(22) Chemist asks if there is known any chemical or combination of chemicals which, if applied to the hair of the head, will turn it gray, without producing any injurious consequences. A. We know of nothing that we can recommend for this purpose.

(23) S. W. C. writes: In your paper for February 1, 1879, page 75, No. 14 of "Notes and Queries," you state that a strong aqueous solution of tannic acid will restore faded writing on parchment. Would that work on paper? A. Yes.

(24) W. M. asks what is the best varnish or paint for iron tanks, to protect them from rust. Would like to get something that will not scale off. Would paraffine applied to the iron hot, stick well and stand for a long period? A. Coat the dry tank with genuine asphaltum varnish, and when this has nearly dried, with melted paraffine. Let the varnish harden thoroughly before filling the tank.

(25) L. M. C. asks how to make a gold bath for plating, so that he will get a dark gold deposit, and how many Bunsen's elements are required. A. See "Electro gilding," p. 2540, SCIENTIFIC AMERICAN SUPPLEMENT, No. 160.

(26) J. B. asks what chemicals are used in fire extinguishers. A. Usually a strong aqueous solution of carbonate or bicarbonate of soda and strong sulphuric acid.

(27) W. H. G. S. writes: I have a large quantity of small malleable iron castings: I wish to copper them. How shall I do it? A. See SCIENTIFIC AMERICAN, vol. 39, p. 75 (23).

(28) J. P. asks: 1. Is there any way of making artificial stone without kiln drying; is there any treatise on the manufacture? A. Yes; consult patents 82,202, 82,731, 105,132, 100,944, 100,945, 101,253, 118,477, 119,394, 150,179, 157,511, and 155,176. See Maj. Gen. Q. A. Gillmore's "Practical Treatise on Colgnet Beton and other Artificial Stones." 2. Have the postal department found a satisfactory canceler? A. We believe not.

(29) C. H. asks: What was the first steamship to cross the Atlantic? Was it the Savannah of New York in 1819 or a vessel from Liverpool in 1817? A. Savannah, 1819.

(30) F. H. B. asks how to make a glossy blue japan for tin. I tried white varnish added to blue dissolved in linseed oil and spirits turpentine, but the color was dingy and the mixture muddy. A. Grind bright Prussian blue or smalt with pale shellac or mastic varnish.

(31) H. L. asks: What wire gauge is referred to in giving the size of wire used on the dynamo-electric machine described in SCIENTIFIC AMERICAN SUPPLEMENT, No. 161? A. American.

(32) J. A. S. writes: 1. Give size and material (metals, etc.) of the Righi telephone (dimensions of each part). A. The construction of the Righi telephone is described on p. 186 of current volume of the SCIENTIFIC AMERICAN. The dimensions given in the engraving are correct. The diaphragm may be of wood or metal, or a membrane may be used. The spring may be of brass or steel. 2. Where are the connections made? A. One wire is connected with the spring, the other with the metal attached to the diaphragm.

(33) J. W. W. asks (1) how lead pipe is made. A. By forcing semi-melted lead by hydraulic pressure, through a die, in which, concentric with its walls, is supported a core. The process is analogous to that of tile making. 2. How is iron gas pipe made? A. By passing strips of iron heated to a welding heat between rolls having semicircular grooves. The pipe is formed and welded over a mandrel as it passes between the rolls.

(34) R. E. H. asks: Does the Gatling gun send all its shots to the same point, or do they scatter? A. It may operate either way. The gunner, by giving it a lateral motion, may scatter the bullets to almost any extent.

(35) J. H. F. asks by what process he can extract nicotine from tobacco. A. Tobacco leaves are digested for 24 hours, and repeatedly, with water containing sulphuric acid, pressed, and the liquid evaporated half down. It is then distilled with caustic potassa, and the nicotine exhausted from the distillate by ether. The ether is removed from the ethereal solution by evaporating, finally elevating the temperature to 140°C (=284° Fah.). The nicotine, which is still impure, of a brown color, is distilled slowly at 180° C (=356° Fah.) in a current of dry hydrogen over quicklime. Some varieties of tobacco yield as much as 7 per cent of nicotine, Havana only 2 per cent. Nicotine turns brown and is partially decomposed in contact with air.

(36) F. H. N. writes: You told in a late paper how to cut off water gauge glasses for steam boilers. I suggest a better plan. Take a small round file, insert it in the glass, and hold your thumb for a gauge as to the length you want to cut off, then scratch around and the thing is done.

(37) M. McL. asks (1) how gas is made, and of what material, at the Municipal Works, foot of 44th street. Is it made from water? My friend contends that it is made from water; I say that it is not possible even in this age of science. A. Yes; when superheated steam is passed slowly through a large body of ignited carbon (coal) it parts with its oxygen to the latter. The resulting gas—composed chiefly of hydrogen—and carbon monoxide—has very little illuminating power, but this is remedied by introducing a small quantity of the vapor of some rich hydrocarbon—as naphtha—into the retort with the gases. 2. Also what is meant by the governor room in a gas works. A. The governor is an appliance by which a uniform pressure is automatically maintained as the gas passes from the reservoirs or gas holders to the street mains. The room where the governor stands is called the governor room.

(38) D. C. asks: 1. What is the temperature of a vacuum? A. The temperature of bodies within a vacuum under ordinary circumstances varies with the temperature of surrounding bodies, the inclosing walls, etc. 2. What is the recipe for making a brilliant black ink used in fine pen work? A. See answer No 15, p. 218, current volume SCIENTIFIC AMERICAN. 3. Which is the best steam engine governor in use? A. There are several governors that seem equally good. We are unwilling to decide between rival manufacturers.

(39) G. L. L. asks: 1. What can I use to coat the inside of a wooden box for holding silver plating solution? A. Line the vat with sheet lead, and give the latter several good coats of a melted mixture of equal parts of genuine asphaltum and gutta percha. 2. What kind of wood is the best to make the box of? A. Cypress is among the best. 3. Is the inclosed sample of rubber the kind that is used for making rubber hand stamps, and will I have to vulcanize it after taking it from the mould? If so what is the most simple process? A. Yes; see pp. 48 and 105 SCIENTIFIC AMERICAN, vol. 39.

(40) W. G. W. asks: 1. What will make hair grow, such as beard and moustache? A. Keep the system in a vigorous condition and the skin clean. Bathe the parts frequently with cold water containing a small quantity of tincture of cantharides. See "Hygiene of the Hair," by Professor Erasmus Wilson, SCIENTIFIC AMERICAN SUPPLEMENT, No. 110. 2. What will turn it black or dark, not instantly, but slowly? A. The diluted juice of the hulls of green walnuts (Paulus Ægineta) is commonly employed.

(41) C. H. H. writes: 1. Take two round balls of precisely the same size, one being, say, four times heavier than the other, and let them both drop at the same time. Will the heavy ball strike the earth any quicker than the light ball? A. In air the heavier body would reach the earth first. 2. In the SCIENTIFIC AMERICAN of February 15, in the article headed "Galileo's Museum" by H. D. Garrison, it is stated that all bodies large or small, dropped from an elevation at the same time, will reach the earth at the same time. Is this so? Please explain, as I think the atmospheric resistance would be greater in the large body than in the small. A. In a vacuum all bodies would fall with the same velocity; in air, the action is modified. 3. In query February 1, in answer to E. W. in directions for making a Leyden jar, he is told to coat an ordinary candy jar with shellac and then coat with tin foil inside and out. This I have tried by putting three or four layers of shellac on first, and then coated both inside and out smoothly with tin foil, and yet the jar will not work. Please give me the reason. A. Jars for this purpose should be of green glass. Flint glass is not a good insulator. You should also reject a jar which has the slightest crack or flaw.

(42) B. W. asks if an electrical plate machine and a battery of Leyden jars will work an electrical pen, as well as a Bunsen battery? Or tolerably well? A. No; the discharge of sparks is not sufficiently rapid.

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

W. M. S.—Itis the pollen of the pine (Pinus strobus).

COMMUNICATIONS RECEIVED.

On Electric Light. By G. F. S.
On Vibratory Motions. By J. C. W.

[OFFICIAL.]

INDEX OF INVENTIONS

FOR WHICH

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

March 11, 1879,

AND EACH BEARING THAT DATE.

[Those marked (r) are reissued patents.]

A complete copy of any patent in the annexed list, including both the specifications and drawings, will be furnished from this office for one dollar. In ordering, please state the number and date of the patent desired and remit to Munn & Co., 37 Park Row, New York city.

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