(3) J. C. H. writes: 1. When I add tincture of cantharides to Horsford's acid phosphate, the mixture becomes cloudy. What are the reactions? A. The alcoholic extractive matter, insoluble in water, is naturally precipitated by the addition of an acid aqueous solution. 2. Is the phosphorus precipitated? A. The phosphorus is therefore not thrown down. 3. Are the medicinal properties of the ingredients changed? A. Not unless the extractive matter, which is precipitated, is removed, and also it depends upon what the compound is given for, whether it is impaired.

(4) H. W. H., Jr., writes: Some time ago I saw a very good method of assay of gold, a short process producing the metal from the ore to the pure state. Kindly say where I may find it. A. The detection of gold in a given mineral is a simple process, but the assay involves a determination of the amount of gold in the ore, and can only be satisfactorily accomplished by the collection of the metal in a lead button and subsequent cupellation of the same, as described in all text-books on the subject.

(5) H. M. asks (1) for means of restoring to its previous condition a painting done on white velvet, which was soiled by smoke, etc. A. We do not think that it is possible to remove the smoke without injury to the painting. 2. The method of cleaning steel engravings? A. Articles on "How to Restore Soiled Steel Engravings" are given in SCIENTIFIC AMERICAN SUPPLEMENT, Nos. 44, 115, and 124.

(6) C. M. McK. asks how will vulcanite a little less hard than that used for combs, brushes, etc., compare, under pretty rough treatment, with leather in durability? A. The vulcanite will not stand "pretty rough treatment." 2. About what proportion of sulphur would be used to obtain such a quality of vulcanite? A. For details as to manufacture see SCIENTIFIC AMERICAN SUPPLEMENT, No. 252. 3. Can you give me some idea of the cost of vulcanite in large quantities? A. The value of vulcanite is dependent upon its quality, and the price in accordance is from 30 cents to 75 cents.

(7) E. H. R. asks if the "white bronze" monuments retain their original color for an indefinite length of time. A. Yes. 2. Is the expansion or contraction of the metal by reason of heat or cold such as to be material, or worthy of consideration? A. No. 3. Does the white bronze, which I understand is zinc, wear well? A. Yes, it is very enduring. 4. My reasons for inquiry is, we are about getting up a soldiers' monument, and we want a good one. A. White bronze is excellent for the purpose you mention.

(8) J. H. asks the names of the ingredients composing the liquids in the various patent fire extinguishers, or a formula for a good liquid for the same. A. 8 pounds carbonate of soda, 4 pounds alum, 3 pounds borax, 1 pound carbonate of potash, and 24 pounds silicate of soda solution are mixed together; 1½ pounds of this mixture is added to each gallon of water when required for use. See also answer to query 7 in SCIENTIFIC AMERICAN for February 7, 1885.

(9) W. W. A. asks: Can I keep ice successfully with sawdust in a room 6 feet square and 8 feet high? The bottom is 6 feet below the ground, and is well drained. How thick should the sawdust be around it? A. Your plan is feasible. A layer of sawdust from 6 to 8 inches between double wood walls will be quite sufficient.

(10) H. L. K. asks (1) how sugar coated popcorn is prepared after the corn has been popped. A. The adhesive mixture with which the corns are held together consists of gelatine with a little molasses; the coloring matter is carmine.—We cannot undertake to give examples in simple arithmetic in these columns.

(11) F. E. asks: 1. Is there any book giving full information in regard to the manner of removing hair by electricity? A. There is no single book treating on this subject, and the practical success of this method can hardly be called proved. See the articles on Removal of Hair by Electricity contained in SCIENTIFIC AMERICAN SUPPLEMENT, Nos. 176 and 353. 2. Are there irido-platinum needles, manufactured for this purpose? A. No. 3. Is a one cell battery sufficient? A. No. 4. How is turtle shell softened, so that it may be given any desired shape? A. It is softened by the heat of boiling water; and if compressed in this state by screws in iron or brass moulds till it may be bent into any shape, the moulds being then plunged into cold water.

(12) J. W. V. asks: Is there any difference between the so-called "compound oxygen" used by some of the doctors, and the oxygen obtained by heating potassium chlorate and manganese? A. "Compound oxygen" is simply a fancy name given to an article made and sold by various physicians throughout the country. In the May issue of the *Druggists Circular*, the analyses of five articles bearing the name of compound oxygen are given. 2. Is the latter ever used for medicinal purposes? A. Under certain circumstances, it is probably used for inhalation. 3. How are paper mustard plasters made? A. They are probably made by dipping porous paper in a strong alcoholic extract of oil of mustard. After it has dried, it may be applied.

(13) C. R. C. writes: An eight day clock spring ¾ inch in width would be equal to a weight of how many pounds as to power? A. Clock springs are not always of the same power for the same width. You can only ascertain by trial of a given spring.

(14) E. C. & J. E. Y.—For stove cement use pulverized clay 8 parts, fine iron filings 4 parts, peroxide of manganese 2 parts, sea salt 1 part, borax 1 part. Thoroughly pulverize, dry, and mix. When required for use, make up the required quantity for immediate use into a thick putty with water.

(15) C. E. A. asks the simplest way to melt small quantities of gold, silver, copper, etc., also if platinum can be melted in the same manner. A. The simplest method of melting gold, silver, copper, etc., is by treating them with a little carbonate of soda on a piece of charcoal, and then fusing with a blowpipe. Platinum requires a much higher heat, and is infusible by the ordinary processes.

(16) B. writes: I can buy a good second hand portable 12 horse power boiler and engine for the same price I can a 5 horse power of same style. I wish to put an engine in my barn for steam purposes generally, such as cutting forage, firewood, etc., but do not need over 5 horse power. Which of these two engines is preferable for me? Will the 12 horse power be as economical as the five horse power in doing the same work? In my inexperience, it appears that a 12 horse engine doing half work is as economical as a 5 horse power at its full power. Is it? A. We recommend the 12 horse power engine, which will do your work at half the boiler pressure; and, if your boiler is in proportion, will not only give you economical results, but will be a source of satisfaction if you should afterward need more power or wish to sell.

(17) M. C. C. asks: What chemical is used in annealing malleable iron castings, and in what proportion? A. Pulverized hematite or pulverized anvil scales. The goods to be packed in cast iron boxes so that each piece shall be surrounded with the above material. The whole to be placed in an oven and heated red hot, and remain so for from 2 to 4 days.

(18) G. M.—The bluing of gun barrels is done by heating evenly in a muffle until the desired blue color is raised—the barrel being first made clean and bright with emery cloth, leaving no marks of grease or dirt upon the barrel when the bluing takes place. We do not recommend this except in the hands of experts. It requires considerable experience to obtain an even, clear blue. The receipt for browning is from the United States Ordnance Manual, and is as follows: Spirits of wine 1½ ounces, tincture of steel 1½ ounces, corrosive sublimate 1½ ounces, sweet spirits of niter 1½ ounces, blue vitriol 1 ounce, nitric acid ¾ ounce. Mix, and dissolve in 1 quart of warm water, and keep in a glass jar. Clean the barrel well with caustic soda water to remove grease or oil. Then clean the surface of all stains and marks, by emery paper or cloth, so as to produce an even bright surface for the acid to act upon. No finger marks. Stop the bore and vent with wooden plugs. Then apply the above mixture to every part with a sponge or rag, expose to the air for twenty-four hours. Then rub the loose rust off with a steel scratch brush. Again apply the mixture and scratch brush, and if not perfect, a third time. If satisfactory, wash in boiling water, dry quickly, and wipe with linseed oil or varnish with shellac.

(19) R. G. W. asks (1) how to gold, silver, and nickel plate small things. I have a powerful battery of zinc and carbon and sulphuric acid and bichromate of potash. A. For information on electroplating we refer you to SUPPLEMENT, No. 310. You will not require a battery giving a high tension current for electroplating. 2. Which can be burnt the harder—a hard pressed brick or one that is not pressed very hard? A. So far as the hardening of the clay is concerned, one brick will be as hard as the other; but the pressed brick will be more dense, and will consequently stand more pressure.

(20) F. R. H. asks: Will you give me in your valuable paper a little advice as to the use of melted paraffine as a means of protecting metal (tools, implements, etc.) from rust, damp, and salt air? Here in Florida I have great trouble with such things as guns, carpenters' tools, machinery, and hardware in the house rusting, and have heard a good deal of talk about paraffine. A. You can obtain paraffine from any of the wholesale druggists in New York city, who will give you prices on application. It comes in irregular fragments or in cakes; you can apply it to the metal surfaces by warming the metal and rubbing the paraffine on, allowing it to melt, or you can dissolve the paraffine in benzole or naphtha, and apply it as a varnish.

(21) D. G. E. asks: Why will a long horsehair stretched in an Æolian harp produce a sound, when a shorter one, blown upon with a current of air from the mouth, will not? Are there any peculiar conditions in which strings produce sounds by such means? A. There is no reason why the Æolian harp effect cannot be produced by the breath, if the conditions are favorable; probably one reason why you did not succeed in your experiment is that your string was so short as to produce vibrations too rapid for a musical note.

(22) J. B. S. writes: Please send me the directions for using the Reis telephone, or let me know in what number of your paper, if in any, I can find an explanation of the same. A. Reis' telephone may be used successfully by substituting carbon for the platinum points. It may be made to transmit speech by a careful adjustment of the platinum points, but it is not practical when used in that way. Some experimenters have placed between the contact points of the transmitter a liquid such as acidulated water, thereby improving the effect. For description of Reis' telephone, see SUPPLEMENT, No. 389.

(23) F. A. H. writes: To-day a man came in my office with a small glass tube with two round globes on each end, each as large as an egg. The tube connecting the two bulbs was some 8 or 10 inches in length. They were about half full of a red, blood-looking fluid. By holding one bulb in the hand, for some persons, the fluid would rush to the other bulb, although the other bulb was much higher than the one in hand; for others, the fluid would not move. It was claimed by the man that had it that it was operated by the blood; a person having good blood would cause it to flow almost perpendicular into the upper chamber, while a person with poor blood would not move it. As I had never seen anything of the kind before, I was much surprised. Will you kindly explain in Notes and Queries the science of this instrument, what the fluid is, and why it operates? A. The tube and bulbs contain ether colored by aniline. The air is exhausted from the bulbs, so that the ether boils at a very low temperature, the heat of the hand being sufficient to vaporize it rapidly. The quality of the blood of the person handling the instrument has nothing whatever to do with the action of the ether.

(24) R. L. asks: 1. Would not brass wire do for winding field magnets of electric machine described in SUPPLEMENT, No. 161? A. Brass wire will not answer so well as copper wire, because its electrical conductivity is considerably less than that of copper. 2. Would not paper covered wire do? A. Paper covered wire would do, provided you could wind it without breaking the insulation. The paper covering should be very thin and strong. 3. What would machine be worth complete? A. Such machines may be purchased for from $40.00 to $50.00.

COMMUNICATIONS RECEIVED.

On Clinical Thermometers. By C. E. W.
On the Fly's Foot. By C. H. L.

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