treated. A list of authorities quoted, and of "manufacturers represented in the illustrations" (meaning, we presume, manufacturers' machines and appliances, as we see no portraits) are commendable features. A peculiarly full index closes the work.

ELECTRICITY AND ITS USES. By J. Munro. London: The Religious Tract Society. Fleming H. Revell Company, New York and Chicago, sole agents. 1890. Pp. xv, 208. Price $1.40.

The oft-trod ground of popular description of electrical appliances is traversed in this attractive volume. Its neat shape and numerous illustrations make it a contribution of some value, although in so crowded a field.

PRACTICAL DIRECTIONS FOR ARMATURE AND FIELD MAGNET WINDING. By Edward Trevert. Lynn, Mass.: Bubier Publishing Co. 1892. Pp. 113. Illustrated. Price $1.50. No index.

This book is of interest now when so many amateur electricians are experimenting with motors. The directions for winding, while not going very deeply into the subjects of sizes for given power, etc., are clear and simple, and so expressed as to be understood easily. The last portion of the work, a little less than one half, is devoted to an outline of the principles of commercial motors and dynamos, and contains a few useful tables.

PRACTICAL CENTERING. By Owen B. Maginnis. New York: William T. Comstock. 1891. Pp. 80. Illustrated. Price $1.50. No index.

The hand of the practical builder and constructor appears in the pages of this book. The thoroughly practical cast of its text and the many useful hints scattered through it make it useful reading for all who are engaged in the class of engineering work of which it treats. The concluding chapters on house carpentry are excellently conceived and put before the reader.

The Shoe and Leather Reporter Annual for 1892 is a volume of nearly 750 pages. The main portion of the book is a directory of the boot and shoe manufacturers, tanners, dealers in leather and findings, hides, furs, etc., and manchinery manufacturers, in the United States and Canada, with names of prominent firms in other parts of the world. It also has particulars as to the organization of a number of trade bodies in different cities, and various other matters of interest in the shoe and leather trades. Published by the *Shoe and Leather Reporter*, New York.

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 the following week's issue.

Notes & Queries

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.

Special 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 price.

Minerals sent for examination should be distinctly marked or labeled.

INDEX OF NOTES AND QUERIES.

(4116) F. E. H. asks (1) Is there any way to oxidize nickel? A. To oxidize nickel give it a thin coating of silver and oxidize with sodium sulphide solution, or try dipping the nickel into a solution of mercurous nitrate and then treating with sodium sulphate solution. 2. How is etching done on souvenir spoons? A. For silver etching we refer you to the SCIENTIFIC AMERICAN, No. 15, vol. 65, query 3445.

(4117) P. B. W. asks: 1. Will you publish how to cure a cigarette habit? I have been a slave to it for the last 5 years. A. Quit the dirty habit at once and forever. 2. What is good to take the pain out of my breast that the nicotine has made? A. Stop smoking. 3. Is there a substance that you can put in your tobacco that will kill the nicotine? A. No.

(4118) W. R. B. asks: 1. What size wire should I use for a telegraph relay magnet? A. Use No. 32 or 34. 2. Of what sized iron should I make my iron core? A. ⅜ inch diameter and 1¼ inch long. 3. How long and thick should the wire coils on the relay cores be? A. The length of the core and 1¼ inch outside diameter. 4. Please state some way of softening cores? A. Heat them to a cherry red and bury them in ashes overnight. 5. What kind of iron should I use? A. The softest wrought iron. 6. What size wire and coils should I use on my sounder to work on short circuit, on a circuit of two or three miles? A. No. 24 for local and No. 32 for line. 7. If I made the parts of my instrument of iron, would it be better to temper the iron or leave it soft, to give the best sound? A. If you use iron, leave it soft. For all parts except the magnet cores, yoke and armature, brass is preferable to iron.

(4119) T. C. S. writes: 1. What chemical could I put into a glass and let dry and in a little while, by pouring water or some other chemical into glass, turn it (the water or chemical) black or any different color? A. For black add a little nut galls and iron sulphate, both in powder. For blue use ferridcyanide of potassium in place of the nut galls. Excellent effects may be produced with aniline colors in very small quantity. 2. Would a 40 ohm telegraph sounder work with two batteries on a line of ten or fifteen feet? If not how could I remedy it? A. Yes; but it should have more battery. 3. How do you make the solution of a gravity battery? A. Use pure water, and drop the crystals of copper sulphate into the bottom. A few teaspoonfuls of salt or of sodium sulphate may be dissolved in water and added to start the battery.

(4120) J. M. writes: I desire to learn of some absorbent that can be used in connection with the storage of certain perishable products, such as eggs. I want to find something that will absorb gases and odors, without giving off any odor itself. You are aware, no doubt, that in machine storage, it seems necessary to keep rooms tight, and consequently any gases given off are confined in the rooms. It is this I want to get rid of, as it seems to affect the articles of the more delicate kind of perishable merchandise. A. We would suggest the use of a strong solution of potassium permanganate exposed in shallow vessels. Bone charcoal would also have a good effect.

(4121) J. B. says: 1. He has been trying aristotype paper, and succeeds well except when mounting. After printing and toning I throw the prints into cold water and wash in several waters for two or three hours. I use starch paste new made, but perfectly cold and thick enough to be stiff when cold. I take the print from the water and lay face down on glass and put blotting paper on it, and that takes away all water. I then brush paste over the print carefully, taking care to cover every part of it. I then lay the print on the mount and squeeze it down perfectly flat. I generally wipe off with wet white cloth. I often use a handkerchief, wringing it as dry as possible before using. It is now all right to all appearance. If I place them between blotters to dry, the paper makes them woolly, for it sticks to the blotting paper. If I lay them out on a table to dry, they get along all right till they get pretty dry, then the corners begin to turn up, and sometimes the sides leave the mount too. The man I buy my paper from says to treat the paper as albumen paper. I have tried it every way, and I have lots of trouble with it, and am a little doubtful about it. Please send me a good formula for toning aristo paper, also directions for mounting and burnishing. A. A better mounting paste than starch for aristotype prints is:

Nelson's No. 1 photo. gelatine	4 ozs.
Water	16 ozs.
Glycerine	1 oz.
Alcohol	5 ozs.

Dissolve the gelatine in warm water, then add the glycerine, and lastly the alcohol. This is said to prevent cockling. Alum should be used in the toning and fixing solution to harden the surface. A combined toning and fixing solution is made up as follows:

1. Hypo	10 ozs.
Add water to make	36 ozs.

When dissolved add 4 ozs. of powdered alum.

2. A. Sulphocyanide of ammonia, c. p.	1 oz.
Dissolved in water	2 ozs.
B. Dry chloride of gold, c. p	15 grains.
Chloride of ammonia	60 grains.
Dissolve in water	2 ozs.

Add B to A in small portions, shaking after each addition till the precipitate formed is redissolved, then filter. This solution should be clear and colorless and be kept in a yellow bottle.

3. Nitrate of lead	90 grains.
Water	2 ozs.

Different tones can be made by various combinations of the three solutions.

Warm tones.	No. 1	8 ozs.
	No. 2	2 ozs.
	No. 3	2 drachms.
	Water	6 ozs.
Purple tones.	No. 1	8 ozs.
	No. 2	3 ozs.
	No. 3	4 drachms.
	Water	5 ozs.
Cold tones.	No. 1	8 ozs.
	No. 2	4 ozs.
	No. 3	4 drachms.
	Water	4 ozs.

The bulk of the solution may be lessened by using one-half or one-quarter the proportions above stated. After the prints are dry, and before burnishing, rub the following lubricator over the surface:

Cetaceum (spermaceti)	10 grammes.
Castile soap	10 grammes.
Alcohol	1 kilogramme.

This will give a good gloss. 2. Are the roller burnishers ahead of the other kind? A. They are considered superior. 3. The other day I sensitized some albumen paper with nitrate of silver, and after printing and toning I found it all covered with little blisters about the size of a pin head; at least they seemed to me to be blisters. The paper looked like pebbled leather. Was it my fault or the fault of the paper? A. Blisters generally occur when the solutions are of uneven temperature. All solutions should be between 70° and 80° F. Make the fixing bath one ounce of hypo. to eight of water, and to each gallon of this add two ounces of alcohol and two drachms of ammonia 0·880°. This is said to prevent blisters.

(4122) Young Electrician asks: 1. What number of the SUPPLEMENT contains the construction of the electroplating outfit? A. See SUPPLEMENT, No. 310. 2. What becomes of the energy that is employed in splashing water in a churn? A. It is dissipated in the form of heat. 3. How are storage batteries constructed, and how many cells would it take to light eight 16 candle power lamps through an evening, the plates in the cells to be 10 in. by 8 in. by ⅛ in.? A. Consult SUPPLEMENT, Nos. 322, 677, 685, 342, 426, 455. It will require 11 cells for 20 volt lamps.

(4123) H. S., A. L. S., and others ask how to restore a meerschaum pipe which has been burnt. A. Place corks in both the bowl and stem hole of the pipe, and place for one minute in boiling milk, if the pipe is to be slowly colored and hard, and for the same length of time in boiling beeswax, if the pipe is to be colored quickly.

(4124) G. D. C. asks: 1. Can the simple electric motor described on page 498, "Experimental Science," be run by the gravity battery? If so, how many cells would it require to run the motor at 500 revolutions per minute? If the gravity battery will not run the motor, how many cells of Dr. Gassner's dry battery will it take to run the motor, or will it run it at all? A. Neither the gravity nor the dry battery is suitable for running the simple motor. The motor has very low resistance and requires a battery of low resistance. 2. If the motor be connected up as a dynamo, or as the motor should be and run at about 500 or 1,000 revolutions per minute by foot power, would it give a current of electricity which could be felt by any one, without an induction coil? A. The motor does not act well as a dynamo. It generates only a very slight current. For a dynamo, wind the armature and field magnet with finer wire and use soft cast iron in the field magnets.

(4125) Tel. writes: I am making telescope as described in "Experimental Science." I have an acromatic objective glass 2¼ in. diameter, 44 in. focus. The other glasses are eye lens, ¾ in. focus, field lens 2 in. focus. Should I have tube 40 in. long? I had already made the tube before I got glasses, and it is 32 in. long. Will that do as well? A. The 32 in. tube will answer. You can make out the length of the tube by means of a draw tube.

(4126) M. D. writes: 1. I am making the motor described in SUPPLEMENT, No. 641, and would like to know if the core of the armature could be made of a coil of sheet iron instead of the wire? Would it give as good results? A. Sheet iron will not answer as well as wire. 2. Would this same armature do for other motors with field magnets of solid iron instead of Russia iron? A. Yes. 3. How many cells of storage battery would it require to run this motor, and how many gravity cells will be required to charge the storage battery? A. Two cells of storage battery. The gravity battery is not suitable for running the motor, but will answer for charging the storage battery. 4. What is the least number of volts required to run this motor? A. Four. 5. What size dynamo would this motor run? About how many lamps would the dynamo light, each about ten candle power? A. A very small one. So small in fact, that it would not be of much account practically. It is poor policy to run a dynamo by an electric motor driven by batteries. Better make use of the battery current, which is much greater than you could produce in the manner suggested. You might possibly run one or two lamps of smallest size. 6. Would this motor run a 16 ft. canvas boat? How could the speed be regulated? A. Yes; slowly. You would hardly need a speed regulator. The regulation, however, can be effected by introducing more or less resistance in the circuit. 7. Could this motor be made more powerful by increasing dimensions? A. Yes; but we do not advise basing the calculations for a larger motor on the dimensions and proportions of this. 8. In what number of SCIENTIFIC AMERICAN SUPPLEMENT would I find a description for simple dynamo? A. Nos. 161 and 600. 9. How could the battery be fixed to keep it from splashing out by the movements of a boat? A. The battery may be provided with a close fitting cover having a small vent tube.

(4127) H. M. T. asks: Can you give instructions for making a Ruhmkorff coil? A. Consult SUPPLEMENT, No. 160.

(4128) W. A. H. writes: 1. I have a glazed earthenware vessel, the right size for a porous cup, but know of no way to take off the enamel. Could you suggest one? A. The glaze cannot be removed. Better purchase your porous cells. They cost very little. 2. I have a single fluid four-cell battery, each cell consisting of a number of electric light carbons with a leaden ring cast around one end and a rod of zinc, well amalgamated in the middle; inside is solution of salt and water. After being worked through a door bell a few days the current diminishes, but the difficulty is removed by cleaning the zincs. Even then the current does not exceed two and one-half volts. A film seems to come over the zincs. Could you tell me of any way to get more current without so much trouble? Have tried sal-ammoniac, but the current does not increase. Is the zinc surface too small? A. Convert you battery into a Fuller battery by placing the zinc in a porous cell having mercury in the bottom, into which the zinc dips. Place bichromate solution outside the cell and water inside. The carbons will, of course, be immersed in the bichromate solution. A current is measured by amperes, not by volts, hence your characterization of your current is meaningless.

(4129) H. A. A. asks: 1. Why is the induction coil described in "Experimental Science" wound as two coils? A. To prevent the passage of sparks from one end of the coil to the other. 2. I want to make an induction coil about 4 inches long by 2 inches in diameter; will a ½ inch core be large enough? A. The core will do. 3. How much and what size wire will I require? A. Use two layers of No. 18 in the primary, and fill the spool with No. 36. 4. I saw a core made inside of a brass tube, and to decrease the current the tube and core were both pulled out. Was this right or should not the core be stationary? A. It is right to have both the brass tube and the core movable. The brass tube may be omitted if the core is movable. 5. How can I splice some pieces of No. 26 wire together to use on an induction coil? A. Twist it together neatly and solder with soft solder, taking care to wash off all traces of soldering fluid to prevent corrosion. 6. Is there a SUPPLEMENT through which I can get some hints on making an induction coil like the above? A. None that gives other information than that contained in "Experimental Science." 7. Please make the following from "Experimental Science," page 550, clearer. A piece of quite thin brass should be bent together in a U form, and the wire should be allowed to pass through the channel thus formed. A. The U shaped piece of metal is designed as a guide. It rests on the coil while the winding progresses and the thickness of the metal determines the space between the convolutions.

(4130) J. J. O'D. asks: How to work Mushett steel to the best advantage, and how to temper it. A. Work Mushett steel in the same manner, and with the same care, as high tool steel. Must not be heated beyond a full red. Requires no tempering. When the tool is finished under the hammer, lay it down to cool. Sharpen as other tools on the grindstone or wet emery wheel.

(4131) E. N. H. writes: I intend making a motor like the one described in "Experimental Science" on pages 497-509 reducing it one-half. I am going to have castings made for the field magnet and the armature. Could not the armature be cast with wedge like projections to facilitate the winding? A. Cast iron should not be used for the core of the armature. 2. What size wire should the field magnet and the armature be wound with? (In making it ½ size.) A. It depends upon the source of the current and the E. M. F. Probably No. 22 or No. 24 would answer for a battery current. 3. Should I put the same number of layers and convolutions as in making it full size? A. Yes. 4. If it is not a good plan to have the armature cast, could I not cut out some pieces of the shape described from Russia iron? A. Yes.

(4132) S. M. S. says: Can you give me a formula for sensitizing albumen paper that does not need fuming with ammonia? One of my friends can make a sensitizing bath that works nice, do not need to fume the paper. A, Try this:

Water	1 oz.
Nitrate of silver	40 grs.
Nitrate of ammonia	30 grs.
Liquid ammonia	3 min.

Float the paper for 3 minutes. The hydrometer should register from 54 to 56. Very important to keep bath alkaline.

(4133) X. Y. Z. says: I have a negative from which I have been making silver prints, and the silver from the paper has got on to the negative, on account of dampness, I expect, and spoiled it for printing. Can you tell me of any method of removing it? A. If the negative is varnished, remove the latter by soaking in alcohol for a few minutes, then apply the following to the stained part:

A. Sulpho cyanide of ammonia	½ dram.
Water	1 oz.
B. Nitric acid	½ dram.
Water	1 oz.

Mix A and B and apply. A fresh solution should be made for each negative. Follow by washing and applying a saturated solution of chrome alum.

(4134) W. H. W. asks: 1. What would be the result if a motor or dynamo were constructed the same in every respect, that is in the "Experimental Science," Fig. 485, with the exception of the armature core, or in other words, if the wire of the armature were wound on a wooden core (the shaft being also wood) and everything else being the same as in Fig. 485? How much current would such a machine give, run as a dynamo, and how much current would it take as a motor to run it? A. The result of the construction described by you would be to produce a very slight current when used as a dynamo, and as a motor it would possibly rotate itself, but it would not be a success. 2. What would be the result if I wound the armature and put all the wire on the outside of the core, made as directions, winding back and forth over pins in the sides of the core, bringing all the wire of the section on one side? A. The result would be a machine incapable of being used either as a motor or a dynamo, as the currents in the different portions of the winding would counteract each other.

(4135) D. P. sends us diagrams showing two halos concentric with the sun and four sun dogs or parhelia on a horizontal line with the sun at the intersection with the halos, and asks explanation. Both halos are surmounted by inverted colored halos tangent to each of the white halos. The phenomena is attributed to the existence in the upper atmosphere, in the region of the cirrus clouds, of snowflakes thinly dispersed through the air, which reflect and refract the light of the sun at certain angles. As the snowflakes are crystallized in a great variety of forms, the reflections and refractions from their surfaces and through their angular forms seem to account for all the known variation in halos, coronas, sun dogs or parhelia and prismatic colors of the inverted halos.

(4136) E. L. says: Noticing your directions for coloring photos, in SCIENTIFIC AMERICAN of February 20, 1892, page 119, I beg to ask: 1. Will not the solution render the oil colors soft and flow over the other part of the paper when rubbed with the finger? A. We think not, since the color is first thoroughly dried. 2. Are the effects permanent, and for how long? A. Probably for several years.

(4137) T. W. K. asks for the ingredients that compose luminous paint, to make numbers that can be seen in the dark. A. Barium and calcium sulphides formed by ignition are characteristic ingredients. See our SUPPLEMENT, Nos. 229, 197, 249, 539.

(4138) G. A. L. says: Please let me know through your paper what direction the north star is from the north pole? A. The pole star is now about 1¼° from the true pole. When the middle one of the three stars in the handle of the dipper (Mizar) is on the meridian below the pole star, the true pole is 1¼° below the pole star. In any position of the line between the two stars the true pole is 1¼° from the north star toward Mizar.

(4139) C. E. D. asks how to find the altitude of a triangle when the base and the sum of the altitude and the hypotenuse is given. A. Altitude = sum of altitude and hypotenuse squared *minus* base squared, the whole divided by twice the sum of hypotenuse and altitude.

(4140) W. W. asks: 1. How can I explode a cannon with electric battery? Will you please let me know how to proceed, what kind of battery to use, etc.? A. You can explode the charge in a cannon by means of an electric fuse having a small platinum wire surrounded by fine powder. A current from a Grenet battery heats the wire to redness, and explodes the powder, the latter igniting the charge of powder in the cannon. 2. Is cast iron preferable to soft iron for the field magnet of a dynamo? A. No; soft iron is preferable. 3. Which is right? A says that if an article like tooth powder or face powder is put up and sold, that its sale can be stopped by law if it is not patented, while B says, if it is beneficial and harmless, its sale cannot be stopped and that a patent is only to protect it? A. Taking out a patent does not oblige the patentee to sell, nor does the mere fact that a patent is not taken out prevent selling an article unless it infringes an existing patent. 4. Also what is the meaning when they say such an article (face powder, etc.) is liable to stamp? A. It probably refers to the internal revenue stamp. The appliction of a stamp to articles of merchandise is not now required on articles of the class named.

(4141) J. F. L., Jr., asks: 1. What is a 10 per cent solution? I have been told the following:

1. 1 oz. solid substance (480 gr.).10 fl. oz. water.
2. 6 grs. " " ..... 1 " " "
3. 6 grs. " " .....54 grs. " dist.

A. A solution containing one-tenth its weight of the substance dissolved. This corresponds with your third formula. The second is altogether wrong. 2. How may I put up a formula as follows:

Dextrin	2 parts.
Acetic acid	1 "
Water	5 "
Alcohol	1 "

A. Weigh all parts. 3. Can you me a formula for the fastest developer you know of for fast gelatino-bromide dry plates?

A. Eikonogen	1 oz.
Sodium sulphite C. P.	2 "
Warm water	30 "
When cool add	
Carbonate of potash	½ "

If this develops too slowly add more carbonate of potash. 4. Can you tell me briefly how to form artificial crystals of alum, copperas, salt, sugar, etc., on a thread for crystallographic purposes? A. Simply make a strong solution and while hot immerse the threads. After crystallization place more solution in the vessel. Always let it cool a little before adding.

(4142) A. M. asks for the name of the acid used for stencil work on glass plates and how to use it? A. Hydrofluoric acid is used in etching glass. It can be purchased from wholesale druggists in New York prepared for use, or you can prepare it yourself by pouring sulphuric acid upon fluorspar. A lead dish is required for this operation. The glass is protected with wax, paraffine or varnish. Where lines are required the protecting coating is removed with a needle or scraper. The glass is placed over the lead dish and the hydrofluoric fumes rising from the dish attack the glass where it is exposed. Care must be taken to not inhale these fumes and to avoid getting the acid on the skin, as it is very corrosive and poisonous.

(4143) P. T. L. asks: What volume and fall of water will it require to furnish power to maintain 68 arc lights 2,000 candle power and 5,000 incandescent lights 16 candle power? What will first cost be in comparison with a steam plant of say 600 horse power? Will cost of maintenance be less? Is there less danger of stoppages? What is the life of a turbine working 16 hours per day? A. Your installation will require about 600 horse power actual from the water power motor. If a turbine of good make is used, the waterfall should be equal to 700 horse power, as this depends upon two elements viz., height of fall and quantity of flow. We must necessarily refer you to SCIENTIFIC AMERICAN SUPPLEMENT, No. 788, for illustrated description of the method of measuring a water power. The first cost of a turbine and head flume is much less than a steam plant, and in favorable places the dam and complete power plant may be brought within the cost of a steam plant. The economy of running expenses depends upon the cost of coal, but is no doubt much less than steam. With any degree of care against floods there is little or no danger of delays, far less than with the dynamos. Turbines run for many years without interruption.

(4144) E. W. H. says: I have a long fence with 4½ inches by 4½ inches Oregon fir posts set 3 feet in the ground. Fence has only been in position one year, yet the portion of the posts in the ground show considerable rot on the surface when dug down on. The posts were green when set. I do not want to take up the post, yet, at present rate, it would appear that they would rot off in three or four years. Would it do any good to bore into the posts, just above the ground, in a standing direction, and fill the holes with some mineral salt? If so, how large should the holes be and what should they be charged with? A. We do know that the plan proposed will fully preserve the posts, but will no doubt add several years to their life. Soaking the ends of posts in a strong solution of sulphate of iron or sulphate of copper for a day has been tried and found efficient for several times the life of posts without any application of preservative. We think it will pay to bore a ⅝ hole in as slanting a position as convenient, from 4 inches above ground, say at 45°, three-fourths through the post, and fill it with a saturated solution of sulphate of iron. In a few weeks again fill the holes and plug with wood or a cork.

(4145) W. W. M. asks: 1. Can you give a description in the SCIENTIFIC AMERICAN of the ginseng of Washington, Oregon, and Idaho, where found, and illustrate if you can? A. We refer you for articles on ginseng in general to the SCIENTIFIC AMERICAN, vol. 65, p. 104, vol. 64, pp. 19, 69, 309. 2. I send specimen of ash of burned flax. Can you explain what gives the color, etc.? A. The colors are due undoubtedly to the presence of iron, and possibly some carbonaceous matter.

(4146) J. K. M. — For the information you require regarding brazing and japanning, we refer you to "Scientific American Cyclopedia of Receipts, Notes and Queries, price by mail $5.

(4147) C. M. T. asks: 1. Have you a good book on induction coils? If so, what price? A. SUPPLEMENT, Nos. 160, 166, 229, and 569, also Dyer's "Induction Coil," 50 cents. 2. How many electric light carbons will it take to give E.M.F. of one volt? (About 5 inches of carbon in fluid.) How much zinc? A. One carbon and one rod of zinc of any size will give an E.M.F of nearly two volts. 3. I have a telegraph sounder that seems to have residual magnetism in the cores to such an extent that it affects the free movement of the armature. Is there any way to remove the magnetism? A. Remove the magnet cores, heat them red hot and bury them in ashes overnight, or until cool.

(4148) R. P. asks: Why do the English believe the occasional finding of a horseshoe to be a good omen? A. There is no reasonable explanation of the horseshoe superstition. There is no scientific connection between the finding of a horseshoe and good luck, excepting possibly the fact that one who picks up a horseshoe or anything else of slight value and saves or makes use of it is apt to have good luck. Possibly some of our readers may be able to give the origin of this peculiar notion.

(4149) C. H. B. writes: 1. I have been contemplating trying to use water glass as a substitute for glue in sizing spirits of turpentine barrels. I have been informed that it can be used for this. A. We think it would answer your purposes. 2. How is it prepared and used? A. It is made by dissolving silica in caustic soda solution under pressure. Apply with a stiff brush.

(4150) A. T. M. — The word "typewriter" does not indicate either sex, and is correctly applied to both; "typewritist" is an offensive eccentricity. "Cosmopolitan" is correctly used as a noun, and more frequently than "cosmopolite," though there is no objection to the latter if you prefer it. The word "macadamized" is usually employed as an adjective, accent on second syllable.

(4151) J. V. D. asks: Would a five horse power electric motor (500 volts, 10 amperes) afford sufficient power to drive a 10 in. circular saw for cutting cordwood? A. Five horse power would be ample for driving a 10 in. cross cut saw.

INDEX OF INVENTIONS

For which Letters Patent of the United States were Granted

March 8, 1892,

AND EACH BEARING THAT DATE.

[See note at end of list about copies of these patents.]

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