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J. R. will find a recipe for stove blacking on p. 41, No. 3.-For information on rubber stamps, A. A. R., D. R., and others may consult No. 6, p. 91 (33). twice their weight of water, to each gallon of which 1 No. 7, p. 100, for information on curving a base ball.— point is raised, and consequently the oil comes over W. S. P. will find information concerning the preserva- more readily. The distillate separates into two layers, tion of flowers on p. 98, vol. 35.-J. M. will find direc- the water being drawn off and returned to the retort

do the stone piers of the East River bridge rest on for a foundation? One person claims they stand on clay, or what is called a hard pan, while I claim they stand on solid rock or stone. Is either of us right, if so, which one? A. The piers rest on solid rock in some places, and on gravel or boulders in others.

description of the magneto-electric machine given on p. 195, vol. 34? A. No.

(5) J. A.—For the information of C. R. B., in reference to the fluid contained in a storm glass, says: "The mixture is made as follows: Place in a long narrow bottle or test tube, camphor gum 21/2 dhm, spirits of wine 11 dhm. When the camphor is dissolved add the following mixture: Water 9 dhm, saltpeter 38 grains, sal ammoniac 38 grains. Dissolve these salts in 9 drachms of water before mixing with the camphorated spirits, then shake the whole together. Cork up tight, and seal with wax, then make a small hole through the cork with a red hot needle, so as to have a small clean hole. Heavy atmosphere will cause the salts to rise: a

(6) H. M. N. asks for the best method for cooling water without the use of ice, being situated in a place where ice cannot be obtained. A. See "A selfcooling goblet," p. 72, No. 5. We shall soon publish another method of cooling water and liquids.

(7) P. R. asks how the ends of the single wires are joined together to form the strand for the East River bridge cables? A. Short thimbles are made with a right hand thread cut in one end and a left hand thread in the other. Corresponding threads are cut in the ends of the wires to be joined, which are received in the thimbles.

(8) O. B. says: Suppose I suspend two weights from line 50 feet long, say 200feet apart at the point of suspension. Now it seems to me that, by carefully measuring, the distance from weights would not be quite 200 feet, as both tend to the center of the earth. I think therefore that in this way I might be able to find the radius of the earth by simply measuring the disthey would finally meet. Am Iright or wrong? A. The theory is correct. You may find it difficult to apply under the circumstances.

(9) S. J. S. asks: 1. Would not steam power be more economical or take less steam and wood to pump in air with the steam? A. There would probably be some economy in the arrangement. 2. Are the petroleum engines a success? A. There are some forms lon at present. 4. Does water in boilers protect no thicker iron than 3% all over burn out or away? A. It is not usual to make fire surfaces thicker than this. 5. that do away with the objection to them or make them as safe as wrought iron boilers? A. We think not. Your proper consideration, and if you will consult the back files of our paper, you will find that they have all been referred to. 6. How much cheaper is water power than steam, say for the length of time that an engine or boiler would last, or in the long run? A. Experiment can alone decide.

(10) A. B. asks how to make sizing for walls? A. Size to make paper stick to walls is made by adding 8 ozs. of dissolved glue to a pailfull of hot water. Apply the preparation to the wall with a white- lasses will not adhere to the paper? A. Dip the moulds wash brush. Be particular to touch every part of the wall, especially the top and bottom. Allow the size to dry a little, and hang the paper with paste as usual.

clean guns? A. Remove the barrels, wash with hot water to remove the residuum of the powder, wipe dry and oil lightly with oil that contains neither salt nor acid. Keep the locks dry and do not get water into them.

(12) F. M. Y. says: In procuring alkalies from barks by boiling in dilute muriatic acid, Ifind great difficulty in separating them from the tannic acid. How can I precipitate the alkaloids moderately pure? A. Heat the solution with a solution of lead acetate (Goulard's solution) as long as a precipitate forms, and then remove the excess of lead by cautious addition of ammonia or by hydrosulphuric acid (sulphuretted hydrogen). Evaporate and crystalize from the filtered solution.

(13) M. L. T. asks: What is the process and appliances used for extracting oils from herbs? A. The volatile oils are generally obtained by distilling in a ignited. deep narrow retort the articles along with an equal weight of water; but some substances that give out their oil with difficulty are first soaked for 24 hours in -A. B. C., G. H. J., J. B. B. and others are referred to | lb. of common salt has been added, by which its boiling

to the gallon should then be added. For other ink re- salts in use cipes and methods for removing ink stains see p. 76 (54) vol. 37, pp. 155 (30), and 315 (26), vol. 36, and pp. 101 and 297, vol. 35 of Scientific American.

(16) W. G. says: How can I save apple and (4) J. A. says: Would you reproduce the pear trees attacked by the blight? A. A good lime wash is recommended, with the addition of a little soot or lampblack to neutralize the glare if this is objectionable. This wash destroys the eggs of insects and germs of fungi, and keeps the barkfree to swell as the cells grow. Some farmers have used strong hot solutions of common soap applied with a swab, also linseed oil where the white scales abound.

coins dissolved in nitric acid (HNO₃)? A. Heat the solution gently, slightly acidified with dilute sulphuric acid, and pass a slow current of sulphuretted hydrogen through it until a filtered drop of the solution no longer gives the copper reaction when brought into contact with a drop of potassium ferrocyanide solution. Filter, cautiously add a little potassium chlorate, heat to boillight atmosphere to fall. Cost of mixture, 10 or 15 cents. ing, and precipitate as oxalate (with oxalic acid). The driedoxalate heated in a closed crucible will yield pure nickel

(17) W. E. S. asks: What is the quickest way to make vinegar? A. What is known as the German process is the most rapid method of making a good vinegar. In this, dilute alcoholic liquor to which $\frac{1}{1600}$ th part of honey or extract of malt has been added is caused to trickle down through a mass of beechwood shavings previously steeped in vinegar and contained in a vessel called a vinegar generator (essigbilder). It may consist of a large oak hogshead or barrel furnished with a loose lid or cover, a few inches below which is fitted a perforated shelf, having a number of small holes loosely filled with packthread about 6 inches long, knotted at the upper end to prevent their falling through. Several small glass tubes long enough to project slightly above and below the shelf are also fitted in perforations in the shelf to serve as air vents. The vessel at the lower part is pierced with eight or ten holes equally distributed around the sides at about six inches above the bottom, tances between the weights, make calculations where | to admit of the entrance of air. A small siphon tube, the upper curve of which is an inch below the air holes, serves to carry off the liquid as fast as it accumulates at The alcoholic liquid at a temperature of the bottom. 75°--83° Fah, is run in on the shelf, and slowly trickles down through the holes by means of the packthread. diffusesitself over the shavings, slowly collects at the bottom, and runs off by the siphon exit. The air enters by the lower holes, passes freely through the shavings, and escapes by the glass tubes. The temperature within the apparatns soon rises to about 100° Fah., and remainsstationary at this point while the action goes on favorably. The liquid generally requires to be passed three or four times through the cask before its acetification is complete.

(18) C. says: I have used the following recipe for making hard soap: 7 lbs. common yellow soap, other questions would require quite a treatise for their 4 lbs. sal soda, 1 oz. hartshorn, 2 oz. borax, 1/4 lb. rosin, to be dissolved in 22 quarts water, and boiled about 20 minutes. It hardens sufficient on cooling to be cut in bars, but after a short time it becomes greasy, with particles of soda appearing in it. A.Use a larger proportion of sal soda and boil with the rosin and borax some time before adding the soap. It should be kept in a dry place for a time after cutting.

> (19) H. R. says: I wish a preparation to coat paper moulds so that a mixture of glue and moin melted paraffin, and when cold cover them uniformly with a thick oil.

(20) A. B., and others who ask how to make (11) E. F. S. says: Will you tell me how to marineglue: Dissolve 1 lb. best caoutchouc (gum rubber) in 4 gallons of pure gas naphtha, with frequent agitation. After ten or twelve days add 21/2 lbs. of shellac, in finest powder, and allow to stand for about a week in a well stoppered flask. The mixture must then be carefully heated in an iron vessel having a discharge pipe at the bottom, and, when the whole has become liquid, drawn out upon large metal slabs to cool. When re quired for use it should be heated to 258° Fah. (best in an oil bath), and applied with a brush. It forms, when properly prepared, one of the strongest and most insoluble cements known.

> (21) T. J. S. asks: What ethers will mix with naphtha or gasoline of 62° without danger of explosion? A. As we understand you, most of the common ethers are miscible with the oils mentioned, and the vapors are explosive only when mixed with air and

> (22) L. H. asks how to make ozone in large quantity? A. Ozone may be formed in large amount by electrifying air or oxygen. It is by this process that it is usually made when required in large amount and in very concentrated form. You should consult some standard work on inorganic chemistry.

> (23) W. C. R. says: 1. I made some fulmi-

(3) J. C. D. asks: What kind of mineral and enough extract of Brazil wood to strike the desired metallurgical and chemical operations, and are the color. A little alum solution and an ounce of gum source of nearly all the potassium preparations and

> (26) A. P. asks: How can I prevent souring and putrefaction of flour paste? A. A small quantity of solution of corrosive sublimate or chloride of zinc will prevent the souring and putrefaction of the composition. These antiseptics are poisonous when taken into the system.

(27) D.F. asks how to prepare chewing tobacco? A. Chewing tobacco is prepared by some unprincipled persons from the leaf by soaking in cheap rum and molasses, with the addition of ammonia and niter, and pressing; but it is, we believe, a common practice to first soak it inurine and How can I separate nickel from a solution of nickel then in molasses water, etc. See p. 68 present volume of the SCIENTIFIC AMERICAN. Common smoking tobacco is prepared from the wet pressed leaf, the waste of cigar making, and stems similarly treated, dried, and broken, or cut. It is usually thought proper to improve (?) it with various quantities of safflower, rhubarb, potato, cabbage, coltsfoot, dock-leaves, sawdust, malt combings, medicinals, and sand.

> (28) E. D. asks how to construct a Leclanché battery? A. The Leclanché battery consists of a plate of zinc placed in a solution of ordinary commercial sal ammoniac (chloride of ammonium). The porous cup should hold a plate or prism of carbon surrounded with a dry mixture of manganese black oxide and pounded gas carbon. The contents of the cup is usually sealed at the top with a layer of asphaltum, through which the end of the carbon plate projects for connection. See (40), p. 60, present volume of SCIENTIFIC AMERICAN. 2. Is the Leclanché battery durable and strong by always leaving it together? I like to have a very strong and durable galvanic battery, preventing the use of acids and vitriols if it can be helped. A. On open circuit it lasts a long time, and, at the moment of closing circuit, has an electromotive force greater than the Daniell's or gravity form of battery, if in good order.

(29) J. H. C. asks for a simple way of purifyingcoal gas? A. Hydrated oxide of iron or coke dust saturated with a strong alkaline solution will answer; but for large quantities of gas, lime or lime water is the cheapest. Washing with water will not completely purify it.

(30) I. M. asks: Can scent of coal oil be renoved without injuring its qualities? A. A great part of the disagreeable odor may be removed by treating the oil with milk of chloride of lime (bleaching powder) at a temperature of 138° Fah. for some time, decanting from the sediment, agitating with a few per cent of soda solution, and washing well with water.

(31) H. W. S. asks if there are any compounds or liquids that will explode or ignite when brought in contact with each other? A. Hydrogen phosphide ignites explosively on contact with air or oxygen. On contact of calcium phosphide with water, hydrogen phosphide is formed, and inflames immediately in contact with air. Iodine inflames phosphorus (vitreous) by contact. A mixture of potassium chlorate with fine sugar or ether is ignited by a drop of oil of vitriol. Pure hydrogen and chlorine (gases) combine explosively by contact in strong sunlight. The ozone liberated by the action of a little strong sulphuric acid on dry, powl dered potassium permanganate directly ignites coaas, cotton, oil, or other combustible substance brought in contact with the generating mixture. Other similar reactions might be cited.

(32) W. T. asks how to etch on steel? A. The clean plate must be covered with an even film of wax, either applied while the plate is uniformly heated, or dissolved in alcohol and flowed on the warm plate. The etching fluid may be made as follows: Pyroligneous acid 4 ozs., alcohol 1 oz., nitric acid 1 oz.; by measure, Or use iodine 1 oz., iron filings ½ drachm, water 4 ozs. The lines are cut through the wax with a fine steel point. so as to leave the metal surface bare under the lines. The etching fluid is then poured on, and removed as soon as the metal is sufficiently etched.

(33) F. H. asks how to obtain the color of the "liqueur absinthe "? A. The substances used by the French to color their liqueurs are, for blue, sulphate of indigoneutralized with chalk, or the juice of blueber-ries; fawn and brandy color, burnt sugar; green, spinage and parsley leaves digested in spirit, also by mixing blue and yellow; red, powdered cochineal, either alone or mixed with a little alum; violet, litmus; yellow, an aqueous infusion of safflowers or French berries, or a spirituous solution of turmeric.

(34) A. E. G. asks: 1. What solid substance is most sensitive to changes of temperature, or has the greatest coefficient of expansion? A. Zinc, we believe, suffers the greatest change. 2. What substance is most sensitive in lengthening and shortening for changes in humidity? A. Porous bodies, such as light wood, are most notably affected.

(35) C. E. F. asks for some liquid of a volatile nature that will reduce sawdust and scrap white paper to a pulp? A. Ammonio-cupric oxide and aluminous chloride dissolve and soften woody fiber and paper.

tions for making the American flag on p. 12 (29).-R. L. and this is repeated until distilled water ceases to come asks how to prepare sumach leaves for insect powder. over mixed with oil. The rectification of the oil is per-blaze. A. The detonation of the fulminate in small The leaves must be throughly dried, ground very formed without water, by the careful application of fine, sifted, and kept dry.-W. B. S. must see reply to heat just sufficient to cause them to flow overpretty rap-W. T. for instructions for etching metals with acids.- | idly, so that they may be kept heated for as short a time T. C. is informed that wood is a conductor of electrias possible. city. Glass is a non-conductor.

(1) L. R. asks: How is nitro-glycerin made? A. Nitro-glycerin is produced by treating ordinary gly- | steam, first with solution of tannin (hot infusion of oak cerin with a mixture of equal parts strongest nitric and | bark), next with water and chloride of lime, and then sulphuric acids, and then washing the heavy, oil-like with dilute oil of vitriol. Solution of blue vitriol (copproduct with plenty of cold water. See p. 407, vol. 35, per sulphate) and salt is also sometimes used, and the also vol. 34 of the SCIENTIFIC AMERICAN. Nitro-glycer- oil filtered through dried and powdered fuller's earth or in, when pure, is free from acids. It is a compound in charcoal in large bags of Canton flannel. which part of the hydrogen of the glycerin is replaced by nitric acid.

(2) F. W. S. says: I want something that in quantity of only about an inch square will burn with clothing? A. The purple ink made from aniline violet a small flame for about 10 hours? A. We know of no perhaps, a quantity of heavy oil controlled in a diminutive lamp.

(14) J. G. S. asks how to clarify neats' foot oil? A. The oil is usually agitated by means of injected

(15) S. L. E. asks: What is the best method of making black and violetink that will dry immediately? Also what will take such ink stains from hands and

solution with a little gum is among the best of its kind. cined in a furnace so as to burn off most of the coloring substance a cubic inch of which would be capable of | A purple or violet ink may also be made by triturating 6 | impurities, affords the impure carbonate known as maintaining a notable flame during 10 hours, excepting, parts of finest Prussian blue and 1 part of oxalic acid pearlash. 2. Who use ashes, and for what purpose are are pure, no. 3. Are the solutions very dangerous? into a smooth paste with a little water, and, after stand- they used? A. These find extensive use in technical A. They are only dangerous when taken into the system;

report, it only made a puffing noise and very bright quantities is not very violent unless it occurs in a confined place. 2. Will you tell me how to explode torpedoes made of chlorate of potassa and sulphur? A. The ingredients must be reduced separately to the finest powder and intimately mixed; the mixture explodes either by concussion or ignition.

beer have on elastic rubber, when in constant contact with it? A. It will probably soften it considerably after a time

(25) G. H. E. asks: 1. What is the differnce between pot and pearl ashes, and how made? A. The crude carbonate of potash of commerce is obtained by lixiviating the ashes of plants with water, and boiling down the liquid to dryness in iron pots. The darkcolored residue is called potashes, and this when caling 24 hours, diluting with sufficient quantity of water operations, such as soap-making, glass making, dyeing, they are not volatile.

(36) J. D. S. asks how to make the putty used by carriage painters? A. Takedrywhite lead and mix with 1 part brown Japan and 1 part carriage rubbing varnish. A common wagon putty is made by using whitening in the place of dry white lead and adding a small quantity of white lead in oil, from the keg. This (24) L. A. L. asks: What action will lager putty should be kept in water when not in use, to prevent drying.

(37) E. D. asks: 1. Can I leave a sulphate of copper battery together without the blue vitriol eating the copper? A. You can let the battery stand, but after a short time the copper solution will get to the zinc and coat it with copper. If the solution does not contain a free acid the copper will not be corroded to any extent. A little sulphate of zinc solution is better than salt water as the zinc fluid. 2. Is it unhealthy to leave the filled battery uncovered in a bedroom over night. where the windows are open? A. If the chemicals

York to Albany in six hours and twenty minutes, April 18, 1876, is the fastest on record. If any of our readers possess records of faster time over this route, we would be glad to hear from them.

(39) R. J. K. asks: How fast will a 15 foot inches, bore 3 inches stroke. A. Probably between 3 this with some other metal, applied to the clean blades and 4 miles an hour.

(40) R. S., Jr., asks: What size engine, boiler, and propeller would work to the best advantage in a small boat 15 feet long and 5 feet beam, and what speed may I expect to obtain in smooth water? A. Boiler 24 inches diameter, 31/2 feet high. Cylinder 21/2 by 3 inches. Propeller, 18 to 30 inches diameter, 30 inches pitch. Probable speed 5 to 6 miles an hour.

(41) J. W. W. asks: Can you send me a prescription for weak kidneys? A. You should consult is the number of our correspondents, so wide the range a physician.

patentable? Are any links on locomotives patented? | employ the constant assistance of a considerable staff of A. Certainly it is. There have been many patents re- experienced writers, who have the requisite knowledge lating to link motion, and it would be well for you to or access to the latest and best sources of information. study up the subject and become acquainted with the For example, questions relating to steam engines, boilmost advanced practice before attempting to effect im- ers, boats, locomotives, railways, etc., are considered and provements

(42) E. H. R. asks: Is it safe to carry 120 ability and extensive practical experience. Inquiries lbs. steam on a boiler of the following description: Di- relating to electricity are answered by one of the most ameter 48 inches, length 26 feet, four 12 inch flues. able and prominent practical electricians in this country. Thickness of the boiler iron 25 of an inch. A. We do Astronomical queries by a practical astronomer. Cheminot think that this figure allows a sufficient margin for faults of construction and deterioration by use.

(43) J. C. asks; Why do propeller shafts break? A. In such cases as have come to our notice, the cause was insufficient strength, either by reason of being too small, or on account of imperfections.

power of a 4 x 8 steam engine when worked up to its from the mass those that he thinks most likely to be of fullest capacity, also if the length of stroke is 7 and the general interest to the readers of the SCIENTIFIC AMERIcylinder 4, has it the same power as a 4 x 8? A. See CAN. These, with the replies, are printed; the remain p. 33, vol. 33.

(45) R. W. K. says: I have a steam boiler 30" x 42", 18 2" tubes (party from whom I bought it respondents desire a special reply by post, but very few said it was a 5 horse power boiler); how large an engine, of them are thoughtful enough to inclose so much as a screw, and boat could this run, and what speed? I have a small 2 cylinder oscillating engine, each cylinder is reply by mail if the writer were to inclose a small fee, a 2" x 2". How large a boiler should I use to run my boat (12 feet x 31/2 feet) with side wheels, for safety? the case. When we cannot furnish the information, the A. See pp. 33 and 225, vol. 33.

(46) B. C. M. says: I think G. W. W., July 28 (31), would find the information he desires in Thomas Oxley's "Gem of the Astrial Sciences," in ceived from the following correspondents, and which the author treats at length on the construction of planispheres

inch iron was cut with two threads, one right and the .- The clay is of a low quality and would not probably other left handed, commenced opposite and of the same pay to mine for market. It might be used in the vicinpitch, would the screw enter a nut cut with the same ity for the manufacture of bricks and some kinds of potthreads, the same pitch? A. Yes, but if the threads tery. The other specimen is not logwood extract but were fine and of small pitch, the thread in the nut would be nearly obliterated.

(48) T. E. asks: What is enamel made of, and how is it put on iron? A. Enamel is a species of vitreous varnish, colored with metallic oxides, applied in a thin stratum to metallic surfaces. In small articles it is fused on the surface by the flame of a blowpipe and in larger articles by means of the heat of a furnace, Ordinary enamel is common glass fused with oxide of lead. Hollow ware is enameled by a mixture of powdered glass, borax, and carbonate of soda, mixed, fused, cooled and ground. The ware is cleansed with acid, wetted with gum water, the powder dusted on, and then fused by heat carefully applied.

(49) L. D. asks for a good ink that has a pale color when first written, then turning to a deep black. A. For 1 quart of ink take Aleppo galls 4 ozs., soft water 1 quart; macerate in a clean corked bottle for ten or twelve days with frequent agitation; then add 1¼ oz. gum arabic dissolved in a wine glassfull of water, ½ oz. lump sugar. Afterward add 1½ oz. sulphate of iron; agitate occasionally for two or three days, when the ink may be decanted for use, but it is better if the whole be left to digest together for two or three weeks When time is an object, the whole ingredients may be put into the bottle at once and agitated daily until the ink is made, and boiling water may be used instead of cold

(50) S. T. asks for the process of making an impression of a photograph on glass. A. In photographing on glass the clean plate is first coated with a thin, uniform film of collodion (gum cotton dissolved in ether and alcohol) containing a little ammonium iodide or bromide, and often similar salts of cadmium. While the film is still moist, the plate is immersed in the dark in a bath of silver nitrate dissolved in water. This causes the film of collodion to become filled with insoluble iodide and bromide of silver, and in a few minutes the plate is ready to be placed (wet) in the camera and exposed therein for half a minute, more or less. On re- that, for good reasons, the Editor declines them. The moval from the camera it is treated in the dark room, first with a strong aqueous solution of ferrous sulphate (copperas), which developes the picture, and then, after of inventions, assignments, etc., will not be published washing, immersed in a fixing bath, which may be either here. All such questions, when initials only are given, a solution of sodium hyposulphite, or of potassium cyanide. The photograph is finished by washing with our paper to print them all; but we generally take pleas-water, drying, and coating with a film of transparent ure in answering briefly by mail, if the writer's address varnish. In the Woodbury and similar processes for is given. preparing glass photographic transparencies, the picture is printed with a fatty ink from the impression in a plate of zinc of a photographic gelatin bichromate film. Consult Vogel's "Chemistry of Light and Photography."

(38) H. T. R. asks: What boat ever made swer. I want some harder metal which can be poured the fastest time from New York to Albany? A. It is and will not cut the guides. A. You can harden Babbitt stated that the trip of the Chauucey Vibbard from New metal by melting it and addinga quantity of antimony (53) G. L. L. says: What is the new process of coating old table knives so they look like silver? A man has been collecting knives and plating or coating them so they look like silver. He claims they will last for years and that it is neither silver or nickel but some boat go with a screw propeller 12 inches in diameter and kind of metal which is kept secret and that no battery 18 inches pitch, a boiler 12 x 20 inches, cylinder 11/2 is used. A. The coating may be of tin, or an alloy of by simply dipping in a bath of the molten metal under suitable conditions. We cannot say positively, from your statements. Such a coating would not be very

durable. It has been our custom for thirty years past to devote a considerable space to the answering of questions by correspondents; so useful have these labors proved that the SCIENTIFIC AMERICAN office has become the factorum or headquarters, to which everybody sends, who wants special information upon any particular subject. So large of their inquiries, so desirous are we to meet their wants Is an improvement in link motion for steam engines and supply correct information, that we are obliged to answered by a professional engineer of distinguished cal inquiries by one of our most eminent and experienced professors of chemistry; and so on through all the various departments. In this way we are enabled to answer the thousands of questions and furnish the large mass of information which these correspondence columns present. The large number of questions sentthey pour in upon us from all parts of the world-ren-(44) A. A. McN. asks: What is the horse dersit impossible for us to publish all. The editor selects der go into the waste basket. Many of the rejected questions are of a primitive or personal nature, which should be answered by mail; in fact, hundreds of corpostage stamp. We could in many cases send a brief dollar or more, according to the nature or importance of money is promptly returned to the sender.

> MINERALS, ETC.-Specimens have been reexamined, with the results stated:

J. J. S.-The clay may be used for brick and tile ma-(47) Machinist says: Suppose a piece of king, etc. It is too impure for fine pottery.-C. W. G. asphalt .-- S. L. P.-- It consists principally of oxide of iron. The glimmering particles are magnetite. The specimen in bottle will be noticed subsequently .-- G. G. -It is iron pyrites. See p. 7, vol. 36, SCIENTIFIC AMER-ICAN.-D. C. S.-It is magnetite-magnetic oxide of iron,-H. C.-It consists of lime carbonate and a little clay, sand, and oxide of iron. Properly calcined it might yield a good lime or cement, but it does not excel as a polishing powder.-D. L. P., Curaçao, South America.-The sample of cave earth much resembles bat manure, as the per cent of organic matter and ammonia is very small. It contains a large quantity of phosphates -principally calcium phosphate-together with some lime carbonate, a little iron and silicates-clay and sand. If treated with oil of vitriol so as to form the superphosphate it would be of some value as a fertilizer, alone or mixed with others. Its value could not be named even approximately, until a quantitative analysis determines its composition.

COMMUNICATIONS RECEIVED.

The Editor of the SCIENTIFIC AMERICAN acknowledges vith much pleasure, the receipt of original papers and ontributions upon the following subjects:

On a Puzzle of Ropes and Pulleys. By A Subscriber. On Bacteria. By F. G. Fairfield. On How to Draw an Octagen. By I. M.

On a Lightning Draughtsman

Also inquiries and answers from the following: A. A. R.-P. G. H.-W. C. C.-M. B. M.-T. D. S.-J. A. McC,-J, M.-E. M.-H. F.-J. W.-E. F.-O. C. -C. B. C.

HINTS TO CORRESPONDENTS.

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

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INDEX OF INVENTION FOR WHICH

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[Those marked (r) are reissued patents.]

A complete copy of any patent in the annexe including both the specifications and drawings, furnished from this office for one dollar. In ord please state the number and date of the patent d and remit to Munn & Co., 37 Park Row, New York

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	Lamp bracket, J. Forster Lamp burner, A. W. Sangster	
NS	Lantern, O. I. King	193,25
	Latch, etc., G. F. Joyce Leather-crimping machine, J. Smith	
were	Leather-cutting gage, J. Potter (r) Lifting jack, W. Z. Black	7,79
	Link, adjustable, C. J. E. Thompson	193,29
	Lubricating compound, J. H. Pitt Match safe, E. K. Haynes	
ГE.	Milk cooler, E. F. Preston	193,17
	Millstone-dressing machine, F. Miller Mould for casting, S. H. Bingham	193,07
d list,	Motion, converting, T. Tascher Mower, I. N. Hall.	
will be	Mower, H. L. Hopkins	193,25
lering, esired,	Musical instruments, W. Spethmann Nut lock, J. A. Nicols	
city.	Nut machine. J. R. Blakeslee	193,21
	Oil can, W. H. Bartels Oil can, J. Fleming	193,11
193,236 193,237	Oil can holder, G. D. Clark Oil well tubing, L. Patterson	
7,798 193,140	Ores, etc., A. B. Paul (r)	7,79
193,230	Overalls, J. Wallach Overalls, S. H. Emanuel	193,14
193,194 193,265	Pail, P. Hickey Paper cutting, etc., G. L. Jaeger	
193,136	Paper cutting machine, clamp for, J. Keith	193,25
193,148 193,218	Paper holder, A. Newbury Paper pulp, G. E. Marshall	
193,091 193,074	Parer, apple, W. E. Brock Pedometer, B. S. Church	193,22
193,156	Pen and pencil case, J. B. Smith	193,19
193,128 193,290	Pen, H. C. Benson Pen holder, A. S. Hubbell	193,11
193,275	Pen holder, P. Schrag	193,28
193,109 193,183	Pipe coupling, R. H. Moss Pipe couplings, E. Griffin	193,17
193,139 193,146	Pitcher, E. A. Parker Plaiting machine, M. M. Macdonald	193,27
193,079	Plaiting machine, H. B. Rorke	193,13
193,310 7,797	Planter, W. L. Chism Planter, Lancaster & Schull	
193,279	Planter, N. A. Palmer	193,12
193,178 193,078	Planter, W. Moores Plow, Lauer & Hartmann (r)	
193,245 193,137	Plow, J. W. Wood Plow, T. J. Crump	
193,308	Plow, J. L. Florence	193,15
193,303 193,210	Plow, J. Coles Press, H. W. Clum	193,22
193,260 193,103	Printing press, J. Milligan Pulley covers, W. R. Norris	
7,793	Pump, J. W. Collins	193,14
193,196 193,147	Pump, E. Daggett	193,22 7,79
7,800 193,262	Pumps, C. Jarecki (r) Railroad, W. H. & H. M. Stow Railroad switch, J. H. Ainsworth	193,29
7,795	Rear hound, A. Muhleison	193,12
193,281 193,101	Road scraper, U. & L. L. Thompson Rotary engine, J. Davenport	
193,214 193,211	Rotary engine, A. Vivarttas	193,13
193,232	Saddle bags, Suter & Furney Safe and vault, Taylor & Williams	193,29
193,162 193,263	Safes, door and hinge, P. F. King (r) Safety pin, P. Miles	
193,150 103,184	Sand conveyer, R. C. Garcia	103,15
	Sash fastener, E. Leverich	193,20
193,151 193,119	Saw set and file guide, H. C. Root Saw sharpener and tooth gage, G. W. Atkins	
193,193 193,219	Scales, J. Parnall	193,27
193,219 193,164	Seed heaters, R. Macdonald Sewer cleaner, C. Loscher	193,16 193,09
193,132 193,1 4 3	Sewer, trap, J. B. Moore Sewing machine, G. H. Thiele	193,26
193,204	Sewing machines, H. A. Blanchard	193,21
193,214 193,231	Shade holder, G. H. Reck Shears, T. H. Brady	193,21
193,141 193,130	Sheet metal can, G. W. Bell Shoe, bathing, C. C. Clayton	193,10
193,200	Shuttle boxes, H. Wyman	193,30
193,203 193,094	Slate, C. C. Shepherd Slate frame attachment, M. Hills	193,11
193,299 193,251	Soap, machine for cutting, Chandler & Boesch Spark arrester, P. H. Grace	
193,239	Stamp, hand, H. W. Bardwell	193,07
193,115 193,300	Stamp, india rubber, S. B. Scott Stamp mill, H. H. Scoville, Jr	193,28
193,222 193,249	Stamp, revenue, E. A. Locke Steam boiler, Allen & Farrington	193,10
193,154	Steam boiler, J. Hughes	193,25
193,172 193,158	Steam boiler, Millen & Feely Steam valve, W. Andrews	
193,080 193,306	Etone quarrying machine, J. B. McRae Stove, B. Duerstock	193,17
193,111	Stove, Thompson & Knappenberger	193,19
193,185 193,274	Strainer, Guillemin & Lehman Straw cutter, Silberzahn & Hayssen	193.18
193,296	Street guide, M. J. Vieira	193,30
193,269 193,259	Tan bark, process, J. J. Johnston Tank regulator, A. Fuller (r)	7,80
193,264 193,176	Thread, etc., art of making, A. R. Arnold Toy buzz, J. B. Wells	
193,113	Trunk hinge, J. Arnold	193,20
193,159	Turbine wheel, Risdon & Tyler Vaccinating instrument, T. S. Brinkerhoff	193,07
193,241	Valve, W. J. Westwood Vehicle holdback, A. B. Roberts	193,28
193,287	Velocipede, J. H. Nolan Ventilating apparatus, M. A. Morton Ventilator, car, H. E. Finney	193,09
193,267 193,075	Ventilating apparatus, M. A. Morton Ventilator, car, H. E. Finney	193,23
193,093	Ventilator, E. Leverich	193.08
193,181	Wash basin, J. Hamilton	193,01

(51) J. L. & Co. ask: By what method can we temper the blades of our steam shears, so that they will stand to cut old saw blades or any thin tempered steel? A. Harden as for ordinary tempering and draw the temper to a bright straw color.

(52) J. C. says: I have an engine which requires lining up on the crosshead. Having no adjustable gibs I pour in Babbitt metal, which does not an- | way be expeditiously obtained.

of the question. Correspondents whose inquiries fail to appear should repeat them. If not then published, they may conclude address of the writer should always be given.

Inquiries relating to patents, or to the patentability are thrown into the waste basket, as it would fill half of

Hundreds of inquiries analogous to the following are sent: "Who makes covering for steam pipes, to prevent radiation of heat? Who makes steam road engmes? Who makes steam pumps? Who makes instruments to assist the hearing of deaf persons? makes kerosene lamps suitable for lighting cotton mills? Who makes a utensil for scrubbing, made of iron rings?" All such personal inquiries are printed, as will be observed, in the column of "Business and Persoual," which is specially set apart for that purpose, subject to the charge mentioned at the head of that column. Almost any desired information can in this