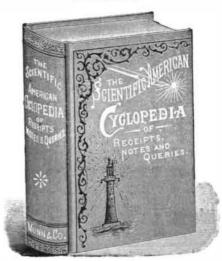
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