(26) T. J. J. asks: How can I preserve a boiler when not at work, for instance, one used in the harvest field for thrashing? It is only used a few months in the summer, and perhaps once every month or two during the winter, and the balance of the time it is corroding and wasting away. It is my judgment that a boiler used so will not last as long as if used all the time. Is it so; and if so, how can I treat it? A. To lay up a portable boiler out of use, blow out or otherwise empty the water from the boiler thoroughly while the iron is warm, so it will dry off inside. Take off a hand hole plate, and (if no man-hole plate) take out the safety valve so as to permit a circulation of air through the interior. Take out the grate bars, and thoroughly clean off the ashes and soot from all parts of the furnace walls and the interior of the tubes. Store the boiler in a dry shed or barn, with the chimney stack standing, or in a dry place with an umbrella hood over the top of the stack, so that dry air will draw through the furnace and tubes.

(27) S. P. W. writes: I am in need of information. I wish to find out how to color wood black entirely through—for instance, knife handles. I have tried and failed. I wish to make maple black enough for knife handles, and have the color so that they can be finished to look something like ebony. They are all cut into about the sizes that are required. A. Steep in a strong boiling aqueous solution of logwood extract for several hours, and then for twenty-four hours more in a strong hot solution of sulphate of iron.

(28) J. F. writes: Please advise us if you can name some process whereby we could make our own carbon paper. We use large quantities, and it comes very expensive buying it from stationers. A. Clear lard, 5 ounces; beeswax, 1 ounce; Canada balsam, one-tenth ounce; lampblack, q. s. Melt by aid of heat, and mix. Apply with a flannel dauber, removing as much as possible with clean woolen rags.

(29) L. N. writes: I have a telephone from my house to that of a friend. The diaphragm is made of tough animal tissue, or drumhead. I formerly used a string for the line, but it was constantly getting out of repair, on account of the different conditions of the atmosphere. I tried wire, but it rings so I cannot understand. I stuffed it behind the diaphragm, and inserted a soft substance between the diaphragm and the tin fastening of the wire, and yet it does not work perfectly. I think the diaphragm is too sensitive. What must I do for it? A. Try small wire cable cord.

(30) G. H. writes: I wish to patch a blacksmith's bellows. What is the best cement for gluing such work? A. Use rubber cement. See receipts in SUPPLEMENT, No. 158.

(31) S. A. H. asks: 1. What is the shade of green on inclosed sample, and how can I obtain a shellac lacquer for tin? A. The colorant of the lacquer appears to be Frankfurt or Scheele's green—an aceto-arsenite of copper. When in a fine state of division it mixes readily with shellac lacquer. It can be replaced to advantage by some of the aniline or coal tar greens, soluble in alcoholic liquids. 2. Can gold be deposited in various colors, say green, red, purple, etc., by galvanism? And if so, can the same be done with other metals and their alloys, such as brass, etc.? Please refer me to some work giving practical instruction for obtaining the various colors in this way. A. Yes. See "Electrometallurgy," in SUPPLEMENT, No. 310. Few of the brighter colors can be obtained with the baser alloys. 3. What is the best lacquer, and how applied, to give articles of brass, such as mountings for optical instruments, etc., the appearance of gold? A. The lacquer to be used depends somewhat upon the color of the brass: for a light brass a dark lacquer is required, and *vice versa*. The following are good receipts for some of these lacquers: 1. Seedlac, dragon's blood, annatto, and gamboge, each 4 ounces; saffron, 1 ounce; wine spirit, 10 pints. 2. Turmeric, 1 pound; annatto, 2 ounces; shellac and gum juniper, each 12 ounces; wine spirit, 12 ounces. 3. Gamboge, ½ ounce; aloes, 1½ ounce; shellac, 8 ounces; wine spirit, 1 gallon. For other formula, see page 209, vol. xliv. See that the finished articles are clear, heat them as hot as the hand will bear, and distribute the lacquer quickly with brush or rag at one operation over the surface. When the articles are small they require to be heated in an oven to harden the lacquer. Several coatings of a thin lacquer give the best results. 4. How is the lacquer made and applied on the gilt moulding known as lacquer moulding, the leaf used in making it being tin foil? A. The lacquer ordinarily employed is composed of an alcoholic shellac solution colored with turmeric and annatto. 5. Is sheet zinc as pure as the commercial (cast) zinc found in the market in the shape of slabs and pigs; or is the sheet alloyed with lead or other metal; and if so, in what proportion? A. No; it usually contains small quantities of antimony and lead. 6. When impure zinc is used for a gravity battery, may the difficulty be overcome same as in the Grove battery, by keeping the zincs amalgamated, or will the mercury be likely to drop from the zinc on to the copper and interfere with the action? A. Amalgamation of the zinc is useless in the sulphate of copper gravity form of battery.

(32) G. C. W. writes: In your last issue you gave recipes to oxidize gold, silver, and brass. Will the same method do for iron? If not, what will; or can iron not be oxidized at all (malleable iron)? A. Iron is much more easily oxidized than the nobler metals. Plunge the clean metal for a few moments into a strong aqueous solution of ferric chloride, then rinse in water. The color may be somewhat improved by heating it in clay to low redness.

(33) W. K. asks: How can I dissolve bronze powder so that I can put it on papier mache, with a brush like varnish or paint, and after, when it is dry, can it be burnished with an agate stone, so that it looks like a gilt moulding? A. Mix the powder with thin glue size as a vehicle, this will form a good burnishing varnish. These powders cannot be dissolved and retain their properties.

(34) A. O. writes: This is a world of troubles, and I suppose you are entitled to your share. Here is one of my wife's making. She made, last spring, about ten gallons of parsnip wine, the product of parsnips, sugar and dough of yeast cakes, spread on toast; usually after having gone through fermentation this wine gets perfectly clear, but this time it got cloudy, and so far we have not been able to clear it, although we have tried charcoal, raisins, and bicarbonate of soda. Can you recommend a remedy? A. Try the addition of a small quantity of egg albumen—white of egg—allowing the liquid to remain quiescent for forty-eight hours. Then rack off from the sediment and cap.

(35) M. A. asks: Can you tell me how to color feathers? Is aniline used? A. Use any of the soluble aniline or coal tar dyes of suitable color, usually a quarter of an ounce to the gallon of liquid (water, or water and alcohol) is sufficient. Steam the feathers or put them through boiling water before immersing in the dye beck. Usually no mordant or developer is required except for the reds or pinks. For these chloride of tin and tartaric acid may be employed as brighteners, alone or in connection with soap.

(36) T. N. writes: I have been using a 4 gallon gold solution about eighteen months. For the last two months the anodes coat over with gold. I am using one electrotype copper anode and one gold, and I do not understand why they coat over. I am using a wooden vessel, coated inside and outside with asphalt. The work plates all right. A. Your solution is probably deficient in cyanide. See "Gold Deposits," in SUPPLEMENT, No. 310.

(37) J. S. J. asks: Please give me information how to construct a small nickel plater, for plating small articles, the plates to cost as little as possible; also, information to remove rust from brass, and a polish for polishing brass and steel. A. You will find practical receipts and directions on these subjects in SUPPLEMENT, No. 310.

MINERALS, ETC.—Specimens have been received from the following correspondents, and examined, with the results stated:

Wm. F.—It is genuine nutmeg, of poor quality.—J. B.—It is pyrogallic acid.

NEW BOOKS AND PUBLICATIONS.

INCANDESCENT ELECTRIC LIGHTS. New York: D. Van Nostrand. 50 cents.

No. 57 of Van Nostrand's Science Series: contains Du Moncel's and Preece's account of the incandescent electric lights (particularly Edison's) exhibited at the Paris Electrical Exhibition; with papers on the economy of this mode of lighting, by John W. Howell, and on the steadiness of the electric current, by C. W. Siemens.

A NEW METHOD OF SIGNALING ON RAILWAYS. By Sir David Solomons. Tunbridge Wells, Eng.: A. Baldwin.

Describes with some minuteness the electrical signals for railways patented by the author in 1874, with the improvements since made.

ONE OF CLEOPATRA'S NIGHTS, AND OTHER FANTASTIC ROMANCES. By Theophile Gautier. Faithfully translated by Lafcadio Hearn. New York: R. Worthington.

The translator has done his work rather better than such work is usually done. And the same may be said of the publisher. Admirers of Gautier will be pleased to see his artistic and fantastic, not to say erotic, stories in so fine an English dress.

HUBBARD'S NEWSPAPER AND BANK DIRECTORY OF THE WORLD. 2 vols. 8vo, pp. 1228 and 2591. New Haven: H. P. Hubbard. $10. 1882.

These volumes give a vast amount of information with regard to the world's thirty-five thousand periodical publications, and the people who make and read them, together with a directory to some 20,000 American and foreign banking houses, a large number of maps, advertisements, and much statistical matter. Aside from its value to advertisers and in spite of the temporary business utility of much of the information given, the work has, as a whole, a permanent value in that it gives for the first time an elaborate census of the world's periodical literature, and thus exhibits a fairly accurate picture of one phase of human progress. The index of names fills some two hundred closely printed columns.

THE APPLEDORE COOK BOOK. New Edition. By M. Parloa. Boston: Andrew F. Graves. $1.25.

Miss Parloa is well known in this city and elsewhere as a skillful cook and successful teacher of the art of cooking. Both qualifications are shown in the "Appledore." The numerous recipes are plainly and tersely put; and the author claims to have tested and approved them all.

REPORT TO THE STATE BOARD OF HEALTH ON METHODS OF SEWERAGE FOR CITIES AND VILLAGES IN THE STATE OF NEW YORK. By James T. Gardner. Albany: Weed, Parsons & Co. Paper, pp. 15.

Recommends the separate system of sewers for large towns with proper water supplies, and dry removal for villages, hamlets, and isolated dwellings.

ARTISTIC HOMES IN CITY AND COUNTRY. By Albert W. Fuller. Boston: James R. Osgood & Co.

A selection of sketches, showing plans and perspective views of a number of artistic villas, cottages, city homes, a church, with some interior views and explanations.

THE STRUCTURE OF THE COTTON FIBER IN ITS RELATION TO TECHNICAL APPLICATIONS. By F. H. Bowman. Second Edition. New York: John Wiley & Sons.

The first edition of this uncommonly worthy treatise was reviewed at considerable length in this paper a few months ago. The author makes the gratifying announcement in the preface to this edition that he will soon have ready a corresponding treatise on wool.

[OFFICIAL.]

INDEX OF INVENTIONS

FOR WHICH

Letters Patent of the United States were Granted in the Week Ending

March 21, 1882,

AND EACH BEARING THAT DATE.

[Those marked (r) are reissued patents.]

A printed copy of the specification and drawing of any patent in the annexed list, also of any patent issued since 1866, will be furnished from this office for 25 cents. In ordering please state the number and date of the patent desired and remit to Munn & Co., 261 Broadway, corner of Warren Street, New York city. We also furnish copies of patents granted prior to 1866; but at increased cost, as the specifications not being printed, must be copied by hand.

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