

Notes & Queries

HINTS TO CORRESPONDENTS.

Names and Address must accompany all letters, or no attention will be paid thereto.

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 Information requests on matters of personal rather than general interest, and requests for Prompt Answers by Letter, should be accompanied with remittance of \$1 to \$5, according to the subject, as we cannot be expected to perform such service without remuneration.

Scientific American Supplements referred to may be had at the office. Price 10 cents each. Minerals sent for examination should be distinctly marked or labeled.

(1) G. H. H.—We fear that your only remedy for nearsightedness lies in the use of suitable glasses.

(2) J. G. C.—Opacity is supposed to be due to the reflection of light by particles or atoms of matter not in absolute contact or fusion.

(3) H. S.—The water level of a mine is the level at which natural drainage takes place. It has no relation to the sea level.

(4) H. B. H.—An air jet in a chimney has no value unless under considerable pressure, and of similar arrangement to the exhaust jet of a locomotive.

(5) H. S.—For a stone jar filter, cover the opening of the faucet on the inside with a perforated pure tin plate, or attach to the faucet a block tin tube perforated with small holes, extending across the bottom of the jar.

(6) E. H. B. asks for a paste or cement very adhesive and pliable when dry, to repair cotton grain sacks. A. Try one of the following: Pure gutta percha dissolved in benzene or benzole, or a good quality of common glue dissolved in water, in the usual way, with the addition of about ten percent of glycerine.

(7) A.—You will find microphones described in the back numbers of the SUPPLEMENT; but no microphone will answer your purpose. They will not magnify or intensify the sound. Better have two telephone receivers, and place one at each ear. This will more than double the effect of the telephone.

(8) W. W. Q. asks (1) the best battery for silver and gold plating? A. Use Smee battery. A gravity battery or a Daniell's battery will answer very well. 2. The best method of preparing silver solution? A. Consult SUPPLEMENT, No. 310, for information on solutions for electro plating. 3. Is there any way of exterminating roaches from a kitchen? A. Use Persian insect powder freely, or phosphoric paste.

(9) S. M. L. asks how to find the positive or negative pole in a galvanic battery excited by a solution of sulphate of copper, zinc pole, and copper trough. A. The positive pole of a battery is on the negative plate, and the negative pole is on the positive plate. The positive plate of a battery is zinc, the negative plate is carbon, copper, or platinum.

(10) J. G. W. asks: What metals (alloyed) can be used for cocks to resist acid the longest? A. We know of nothing better than lead and glass. Cast iron is much used with lead seats. Also a hard composition of tin and copper with lead seats.

(11) F. W. W. asks: 1. Would the telephone made with U magnets, described in SUPPLEMENT, No. 142, work with No. 36 cotton covered wire? A. Yes. 2. Would carriage bolts do for the soft iron cores? A. Yes. 3. Are the magnets clamped together with iron plates? A. With plates of brass or other non-magnetic material; iron will not do. 4. If the ferrottype plates have been photographed on, does that affect their use for the telephone? A. No. 5. What is the best kind of wire to use for a line wire? A. No. 12 galvanized iron wire for out of door use, and No. 16 or 18 cotton covered copper wire for indoor use.

(12) G. H. P. asks (1) if electricity can be made to run a boat, can it not be made to run a sewing machine or scroll saw or a light turning lathe? A. It is common to run such machines by means of an electric motor. 2. Has there ever been invented an electric motor that can be attached to a sewing machine? If so, can they be purchased, where, and what the probable cost would be? If they cannot be bought, could an ingenious person manufacture one? A. Such a motor is sold by the Electro Dynamic Company, Philadelphia. You will find information on electric motors in the back numbers of the SCIENTIFIC AMERICAN and SUPPLEMENT. 3. Has there ever been invented a spring motor or something similar to clock works for the purpose of running the above named machines? A. Many such motors have been invented, but none of them has proved practical, as it usually requires more time to wind up the springer weight and consumes more power than would be required if applied directly to the machine to be driven.

(13) C. B. B. writes: 1. Supposing an induction coil of 24 inches length by 1 1/2 inches in diameter in the core, primary No. 12 silk covered wire, in two layers, secondary No. 36; the whole most carefully insulated with paraffine paper and hard rubber. How many cells of battery could safely be used on this coil? Bichromate single fluid, two carbons and one zinc to each cell, plates 4 1/2 x 9. A. 2 or 3. 2. Would the primary or the secondary wire be most likely to suffer from too high battery power? A. Neither wire will be injured, but the insulation of the secondary wire might be ruptured with too great a current. 3. A well known work on electricity recommends, after making the core of an induction coil of best annealed iron wires, to heat the core to redness in a charcoal fire and allow it to cool as the fire goes out. What would be the difference in effect between a core thus treated and one not heated? A. You get the best results from the annealed wire, because it is more readily magnetized and demagnetized.

(14) F. C. A. asks: 1. What size of Edison incandescent lamp would be necessary to furnish a light equal in power to an ordinary gas burner? A. What is known as 15 candle power lamp. 2. Where can the lamps be obtained, and probable price? A. From the Edison Electric Lamp Company, East Newark, N. J. We cannot quote price. 3. How many small bichromate of potash elements—half pint size—would be necessary to sustain such a lamp for say four hours? A. A large number, probably from 75 to 100. 4. How many Bunsen elements of a given size would be required for the same purpose? A. About the same. 5. Size of copper wire for connections? A. No. 8 or 10. 6. Should the elements be coupled for quantity or for intensity? A. For intensity. 7. Probable cost per month for running said light? A. It would, of course, depend upon the cost of materials, which is variable. In any event, it would cost much more than gas or any other known light. It is not economical to operate one Edison high resistance lamp by means of batteries. They can be used economically only in the large system, where a number of such lamps are connected in multiple arc. 8. Which requires the most power—to run two machines exactly similar, at a speed of 1,000 revolutions per minute, or to run one of them at 2,000? A. It would require the most power to run one of the machines at high speed. The power required to run a machine increases as the velocity.

(15) E. K. writes: I want to make a battery as described in SCIENTIFIC AMERICAN of April 11, 1885, and would like to be informed as to how strong the caustic potash should be. A. Use from 30 to 40 per cent of caustic potash.

(16) J. W. asks: Which pulls the most of two horses pulling on a wagon, when one horse gets ahead of the other and keeps ahead, so the evener is six inches at one end in advance of the other end, each horse pulling the same distance from the center? A. If both horses go at the same speed, they must necessarily pull alike, no matter what the position of the evener may be.

(17) J. W. asks how to construct a cheap medical battery. A. Consult the back numbers of the SCIENTIFIC AMERICAN and the SUPPLEMENT.

(18) V. S. Z. asks: Which is easiest drawn up a hill or incline plane by horses—a wagon with, say, wheels 3 feet diameter or a wagon with wheels 4 feet 6, axle friction relatively equal, and everything else equal? A. The wagon with the larger wheels.

(19) J. K. asks the best fish bait for perch, catfish, and buffalo. A. Angle worms and minnows for perch and catfish; for buffalo fish, wet cotton rolled in flour to make a fibrous dough that will remain on the hook.

(20) A. M. asks the best way to braze or solder together two pieces of copper wire. In winding a dynamo, the joint should be no larger than the rest of the wire, but I cannot make a joint that will hold, without making the wire so brittle as to break. A. File the ends of the wire to form a long scarf, so that when the two ends are placed together, the diameter will be no larger than the rest of the wire. Rub up a little borax with water on a slate or porcelain slab until the mixture of the borax and water is of about the consistency of cream; apply this to the contact surfaces of the wire, and fasten the ends of the wire together upon a piece of pumice stone. Apply some silver solder to the joint, and heat the wire with a blowpipe until the solder flows. A joint thus made will be as strong as the rest of the wire, and no larger.

(21) T. B., Jr., asks (1) how to make the compound to be used in the Grenet form of battery, in which it is only necessary to add water to produce the exciting liquid. A. It is made by adding sulphuric acid to pulverized bichromate of potash. 2. How are the castings made, and what are they made of, in the miniature toy engines? It is more brittle than lead, and much whiter. A. Of type metal (lead and antimony) or an alloy of tin and antimony. 3. Recipe for Javelle water. A. Consult SUPPLEMENT, No. 314. 4. In making a permanent magnet, would there be any gain in attractive power if the piece of steel was tempered and magnetized at the same instant by being drawn to its proper color while under the effects of a powerful helix? A. It would be difficult to say what the result of such treatment would be.

(22) In the SCIENTIFIC AMERICAN of July 18 (question 46), S. J. H. asks for some means by which the odor of a new refrigerator can be gotten rid of. If, by the use of charcoal and a good washing and airing, the odor is still retained, I advise him to have the refrigerator taken apart, to see that there is no pitchpine in it. I had an ice box that troubled me in the same way. Investigation showed that a piece of pitchpine had been used in building it. The odorous piece of wood was removed and the ice box has been in constant use ever since, and has not retained the contents once.—W. B. H.

(23) W. J. W. asks: What are the colors used in drawing to represent iron, wood, brass, etc.? A. Iron, Prussian blue; wood, raw sienna; brass, chrome yellow; brick, crimson lake; copper, pale scarlet.

(24) G. F. H. asks (1) if the dynamo described in No. 161 of the SUPPLEMENT is suitable for nickel or silver electro-plating or not, and how to proportion a machine of the same kind, of double or treble its given size? A. The dynamo referred to will answer for electro-plating, but it would be better if it were wound with coarser wire, say No. 12 for the armature and No. 10 for the magnet. In making a larger machine for electro-plating, follow the general proportions given, and you cannot go far wrong. 2. The best forms of battery for working on a closed circuit, suitable for burglar alarms, etc.? A. The ordinary gravity battery will answer your purpose.

INDEX OF INVENTIONS For which Letters Patent of the United States were Granted July 28, 1885,

AND EACH BEARING THAT DATE.

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

Table listing inventions with names of inventors and their respective patent numbers, such as Abdominal supporter, M. M. & J. H. Wernm, 323,003.

Table listing inventions with names of inventors and their respective patent numbers, such as Chopper, See Cotton chopper, Cotton stalk chopper, 323,178, 323,179, 323,181.