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. If not then published, they may conclude that, for good reasons, the Editor declines 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 the office. Price 10 cents each.

Correspondents sending samples of minerals, etc., for examination, should be careful to distinctly mark or label their specimens so as to avoid error in their indentification.

(1) G. E. asks: Can I cast a zinc plate 8 x 8 in., $\frac{3}{16}$ in. thick, in a plaster of Paris mould? How can sputtering of the metal, when poured in the mould, be prevented, and how can I get a smooth casting? Could a small furnace, say 4 in. inside diameter, 8 in. high, be made of fire brick, to produce sufficient heat for smelting small quantities of brass, lead, copper, or even iron, to be heated with small hard coal and a blast from bellows? A. You may possibly make a zinc casting in a plaster mould smooth by oiling the mould with linseed oil. A better way is to cast in moulding sand, such as brass foundries use. You may melt a few ounces of brass or copper in a small crucible in a furnace of the size you mention.

(2) C. E. B. writes: 1. I want to know the best way to make a small steam engine, one rating from one-half to one horse power? A The inverted vertical engine is as good as any. For plans, dimensions, etc., consult the works on steam engineering. 2. Is the inclosed rough sketch for connecting the piston to the crank on a good and mechanical principle, and will it do its work as easily as the common slide (pillow) block connection? A. It cannot be used as sketched; there must be a guide on the outer end of rod. The "yoke," as it is called, will have more friction than a crank pin box, and unless the yoke and connections are very stiff, will have a tendency to spring when in operation. A connecting rod is preferable. 3. What is the cause of the vibration of the armature on a telegraph instrument when it is connected by a wire to the base of the key? Is there any appliance which I can put on the instrument to obtain any power? A. An intermittent contact of the wire with the base. A small motor might be made to work on a similar principle, but there are better ways of obtaining power from electricity.

(3) J. C., Jr., asks: 1. Where is the castor oil bean most extensively raised? A. The castor bean is largely grown in Illinois, Missouri, and California, where it is made into oil. Large oil works in Jersey City, N. J., are purchasers of the beans from all parts. The bean is, as we understand, largely cultivated in Texas. If the large seed is used which is best suited to Southern soil, a hundred bushels to the acre may be produced. 2. By what means is it gathered—hand or machinery? A. Hand picking is usual. 3. How many gallons of oil does it yield per acre? A. We do not know the yield of oil per bushel or acre. 4. Does it take expensive machinery to extract the oil? A. It requires a mill and a press. The price is suited to the quantity of work to be done. Four hundred dollars to eight hundred dollars would probably set up a small oil works.

(4) A. W. H.—Most of the so-called bear's grease is prepared as follows: Take of washed hog's lard (dry) 1¼ lb. avoirdupois; melt it by the heat of a water bath, add of balsam of Peru 2 drachms; flowers of benzoin and palm oil (bright), of each, 1 drachm; stir vigorously for a few minutes to promote solution. Then remove the pan from the bath, and after repose for a short time, pour off the clear portion from the sediment, and stir the liquid mass until it begins to cool. 2. For article on imitation coral see Parkesine, Celluloid, page 3617, SCIENTIFIC AMERICAN SUPPLEMENT, No. 227.

(5) J. F. A.—Your question is so indefinite that we cannot give you any satisfactory answer. The values of the different grades cannot be determined from cost of the trees, but from the differences in quality of the different gums, these being quite arbitrary.

(6) G. A. H.—For removing printer's ink from paper use a solution of chlorinated soda, called by some chemists Larabeqes solution. Use as directed on label.

(7) A. and E. ask for directions for tempering coiled springs the best way, so as to get the most power out of a given size of spring? A. The tempering of coiled springs requires much judgment, based upon experience with the particular kind of spring that you wish to temper. A coiled spring does not give us the faintest idea of its form, size, length, thickness, kind of steel, or whether it is a clock spring or car spring, all of which must be considered in the method of treatment. As a general rule, springs that are slender and liable to lose shape in a common fire, should be heated in an oven or muffle, and hardened in water or oil. The temper should be drawn in boiling linseed oil. Springs that have stiffness, like car springs, may be heated in a *covered* forge fire to good advantage, and hardened in lard oil. The temper can be drawn by burning off.

(8) W. C. J. asks: 1. What are the physical causes of yawning? A. Yawning is supposed to arise from a reflex action of the nerves, caused by weariness, and is kindred to many other kinds of involuntary motions, that are probably derived from the nerve centers. 2. What is the chemical reason that bicarbonate of soda relieves a burn? A. We presume that it is by neutralizing the acid products of decomposition arising from the burn. 3. What is the distinction between a fruit and a vegetable? A. There is no absolute distinction between fruit and vegetable, fruit being that part of the vegetable kingdom found growing upon stalks or trees, and containing the seeds and sometimes being the seed itself. Whereas all organic nature not animal is said to be vegetable. In common parlance our soil grown products for culinary use are called vegetables, and some that are really fruit are also called vegetables. The terms overlap so much by customary nomenclature that distinctions become difficult. 4. Can you instance an artesian well where the water is perfectly soft? A. We know of no artesian wells that produce water as soft as rain water.

(9) G. R. P. asks: 1. Is it advantageous to shellac the plates of a Holtz electrical machine? A. Yes. It prevents the accumulation of moisture. 2. Why are two carbons used in the Grenet potassium bichromate battery? A. The quantity of current is somewhat increased by the additional carbon plate. 3. How may I distinguish gutta-percha articles, as buttons, from those made of horn, vulcanite, etc.? A. By the odor developed by heat or friction.

(10) H. M. D. writes: 1. Should I have a return wire on a telephone line three hundred feet long? A. You may use either a return wire or a ground connection. 2. Can I have as many turns as I wish on the line? A. Yes. 3. Can I use two gravity batteries (one at each end) to work two bells, and what size wire should I use? A. Yes. Use No. 12 iron wire or No. 16 copper wire.

(11) W. S. G. writes: I am desirous of becoming an electrician. What books would be the best for me to study on the subject to learn it thoroughly? A. Begin with Ganot's "Physics," then study Gordon's "Electricity and Magnetism," Prescott's "Electricity and the Electric Telegraph," "Electric Batteries," by Niaudet, "Electric Illumination," by James Dredge. As you continue your study, other works will suggest themselves.

(12) W. W. R. asks: Will you please explain the phenomenon of electrical currents as employed in telegraphic circuits—whether by the application of ground wires at the termini a direct current is formed, or that the circuit is completed by the attaching of ground wires, which communicates the electricity generated in the batteries to a general body of fluid which is supposed to permeate the earth? A. It has been demonstrated by the experiments of Wheatstone, Caselli, and others, that the earth is a great reservoir of electricity, and that currents flowing to the earth are dissipated.

(13) R. W. R. asks: Will you please inform me how to make the induction coil, as described in SUPPLEMENT, No. 160, vol. vii., Jan. 25, 1879, so that I can regulate the current to give strong or weak shocks? A. Make the bundle of iron wires forming the core of the coil movable, so that it may be pushed into or withdrawn from the coil.

(14) W. P. B. writes: Referring to SUPPLEMENT, No. 159, Jan. 18, 1879, in article on batteries, it is stated that in the porous cup of the "Marie Davy" quicksilver battery, protosulphate of mercury should be used in the form of a paste. I would like to know: 1 What substance is used with the mercury to form the paste, and in what proportions, respectively? A. Water. 2. Is protosulphate of mercury the same as the sulphate of mercury sold by dealers in chemicals? No. 3. Will such a battery be suitable for silver plating in a small way? A. It can be used in that way, but a Bunsen or Daniell is better.

(15) J. A. B. asks: What would take the scale off polished cast iron, the scale being caused by continuous heat for several hours? A. Use, by volume, one part sulphuric acid, one part nitric acid, two parts water, applied warm—either the acid or cast iron. Better, by far, remove the scale by simple polishing or abrading substances.

(16) G. W. D. sends us the following remedy for stopping the singing in bass violin strings caused by shrinkage of the gut. Release the string somewhat and place some olive oil on a woolen cloth, rub it up and down the length of the string; the oil will penetrate through the wire spaces and on to the gut, and will in a short time cause the gut to swell to its original size, and thus stop the singing.

(17) W. J. asks: Would you please inform me through your paper what would be the best form of battery for making copper electrotypes of any desired thickness? I wish a constant battery, which would require no attention for a couple of months. A. Daniell's or the gravity battery would probably answer your purpose. 2. Also if you could give directions for making nickel electrotypes of any desired thickness? A. We know of no method of making nickel electrotypes. You can make copper electrotypes and afterward nickel them.

(18) A. W. H. writes: in your SCIENTIFIC AMERICAN SUPPLEMENT, you published a description of a small electric light to work with a 3 cell bichromate battery. We would like to know if a 5 cell gravity battery would do, or if a gravity battery would do at all? A. No. It would require a large number of gravity cells to do the same work. 2. Can you send us prices of the gas carbons and could they be sent by mail? A. Carbon plates are not very expensive. The price depends upon the size. Any of our dealers in electrical supplies can furnish them by mail. See our advertising columns.

(19) F. W. D. asks for a good varnish to apply to designs printed in fine gold bronze on thin leather, something which will protect the bronze without coloring the leather and will dry quickly? A. Pale shellac, 5 oz.; borax, 1 oz.; water, 1 pmt; digest at nearly the boiling point, until dissolved, then strain. Equal to the more costly spirit varnish for many purposes; it is an excellent vehicle for water colors, inks, etc.; when dry it is waterproof.

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Sewing machine, button hole, Desnoyers & Sinning 291,701
Sewing machine take up mechanism, G. F. Foss 291,708
Sewing machines, automatic tension for, Fitzgerald & Lyon 291,706
Shade bar, H. L. Judd 291,741
Shaft friction coupling, F. Braun 291,673
Sheep house, portable, L. Robbins 291,625
Sheet metal pans, machine for wiring, C. F. Beaman 291,834
Shelving, adjustable, H. J. Hoffman 291,513
Shoes, manufacture of turned, A. J. Tewksbury 291,810
Shovel and shield, combined, J. J. Holland 291,732
Show case, Loewenstine & Fox 291,612
Sifter, H. Clayton 291,576
Sifter, cinder, H. W. Booth 291,671
Signal. See Railway signal.
Sirup and sugar from sorghum cane, making, A. J. Adamson 291,565
Sled, bob, P. & H. Koepfer 291,744
Sleeve board, reversible, N. Scholl 291,629
Sleigh shifting seat, W. H. Steinbrecher 291,635
Snow plow, P. Brunet 291,675
Soap, washing, R. H. Withington 291,827
Solder, machine for making wire or other, Young & Dyer 291,828
Sole and heel plate, S. Levy 291,611
Spectacles, F. K. Roberts 291,778
Spring. See Carriage spring. Vehicle spring. Vehicle side spring.
Stake, vine and flower, F. Börner 291,569
Staple puller, J. C. Irvin 291,739
Staples, machine for making, J. Adt 291,659
Steam boiler, A. De Dion *et al* 291,580
Steam engine, J. B. Smith 291,794
Steam engine lubricator, W. H. Craig 291,696
Steam gage and alarm, A. Portillo 291,769
Steam nozzle, noiseless, C. W. Nason 291,762
Still, P. N. Bardo 291,833
Stone, artificial, W. Howell 291,734
Storage battery, E. R. Knowles 291,850
Stove, hot blast, D. N. Jones 291,518
Stove pipes, covering for openings in, G. Rasgorshek 291,771
Strap rounding machine, A. C. Sims 291,790
Straw stacker, Brown & Miller 291,674
Straw stacker, T. Major 291,755
Sun, utilizing the rays of the, W. Calver 291,491
Supporter. See Abdominal supporter.
Surgical splint, H. McNaughton 291,617
Syringe, J. H. Clarke 291,690
Table. See Folding table.
Tag, E. W. Thompson 291,813
Tank. See lard and oil tank.
Telegraphs, escapement and unison mechanism for printing, S. D. Field 291,705
Telephone, J. H. Cheever 291,684
Telephone cut out, Williams & Gannon 291,825
Telephone, receiving, L. W. Sutton, Jr 291,802
Thill coupling, J. M. Fulton 291,588
Thill coupling, S. B. Um 291,552
Tie. See Railway tie.
Tile and brick machines, cutting table for, J. C. McKenzie 291,616
Tile machine, J. S. Smith 291,793
Tobacco pipe, A. J. Wolff 291,561
Tool, combination, E. Walker 291,820
Tool holder, J. F. Parkes 291,581
Tools to handles, securing, D. H. Murphy 291,851
Torpedo, C. Pilgrim 291,853
Toy whistle, H. C. Swan 291,548
Transom lifter, F. A. Cortis 291,695
Trunk, A. Kroesing 291,607
Tubes, apparatus for screw threading, H. B. Feldmann 291,842
Underground conduits, mode of and mechanism for forming, H. Howson 291,849
Valve, J. M. Goldsmith 291,506
Valve, steam, R. N. Pratt 291,770
Vehicle running gear, B. C. Seaton 291,542
Vehicle side spring, W. Shinnick 291,789
Vehicle spring, G. L. Artz 291,661
Vehicle spring, C. W. Barenfanger 291,832
Vehicle spring, S. Hunt 291,738
Vehicle spring, I. A. Timmis 291,814
Vehicle, two wheeled, W. M. Hamilton 291,725
Velocipede, C. M. Schaffer 291,781
Ventilator, J. M. Ayer 291,666
Vessel or reservoir for liquids or other materials, M. J. Walsh 291,655
Wagon brake, S. W. Lee 291,747
Wagon draft attachment, Buenng & Klug 291,573
Wagon shoveling board, J. I. Plummer 291,767
Warming the upper rooms of buildings, apparatus for, J. S. Heizer 291,510
Washing machine, C. Hoffman 291,512
Watch regulator, Roux & Fatio 291,780
Water cooler, W. A. Hawthorn 291,595
Water cooler, J. E. Welling 291,857
Water elevator, J. F. McCalmont 291,738
Water meter, C. W. Van Alstine 291,647
Wave power, T. Mayes 291,758
Weaner, calf, M. J. Ablgrim 291,660
Well drilling machine, W. E. Brown 291,837
Wheel. See Buffing wheel. Car wheel. Paddle wheel.
Whip socket, J. Weatbers 291,856
Windmill, E. J. Schrock 291,783
Window screen, G. W. Boynton 291,836
Window screen, G. A. Thompson 291,549
Wire coiling machine, E. W. Durkee 291,500
Wire stretcher, W. G. Garth 291,710
Wiretwisting machine, M. A. Penney 291,765
Wood fiber, machine for making, P. H. Holmes 291,848
Yoke, neck, M. V. Longsworth 291,748

DESIGNS.

Agricultural fork, J. H. Smith 14,544
Corset, J. Bowers 14,535
Hardware, ornamentation of, J. J. Kennedy 14,536
Oil cloth, C. T. & V. E. Meyer ..... 14,537 to 14,542
Sewing machine stand, I. N. Poe 14,543

TRADE MARKS.

Beer, A. Kreiss 10,845
Bitters, W. C. Hurd 10,841
Bitters, T. Ripke 10,849
Boots and shoes, men's heavy, Pingree & Smith 10,848
Canned raspberries, strawberries, cherries, and other fruits, Knowles & Anderson 10,844
Cotton yarns and braids, Dollfus-Mieg & Co 10,835
Dentifrice, F. S. Hanf 10,840
Embroidery cotton, H. E. Erankenberg 10,839
Magnetic body wear, bedding, and medical appliances generally, A. P. Lighthill 10,846
Meat and quinquinia, mixture of, J. Ferré 10,836
Meat, iron, and quinquinia, mixture of, J. Ferre, 10,836, 10,837
Nets and reticulated fabrics, hair, A. G. Jennings & Sons 10,843
Remedy for piles, J. E. Butler 10,834
Rubber, composition as a substitute for hard, T. D. Frary & Son Co 10,842
Shade roller, spring, Saginaw Manufacturing Company 10,850
Tea and coffee, prepared, New York Textile Filter Company 10,847
Whisky or its compounds, Cook & Bernheimer 10,833

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