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 publ cation.

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.

Buyers wishing to purchase any article not advertised in our columns will be furnished with addresses of houses manufacturing or carrying the same.

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.

(8314) R. V. asks: 1. If you know the voltage and amperage of a battery how do you find the watt output? A. Multiply the volts by the amperes. 2. Are the field and armature of a motor common or magnet wire? Could magnet wire be used? Should the primaries and secondaries of an induction coil be common or magnet wire? Could magnet wire be used? A. Magnet wire is used. Magnet wire is simply ordinary copper wire covered with one or two layers of cotton thread so that the wire of one turn or layer shall not touch the wire of the adjacent turns or layers. In other words, magnet wire is insulated wire; common wire is uninsulated. Insulated wire is used so that the electricity must go through the whole length of the coil round and round, and not pass across to the other end of the coil directly.

(8315) G. H. DeL.: I wish to kill a number of pole-cats by means of electricity, without damaging the fur. I have a 1,000 watt alternating current dynamo with 8-pole field and 8-pole armature, but do not have any idea of its practical value for this purpose. The floor upon which the animals are driven is finished off with strips of zinc 4 inches wide and about ½ inch apart, being properly insulated from each other, each alternating strip being connected for positive and negative poles. If this dynamo could be re-wound to do the work effectively, what would be your idea as to field and armature winding, also speed required, and what would be the minimum current required to produce the desired result? A. It is not probable that a high voltage is required to kill a skunk. The dynamo may be all right for this work as it is. We think the zincs should be wet with an alkali solution, caustic soda or potash, before the animals are driven upon them. This will insure good contact between their feet and the zincs. Then turn the current on by a switch and observe the result. We have no idea whatever as to the current required.

(8316) E. D. S. writes: In your issue of July 6, on page 12, "Notes and Queries," No. 8250, W. M. R. says he put a slotted core armature in the 8-light dynamo, and succeeded in getting 50 volts at a speed of 1,660 per minute as against 2,200 for the armature as usually constructed. To an amateur like myself it is interesting to note the difference in speed due to the improved magnetic circuit, and thinking there may be others interested in this dynamo I would describe a change I made in the magnets of this machine with very good results. The armature was made exactly to size, and the iron wire core was used. The field was the inverted horseshoe type with circular cores 6½ inches long, 4 inches in diameter, with quite stout pole-pieces and yoke, and of soft cast iron. The fields were shunt wound and took ⅝ of an ampere at 55 volts. The machine ran cool and sparkless at full load, and with volts at 55 our speed was 1,250 per minute, or nearly 1,000 slower than the speed for the other magnets. A. The change in the machine described by our correspondent makes a very different machine from the original machine. His circular core 4 inches in diameter contains over 12.5 square inches of iron, while the core in the original design contained about 8 inches of iron. Of course the voltage is greatly raised by the change, or, in other words, the original voltage can be produced by about two-thirds the speed. If he ran his machine up to full speed he would have between 80 and 100 volts.

(8317) C. J. M. asks: 1. Can you tell me where a spring motor can be got, one that would run a fan? A. Correspond with any of our advertisers who supply fans and motors. 2. Are boots or shoes made out of India rubber? I mean the soft pliable sheet rubber like that used for patching bicycle tires. A. Rubber overshoes were first made of the pure gum. This was fifty or more years ago, before the art of vulcanizing the rubber was invented by Goodyear. They have been made within a few years again, but the public did not want them and they were not a success. They bind the feet too closely and stretch too easily; they are not durable. The kind ordinarily used are much better in every way. 3. What causes the green stuff that forms in a creek or any slow-running water. It will form on a board or stone or anything water runs on, and what do you call it? I have seen it forming on a roof where condensed steam runs down. A. The green slime is a plant, or rather millions of plants, which grow from other plants just as higher plants do; only the method of their reproduction is entirely unlike that of the higher plants. The germ of the plant must have been taken to the roof by the wind or in some other manner and there have grown in the warm water condensed from the steam.

(8318) W. J. B. asks: Suppose a hole through the earth and its center of gravitation. Eliminating all friction and resistance to the passage of a ball dropped into this hole, the only force acting being that of gravitation, will the ball pass beyond the center of gravitation? In what manner will it come to rest, if at all? A. The ball will fall with an increasing velocity till it reaches the center of the earth. At that point it will have its greatest velocity and momentum. It cannot stop there. It will pass beyond the center of the earth as far as it has fallen to reach it; that is, it will go through the earth to the other side and then fall back to its place of starting. This it will continue to do forever under the conditions imposed. The motion is no different from that of the pendulum of a clock, which oscillates under gravity alone as readily as any other falling body. A pendulum is a falling body, exactly like the supposed ball dropped into the earth. It falls to its lowest position and rises as far beyond it as it has fallen, just like the ball dropped into the earth. The mechanism of the clock is simply designed to restore to the pendulum the energy which it loses in each swing because of the friction of the air and other frictions in its motion. These the freely falling ball is by the conditions of the question, freed from. Hence it will move forever without loss of energy.

(8319) H. G. M. asks: 1. Would like to know a simple method of securing copper plates to carbon (solid), e. g. A. Electroplate the carbons with copper, and then solder the copper plates to the electroplating. A firm connection will be made. 2. How are copper connections secured to carbon brushes? A. The carbon brushes are covered with copper by electroplating and the contact is made by a set screw pressing a plate of copper against the carbon brush. 3. Can this be done by any other than an electrolytic process? A. Not satisfactorily.

(8320) J. W. A. proposes these problems: 1. A contracts to furnish B electric motive power 11 hours per day, 26 days per month, at $2 per month per horse power, to be measured by a Thompson recording meter, sold by General Electric Company, giving readings on five dials in watt-hours. (The meter readings to be multiplied by a constant 4.) B installs a 10 horse power electric motor. Kindly take an imaginary reading and show the method of ascertaining the number of horse power to be charged for at end of first month. A. Eleven hours per day for 26 days are 286 hours. One horse power hour is 746 watt-hours, since 746 watts are 1 electrical horse power. To reduce a reading of the watt-meter in watt-hours to horse power per month: Multiply the meter reading by the constant 4 and divide by 746. The quotient is horse power hours. Divide this quotient by 286 and you have the horse power per month. 2. Please say which price is more advantageous to A (the seller of power), $2 per month per horse power or 2 cents per 1,000 watts. A. Two cents per 1,000 watts is a higher price than $2 per month per horse power based upon 11 hours per day for 26 days.

(8321) F. K. S. asks: 1. On the use of storage cells what is meant by sulphating, buckling and internal short circuiting? A. Sulphating is the formation of sulphate of lead by the action of sulphuric acid upon the lead of the plates. This wastes the active material. Buckling is the bending of the plates by the charging and discharging, and is due to the fact that the material occupies a different amount of space in its different forms as oxide or peroxide of lead. The buckling sometimes bends the plates to such an extent that the positive and negative plates touch each other and produce a short circuit, through which the electric current can pass without going through the external line. You should have a book on the storage cell, such as Salomon's Accumulators, price $1.50 by mail. 2. Is it necessary to use a voltmeter, ammeter and polarity indicator? A. Yes, to observe the condition of the battery and to know when recharging is necessary, or when the cells are fully charged. 3. Is it advisable with regard to the running expenses to use them? A. Yes, if you have a good and cheap current for recharging. 4. About what would be the cost of charging a 15 ampere hour battery of 6 cells? A. That depends upon the answer to the last question. 5. Which make would you advise me to get. Can you tell me anything of a volt ammeter? A. There is no advertising done in this column. There are reliable dealers who can advise you regarding their goods. The firm you mention deals mostly with schools and this class of trade requires good goods. 6. Is it necessary to use the cells immediately after charging, and to charge immediately after discharging, and can they be used on an open circuit, i. e., once in a while, or are they to be used on a closed circuit until discharged. A. No. They can stand on open circuit for a time. But sulphating takes place when standing.

(8322) H. C. S. asks: 1. Wishing to construct an experimental wireless telegraph outfit, if possible, I would like to know what is the shortest length of spark that could be used to illustrate the principle, having your instruments the length of an ordinary room apart? Also if you have published a SUPPLEMENT or can recommend a book containing a description of such an instrument? A. A coil giving quarter-inch spark will send a message much farther than the length of a room. A coil which will fill the requirements is described in SUPPLEMENT No. 160, price ten cents. There is no description of the apparatus for wireless telegraphy which gives dimensions and drawings to scale so that one could make it from the plans. Of course, there are reasons for this. These inventions are new and those who have developed the instruments have patented them and are not anxious to have others work in the same line. We have published descriptions of coherers and coils, etc., of the various parts, from time to time, such that one who had mechanical skill could make these parts from the descriptions and pictures without scale drawings and dimensions. We can send you SUPPLEMENTS Nos. 1318, 1319, 1320, price ten cents each. These contain a series of articles on "Electric Waves," in which a good description of a coherer is given, as well as many hints for making the various parts of an outfit. Fahie's "History of Wireless Telegraphy," price $2 by mail, is valuable. 2. Have you a SUPPLEMENT or do you know of a book showing the construction of a liquid air machine for amateurs? A. Sloane's "Liquid Air," price $2.50. We must say that the making of a liquid air apparatus is hardly a task for an amateur. 3. Name books or SUPPLEMENTS for constructing a voltmeter from 0 to 120 and an ammeter from 0 to 15. A. SUPPLEMENT No. 1215, price ten cents, contains exactly what you request.

(8323) W. E. S. asks: 1. Will a dynamo furnish the same spark for igniting a gasolene engine when the circuit is broken as the batteries will? A. Yes. 2. Can a dynamo be used in starting the engine without batteries? A. No, unless you have other power for running the dynamo than that of the gas engine. 3. Can a dynamo be used for igniting the engine and for lighting purposes also? A. A dynamo for igniting a charge in a gas engine is usually a small machine built for this special work. It is not adapted for lighting purposes. Current from a lighting plant could be used to ignite the gas for a gas engine.

NEW BOOKS, ETC.

LABORATORY INSTRUCTIONS IN GENERAL CHEMISTRY. Arranged by Ernest A. Congdon, Ph. D., F. C. S. Philadelphia: P. Blakiston's Son & Co. 1901. Pp. 110. Price $1.

The present work is intended to illustrate a course of study in general chemistry. Much of the material is original, having been developed in the course of ten years' experience in laboratory teaching, while those portions taken from other sources have been modified and added to so that they might better meet the wants of students. The book is interleaved.

LES INDUSTRIES CÉRAMIQUES. E. S. Auscher et Ch. Quillard. Encyclopedie Industrielle. Paris: J. B. Bailliere & Fils. 1901. 16mo. Pp. 280. Price $1.25.

The authors have produced a book which deserves to take its place in the literature of ceramic industries. They have given formulas which have been tested by long experience, and have reduced the number of these formulas as far as possible in order that the work might not become too complex. The illustrations in the book, although not very excellent examples of engraving, are nevertheless clear enough for the purpose of the technical reader.

DAS GASGLÜHLICHT. Die Fabrikation der Glühneke ("Strümpfe"). Von Prof. Dr. I. Castellani, Autroisirte Uebersetzung und Bearbeitung von Dr. M. L. Baczewski. Wien: A. Hartleben's Verlag. 1901. Pp. 121.

It has been the author's purpose to give a fairly complete account of the manufacture of the well-known incandescent gas light mantles. He has, therefore, carefully and clearly described each step in the process of making the mantles, the properties of the materials which enter into that process and the source of supply whence these materials can be obtained. The work is the result of the author's long experience in the making of mantles.

INDEX OF INVENTIONS

For which Letters Patent of the United States were Issued for the Week Ending

August 6, 1901,

AND EACH BEARING THAT DATE.

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

Air, apparatus for refrigeration of atmospheric, O. P. Ostergren 679,907
Air brake controller, J. C. Wands 680,091
Air brake system, N. A. Christensen 679,945
Air regenerating and purifying apparatus, Desgrez & Balthazard 680,028
Alkali metals, electrolyzing salts of, Allen & Moore 680,191
Animal trap, C. Bloker 680,114
Automobiles, starting device for oil or gasoline engines for, J. P. & J. N. Wright .. 680,103
Bailer, K. Mooring 680,163
Bale of fibrous material, J. T. Cowley 679,831
Bale stay band, W. M. Holmes 679,845
Bale staying device, J. T. Cowley 679,832
Bale tie or band, W. M. Holmes 679,844
Baling fibrous material, apparatus for, J. T. Cowley 679,833
Baling machine, R. S. Munger 680,164
Baling press, P. K. Dederick 679,732
Band cutter and self feeder, automatic, J. N. Cole 679,725
Bandaging table, B. C. Miller 679,980
Bank, portable savings, J. E. Ingram 680,046
Barrel, O. H. P. Cornell 679,728
Barrel, G. M. Tilghman 680,183
Basin, wash, W. Bunting, Jr 679,882
Basket making machine, E. Horton 680,149
Bearing for disk drills, C. Moehring 680,061
Bed, folding, T. Hauser 680,042
Beehive, R. Decroly 680,025
Belt, S. J. Prokesch 680,071
Belt placer, J. S. Montgomery et al 680,063
Bicycle, E. Koch 680,048
Bicycle friction clutch, A. P. Morrow 679,982
Bicycle saddle clip, C. R. Reid 679,913
Bicycle stand, H. Rosskopf 680,177
Bicycle support, G. W. Manson 679,765
Bicycle support, J. E. Sweet 679,794
Bicycles, etc., alarm apparatus for, Blomster & Gustafson 679,825
Binder, loose leaf, L. G. Schult 679,865
Blast furnace, J. W. Nesmith (reissue) ... 11,925
Bobbin holding socket, J. Brown 680,019
Boiler, S. Aman 680,188
Boiler furnace, steam, J. ●. Morris 679,981
Boiler tube cleaner and driving mechanism therefor, W. L. Cassaday 679,723
Book and leaves therefor, index scrap, C. C. Ely 679,734
Book, index, L. Hirsch 680,044
Book, trade, A. A. Glisson 679,741
Books, newspapers, etc., holder for, J. C. Skogvold 680,080
Bottle, non-refillabe, F. J. Abate 679,931
Bottle, non-refillable, H. K. Prosser 680,073
Bottle or jar closures, device for removing, H. K. Prosser 680,072
Bottle stopper, C. W. Meinecke 680,162
Box or package, Hess & Clark 679,747
Brake controlling apparatus, F. C. Stockel. 679,791
Brake shoe, J. Sheehan 679,787
Bread or candy dividing machine, C. Lueteke 680,051
Brick drier, F. Alsip 679,816
Brick making machine, M. W. Marsden 679,853
Bricks or the like, machinery for pressing, R. T. Hughes 679,846
Buggy top, J. O. Wells 680,094
Buggy top raiser, J. C. Ford 679,838
Building block, A. M. Fenner 680,138
Building construction, W. H. Grueby 679,746
Building construction, J. C. Pelton 679,776
Burglar alarm or door signal, W. R. Edelen 679,957
Burial casket lids, cap for, F. Warther 680,092
Button, J. D. Burns 680,121
Button and necktie retainer, combined collar, C. C. King 680,047
Button fastener, E. M. Phelps 679,911
Button holding clamp, J. T. Hogan 679,751
Button, separable, E. M. Phelps 679,910
Button, tack, T. Long 679,762
Calender rolls, means for cooling, Drew & Dickinson 680,135
Camera, E. R. Bullard 679,881
Camera, magazine, C. C. Henderson 680,203
Can filling machine, C. H. Plummer 679,780
Can holder, detachable, W. H. Goddard 679,742
Cans, machine for straightening empty tin, J. W. McCall 679,772
Candelabrum, J. T. O'Reilly 679,984
Car and grain door, combined, J. B. Mockridge 679,855
Car door, grain, W. H. Daniels 680,132
Car draft gear, freight, J. J. Creed 680,130
Car fender and brake, street, T. M. Sanderlin 680,178
Car roof, J. E. Ulsh 679,801
Car ventilating apparatus, C. O. Johnson ... 679,754
Car vestibule, Hodges & Chick 680,146
Car wheels, shoe for truing up, M. Power .. 679,781
Cars, excavator or machine for unloading, P. J. Mullaney 679,903
Cars on sidings, device for locking or anchoring railway, H. E. Flower 680,034
Cars, strut for wrecking J. E. Graham 679,840
Carbide, producing barium, C. M. J. Limb .. 680,050
Cards, etc., mechanism for feeding, J. French 679,961
Casket cover fastener, J. R. Corbett 679,727
Caster, furniture, B. P. Kenyon 679,849
Chain, belt, E. Magaldi 680,159
Chair bottom or back, E. F. Brainard 679,939
Check receiver, workman's S. A. Marker .. 679,766
Cigar or cigarette making machine, Pisko & Philippi 680,069
Cigarette boxing machine, G. M. Williams .. 679,811
Cigarette wrapper, J. C. Simering 680,003
Clipper, hair, C. Carleton 679,944
Clutch, G. R. Goughnour 679,744
Clutch for traction engines, friction, M. Lafever 680,205
Cock, gas or other, C. F. Kincheloe 679,899
Coin delivery apparatus, H. L. Fisher 679,837
Coke oven, L. J. Hirt 679,749
Collar blanks, etc., machine for folding, G. Reece 680,174
Combs, drawing off device for circle, Long & Foster 679,975
Condensation, device for removing water of, P. J. Harleman 680,040
Conduits, cushioning device for fluid, H. See 679,786
Conservatory, portable, F. Alsip 679,818
Conveyer, H. W. Blaisdell 679,875
Conveyer, C. W. Hunt 679,984
Copper sulphates, manufacturing, Palas & Cotta 679,985
Copying device, carbon, J. L. & W. H. Calhoun 679,722
Corn husking bench and fodder binder, combined, J. Emans 679,735
Corn husking implement and twine cutter, J. Emans 680,030
Corn snapping, cutting and husking machine, H. L. Ferris 680,200
Corset, J. D. Belcher 680,112
Corset steel, E. J. Martin 679,977
Cotton elevator, cleaner, and feeder, R. S. Munger 680,165
Cracker stacking machine, E. Mackay 679,852
Crate, folding, M. G. Coughlan 679,730
Cream separator, centrifugal, Collin & Hartmann 679,948
Cuff holder, E. H. Trick 679,799
Cultivator, disk, W. J. Wiswall 680,211
Currycomb, M. Alston 679,933
Cuspidor, F. Strothenke 680,009
Cuspidor, non-spillable, O. D. Charles 680,022
Cutting machine, F. H. Turner 679,800
Cyanide, tank discharge door, A. D. Jansen. 680,154
Decorating machine, C. E. O'Neil 679,983
Dental forceps, F. A. Brewer, Jr 680,119
Desk and chair, combined school, H. W. Welles 679,806
Desk leaf support, G. H. Wyman 680,104
Direct acting engine, Sergeant & Prellwitz. 679,999
Disinfecting apparatus, toilet, L. C. Schoneman 680,179
Display box, W. K. Peek 679,909
Display hook, J. La Burt 679,900
Door check, C. H. Ocumpaugh 679,905
Door check and alarm, J. A. Britton 680,190
Door closing apparatus, J. H. Cook 679,952
Door frame, adjustable, J. Bachus 680,015
Door opening or closing device, automatic, L. Ives 679,847
Door, sliding, J. Handschumacher 679,962
Draft devices, loop bar for, N. C. Woodward 680,102
Draft equalizer, J. Blanchette 679,938
Drawer guide for steel furniture, J. M. Cornell 680,127
Dredging apparatus, J. L. Garwood 679,738
Driving device, cushioned, Oldfield & Schofield 680,170
Drying wraps, yarns, etc., device for, F. Gilli 680,037
Dust guard, H. B. Brower 679,880
Dye and making same, blue red disazo, A. L. Laska 679,974
Dye house conveyer, J. Knott 679,757

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