Business and Personal

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HINTS TO CORRESPONDENTS.

Names and Address must accompany all letters, or no attention will be paid thereto. This is for our information and not for publication.

References to former articles or answers should give date of paper and page or number of question.

Inquiries not answered in reasonable time should be repeated; correspondents will bear in mind that some answers require not a little research, and, though we endeavor to reply to all either by letter or in this department, each must take his turn.

or in this department, each must take his turn.

secial Written Information on matters of personal rather than general interest cannot be expected without remuneration.

Scientific American Supplements referred to may be had at the office. Price 10 cents each.

Books referred to promptly supplied on receipt of Minerals sent for examination should be distinctly marked or labeled.

(5176) W. H. B. writes: I have several pieces of steel in the form of horseshoes. How shall I proceed to magnetize them to get the best results? have access to dynamos, batteries, etc. How should steel be tempered for magnets? A. Heat the polar extremities of the horseshoe to a red heat. Harden them by cooling in water, draw the temper to a dark straw color verging on a purple, and if the poles of the field magnet of the dynamo are near enough together to allow the poles of the horseshoe to rest, one upon each of the dynamo poles, all that is necessary in order to magnetize your horseshoes is to place them in contact with the poles; but if the poles of the dynamo are too widely separated for this, you can apply one pole of the horse shoe to one pole of the field magnet and the other pole of the horseshoe to the other pole of the field magnet.

(5177) F. H. T. asks: 1. On page 407 of your Cyclopedia, No. 14 of hydro-developer, I find this receipt: Sulphite of sods, cryst. sods, and distilled water. Now what is meant by cryst. soda? A. Cryst. soda means crystallized sodium carbonate (washing soda). 2. different chemicals. I would like to know how the pross of neutralizing is done, i. c., to know when enough of the neutralizing chemical has been put in? A. To neutralize is to add acid or alkali to a solution as required until it is neither acid nor alkaline. Acid is added to neutralize an alkaline solution, and viceversa. Litmus paper may be used to determine neutrality. 8. How can I make litmus paper? I cannot buy it here, and how long will it keep? A. See page 371 of the Cyclopedia. Litmus paper will last a long time if kept out of strong

(5178) T. H. DeS. asks: 1. Will you kindly tell me how to make a spark coil? I am putting up in my bedroom an automatic electric gas burner and want spark coil for igniting gas. Kindly state of what the core should be made. A. No. 18; or No. 20 soft annealed iron wire. 2. Name diameter and length. A. % of an inch in diameter and 8 inches long. 8. What number (Am. w. gauge) of cotton-covered wire should the core be wound with? A. No. 18. 4. State the quantity of wire required for winding. A. Use enough of the magnet wire to make the depth of the winding about equal to the diameter of the core. This will probably require about 2 pounds.

any process by which copper can be melted in a crucible and poured in sand moulds, and then taken after they have become cold and heated to'a red heat in a forge and forged out on an anvil. I have tried to cast some soldering coppers and, upon forging them, they would all crack to pieces. I used best lake copper fluxed with about 1 per cent of aluminum, and casting without this flux they would become porous and unfit for use. A. There should be no difficulty in forging good copper. The aluminum tends to harden the copper and may be the cause of the difficulty in forging. Soldering coppers are usually forged from rolled copper rods. By making the castings of the proper shape, forging may not be needed. Try casting the coppers with 1 per cent of tin instead of aluminum.

(5180) W. H. R. asks: If you had a cell of battery giving say 10 amperes and 100 ampere hours working a motor, would it last longer if the motor had a resistance of 1 ohm or 8 ohms? A. By increasing the resistance of your motor, you would be able to run it for a longer time, though with less power.

(5181) E. E.—The latest observations concerning the newly descovered fifth satellite of Jupiter show that the little world is about 100 miles in diameter and 67,000 miles distant from the surface of its grea king and father.

(5182) T. D. M. writes: We have a marble-topped sideboard on which some Horsford's acid phosphate has been spilled, turning the dark red stone a white color. Can you recommend something to restore the color? A. Try washing the stone with soda or some other alkali, stain with dragon's blood dissolved in benzine, and repolish. Your restoration will probably be

(5183) S. D. L., Jr.—The method of cutting down trees by means of electrically heated wire has proved a failure for the reason that the ashes accumulating in front of the wire prevent the wire from coming into contact with the wood.

(5184) W. H. C. asks: 1. Is a gravity ell suitable for running induction coil? A. No. Would iron (or steel) wire do for the secondary coil i A. No. 8. Does the primary coil or the electro-mag net induce the current? A. Both.

(5185) C. C. F. asks: About what deree of heat is produced when the gauge shows 60 pounds pressure of a boiler? I mean the dry steam. A. Steam at 60 pounds pressure has a temperature of 307° Fah.

(5186) G. L. F. writes: I have some wild plum trees that become badly infested with worms every summer. The worms spin a web which soon s the entire tree, spoiling leaves and fruit. Is there anything which will rid the trees of the worms and not injure the fruit for eating? Have tried a solution of sect powder, also slaked lime, without effect. A Reply by Professor C. V. Riley .- Without seeing speci. mens of the worms described it would be difficult to give a specific determination, but from the description the insect is evidently either one of the tent caterpillars (Clisiocampa spp.) or the common fall web worm (Hyphantria cunea). If the former, one of the best pre ventives is to cut off, during the winter time when the trees are bare, the egg masses which encircle the twigs and which are readily visible. At this time of the year, however, the best remedy will be to destroy the nestwhen it first appears, either by pruning it off and burning or by burning upon the tree by means of a mop saturated with coal tar and ignited, or a brick soaked in kerosene, fastened to a pole and ignited, which will answer admirably for this work. If this method is neglected until later in the season, when the nests have spread over larger branches, one of the quickest methods of treating a large number of trees or an orchard is to thoroughly spray with Paris green water in the proportion of a quarter of a pound of the poison to about 50 gallons of water. I have received many complaints the present year of the inefficacy of Paris green sprays, and have no doubt that in the great majority of instances this is due to an inferior article of Paris green, and every one using this arsenical should be careful to have the samples tested, so as to make sure that they are not so thoroughly adulter ated as to be practically useless.

(5187) A. W. P. writes: The writer, with others, in passing through Delaware and Raritan Canal recently, was led into a discussion as to the cause of the peculiar action of water on the banks. The swell from the boat rose about two feet above usual water level, and was preceded by a depression in the water of about the same, that is, the water at sides of canal from a point about opposite the bow of the boat sank down two feet, and was followed by the swell of two feet about opposite stern of boat. It is plain that the displacement would cause the swell, but what caused the water to sink two feet below the usual level? Was it the action of the propeller drawing the water back i If not, what? The boat was a small tug, 60 or 80 feet long. Canal 80 feet wide, speed 6 to 8 miles per hour. I also notice in several places you say neutralize with

A. The preceding wave, side depression and following canals, by the inability of the water to move around the boat from bow to stern in the proper time corresponding with the speed of the boat; hence a wave is produced ahead of the boat and a corresponding depression at the side. This condition causes the water to flow backward past the boat with considerable velocity, meeting the wave following the boat and raising the crest that washes the banks. The propeller favors this action somewhat, but all boats when towing in a canal at considerable speed produce a bank wash by the retardation in the current to meet the displacement of the moving boat. Unless there is a depression from the bow toward the stern, the water could not flow toward the stern, as it flows by gravity. The depression is the hydranlic gradient that produces the flow, and its velocity bears a relation to the speed of the boat and the relative sectional areas of the canal and boat. The same effect may be noticed with all vessels under speed in open waters, but the limited sectional area of a canal greatly increases the

> (5188) F. C. writes: Please tell me through your paper whether you would advise me to use saw dust for a filling (between heavy siding and

(5179) H. K. asks: Can you tell me of | plaster) in place of paper and sheathing in oncer to cheapen the cost in building a house. A. We cannot under any circumstances advise the use of saw dust as filling in a dwelling. It cannot be put next the plaster until the plaster is set, which will be inconvenient in practice, and to put in a board lining behind the plaster would be expensive. There is also danger from a mass of sawdust in the walls of a building. Accidental wetting of the sawdust makes it liable to heat, and sponta neous combustion has often taken place in moist saw dust. Our advice is to use what has been the result of experience in wooden house construction, viz., close studding, diagonal sheathing with good stiff paper inside and outside the sheathing, and covered with clapboards, shingles or matched siding to suit the required style or taste. It will pay in the end in your climate.

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	Heel, M. Murray. Holdback, G. C. Edmunds. Hook, See Drangy book, Whistotage book	500,816 501,000
	Hook. See Drapery nook. Whimetree nook. Lacing hook. Hoop fastening. Ba el or other E. W. Beazell. Horse blanket strap, A. P. Russell. Horseshoe, D. Gingold.	. 500,844 . 600,610
	Horseshoe, D. Gingold Horseshoe, Nailless, S. Pruden.	600,619 500,881 600,946 600,822
	Hose coupling. Electric, J. K. Strauss	500,822 500,831 500,826
	Horseshoe, D. Gingold Horseshoe, Nailless, S. Pruden. Hose coupling. Electric, J. B. Strauss. Hot air furnace, C. C. Sofielss. Ice boat. Oar-propelled, G. H. Thacher. Ice machine, G. F. Knox. Ice shedder or shaver. T. Mabbett. Induction coil. Coin operated, W. R. Pope.	501,045 500,928 500,778
,	Injector, F. Brunbauer. Injector, J. W. Stanley. Inkatand. Fountain, E. C. Mayley.	500,752 500,677 500,690
	Induction coil. Coin operated, W. R. Pope. Injector, F. Brunbauer. Injector, J. W. Stanley. Instand. Foundain, F. C. Mayloy. Insulating coupling, L. McCarthy. Insulator. Conduit railway, G. E. Noyes. Intersecting miter, M. Gates. Iron, See Sad iron. Soldering iron.	600,690 601,021 600,987 600,570
,	Jack. See Lifting jack. Wagon jack. Screw jack.	•
)	Jewel-setting machine, W. Rundquist Journal box, G. W. M. Bowen Keyhole guide, C. Taylor	. 500,954 . 500,794 . 500,977
	Knitting machine. Straight, W.T. Rowlett Lacing hook, W. B. H. Dowse. Lamp, Central draught. F. Rhind.	500,958 500,565 501,025
)	Lamp. Electric arc, R. M. Hunter	500,757 500,829 500,829
	Jewel-setting machine, W. Rundquist. Journal box, G. W. M. Bowen. Keyhole guide, C. Taylor. Knitting machine. Straight, W. T. Rowlett. Lacing hook, W. B. H. Dowse. Lamp. Central draught, F. Rhind. Lamp. Electric arc, R. M. Hunter. Lamp. Electric arc, W. A. Turbayne. Lamp. Electric incandescent, Burnett & Doane. Lamp globe. Incandescent, T. B. Atterbury. Lamp. Incandescent electric, W. E. Nickerson. Lamp. Incandescent electric, W. E. Nickerson. Last, W. Gordon.	500,671 500,671
ì	Last, W. Gordon. Lasting machine, J. T. Avery	. 500,510 . 500,548
	Lathe. Metal turning, T. Coldwell Laundry drier, A. V. M. Sprague.	500,723 500,758 500,625
	Leveler. Land, W. Falconer	. 500,838 . 500,874 . 500,689
ļ	Lamp. Incandescent electric, W. E. Nickerson. Lamp. Incandescent electric, Nickerson & Cary. Last, W. Gordon. Lasting machine, J. T. Avery. Lathe attachment, J. E. Richards. Lathe. Metal turning, T. Coldwell. Laundry drier, A. V. M. Sprague. Leather skiving machine, A. J. Allen. Leveler. Land, W. Falconer Lifting jack, Mahaffey & Haldeman. Lightning arrester, W. A. Turbayne. Lightning arrester, C. S. Van Yuls. Lindeum or oil floorcloths. Manufacturing, J. C. Lyon.	500,828 600,726
	Liquid goods. Receptacle for carrying, G. Pe-	600 777
ĺ	Liquid storage vessels. device for removing sediment from bottoms of, Harder & Fox Lock. See Nut lock. Railway switch lock. Lock. G. E. Tyson	500,741
	Lock, G. E. Tyson,	. 500.HM