Notes & Queries

(1) W. M. J. asks: 1. Are the white fumes seen coming from a locomotive, steam? A. Steam partially condensed. 2. Is there any kind of steam visible? Is there any kind of steam invisible? A. Dry steam is invisible.

(2) F. N. Y. asks: 1. Can I get sufficient depth by the bichromate and gelatin process to make a mould for making pictures similar to lamp shades made resembling porcelain? A. No. 2. Are they made of porcelain? A. Yes.

(3) J. N. B. writes: I have some small castings (iron), and there are some blowholes in them. Can you inform me how I can fill them, and what with? A. It would be best to drill out the holes and plug them with iron; however, you may plug them with a namalgam of tin, zinc, and mercury, or with fusible metal.

(4) J. P. W. asks how to make harness soap. I want to use soap and put in something to make it black, and something to make it oily and good for leather. I have experimented some with black, but the lye in the soap has a bad effect on it and turns it out more of a brown color. A. Resin soap, 2 lbs.; sperm oil, ¾ lb. Digest the soap with a quantity of boiling water just sufficient to thoroughly soften it, when it may be triturated with the warm oil and a sufficient quantity of fine boneblack until a uniform paste is obtained.

(5) E. V. asks: 1. Is stenography a good business for these times? A. Stenography is never a good business except to a few who are by nature specially fitted for it. 2. What is the largest number of words that has been written in a minute? A. 200 words per minute may be reported, but not fully written out. 3. At what rate does a common speaker talk? A. From 50 to 250 words.

In answer to your last query we advise you to consult a physician.

(6) P. C. M. asks how a schoolroom can be warmed comfortably. A. Cause the fresh air supply to enter under the stoves; close all openings for the escape of hot air from the upper part of the room; ventilate by means of openings in the floor, the escape pipes leading to the chimneys or through them, to secure an up draught.

(7) C. F. L. asks why the heating of an iron sphere to nearly the melting point (as noted in your paper of September 28) should change its appearance to a disk. A. It is only by the gradation of light and shade that we can tell solids from plane surfaces. The highly heated sphere shows no such gradations.

(8) J. G. S. writes: I have some wine that is too sour for wine and not sour enough for vinegar. What shall I do to it to make it sour? A. The souring of wine is due to the conversion of the alcohol into acetic acid. This is very common, and may result from too small a proportion of alcohol, too high a temperature of the cellars, or exposure to the atmosphere. The wine, if too far soured, is fit only for making vinegar; but slight cases can be remedied by an addition of sugar. To convert your wine into vinegar the wine should not contain more than 10, nor less than 3 per cent of alcohol. The temperature should not be above 36° C. nor below 10° C. A plentiful supply of air to the wine and an intimate contact between the two. The addition of a small amount of vinegar, or still better, some of the so-called vinegar plant (mother) *Mycoderma aceti*. This method is very generally employed for making wine vinegar. Generally a "souring" vessel or "mother" vessel, made of oak wood, is employed; this vat is first, when newly made, thoroughly scalded with boiling water, and when thereby the extractive matter of the wood is exhausted, the vessel is filled with boiling hot vinegar; when the wood is soaked with vinegar, there is poured into the vessel 20 gallons of wine, and after eight days again 2 gallons of wine are added, and this operation continued weekly until the vessel is two thirds filled. About fourteen days after the last addition of the wine the whole of the contents will have become converted into vinegar. Half this quantity is withdrawn from the souring vessel and carried to the store; to the remainder more wine is added, and the preparation of vinegar continued uninterruptedly.

(9) F. D. W. asks for a preparation that will bleach feathers and horsehair without injuring them. A. You may try exposing them to the vapor of burning sulphur in a barrel or other tight vessel.

(10) J. G. E. asks: What ingredients do they use in pressing plugs of smoking and chewing tobacco to make the leaves adhere together, and also to flavor it? A. Molasses, licorice paste, glycerin, salt, and anise are frequently employed.

What sized cylinder and what sized boiler would be required to drive a screw 16 inches diameter, with a pressure of steam at 100 lbs. to the square inch, and the speed she would be likely to run at? A. Cylinder 2½ x 4, boiler 20 inches diameter, 3 feet high, revolutions 300 to 400.

(11) Constant Reader: What is the most suitable metal for working upon a foot lathe by hand? I wish something which can be turned and bored with ease. Can you tell me of an alloy which will melt at a moderately low temperature, but would be tough enough to be turned down without clogging on a small foot lathe? Would this alloy be hard enough to be used for making the cylinder and side valves of a small engine, the cylinder being about 2x 4 inches. If not, for what parts could it be used? Could you give me the composition of several alloys of different degrees of hardness? What should be the size of boiler, and what pressure should be used to obtain ¼ horse power, with an engine the cylinder of which is of the size above named? What is the pitch of a propeller? In what proportion is it to the diameter? Is there any rule by which to calculate the diameter and width of blades, etc., of a propeller, the length, width, and draught of the boat being known? Is there any by which the proper depth of a small steam launch can be calculated, the length and width being given? A. Brass would be the best alloy for the purpose. You can make a boiler 10 in. in diameter and 15 in. high, and carry a steam pressure of 30 lbs. per square inch. The pitch of propeller can be from 1¼ to 1½ times the diameter. The other rules you desire could not be given in this limited space, but you can proportion small screws and hulls from samples of larger ones, many of which have been described in our columns.

(12) N. E. S.—The washing compound consists chiefly of sal soda, lime, and resin soap.

(13) J. B. F. writes: At our factory we are using soft iron for all the castings we make, but find we will have to use some very much harder than we have been able to produce by adding a small quantity to what is in the furnace after ordinary work is poured. I have thought we might accomplish what we wish by hardening the iron in the ladle. Is there any way in which this can be done? A. We know of nothing that will produce the desired result in the manner suggested.

(14) W. P. K. asks: 1. Is spun glass flexible? A. Yes. 2. How fine can it be made? A. The threads are often drawn as fine as a single hair. 3. What are its constituents? A. Of a soft glass variously colored by metallic oxides. The glass without the coloring matter usually has the composition: Silica 75, potash 5, soda 10, lime 10.

(15) D. M. P. asks if there are not fire engines in New York propelled by steam which visit fires without the aid of horses? If so, who was the inventor thereof, and when did they first come in vogue; moreover, are they in use at the present time? A. There are, we believe, at present four self-propelling steam fire engines in use in this city. They were built by the Amoskeag Manufacturing Company, but the principal details of the self-propelling apparatus have long been used in connection with traction engines.

(16) R. W. S. asks: 1. Has frost any effect upon spiral springs that are in constant use out of doors? A. They sometimes become more brittle. 2. What is the best material for springs for hard usage? A. Steel. 3. Which is the best spring to use where the diameter is small, and the power required is great, a single spring of large wire wound small or a double spring of smaller wire, and which is apt to set the most? A. There is not a great deal of difference if proper proportions are observed in the two cases.

(17) V. E. C. writes: Can you tell me what metal and at what heat it will melt that will allow me to handle it in the melted state? A. The experiment is often performed with mercury, and with Rose's fusible metal—lead 3 parts, tin 2 parts, bismuth 5 parts—melts at 196° Fah.

(18) J. C. C. asks: Is there a process to restore the steel fire sheets of oil stills after crystallization by overheating in the presence of carbon? A. We think not.

(19) E. M. asks where he can learn the process of casting rubber type and stereotype, and if it requires much apparatus. A. See p. 1326, SCIENTIFIC AMERICAN SUPPLEMENT.

(20) C. A. P. asks: I have a meerschaum pipe, and by accident the stem broke off close to the bowl. What is the best cement to fasten it together? A. Slake pure caustic lime with a little boiling water, and mix the dry powder with the white of an egg to form a thin paste. This should be used in small quantity, immediately, as it soon sets.

(21) A. M.: What is the easiest and most efficacious way to destroy roaches (Blatta)? I have tried arsenic, poke root, and borax to no effect. A. A little alum or borax solution in hot water, applied with a cloth to the woodwork, and injected into the cracks in the vicinity of their hiding places, is usually quite effectual.

(22) H. S. asks: Can a body be petrified by laying the same in a solution of silicate of soda? Or can it be successfully injected into a dead body so as to entirely petrify the whole body? A. We believe experiments in this direction have not proved very successful.

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

J. B. W.—Green trap containing marcasite—iron sulphide.—W. M.—An indurated clay containing much sand, iron oxide, and lime.—T. F.—It is magnetite—magnetic oxide of iron, loadstone.—W. S.—Not infusorial earth. Consists of lime, carbonate silica, and much organic matter. The sample contains a little potash and traces of phosphoric acid. The material may prove of some value as a fertilizer.—H. S.—Silicious clay containing much iron sulphide. Is not necessarily indicative of the proximity of metallic ores or coal.

COMMUNICATIONS RECEIVED.

The Editor of the SCIENTIFIC AMERICAN acknowledges with much pleasure the receipt of original papers and contributions on the following subjects:

The Consumption of Natural Gas. By T. B. McC.

Jupiter. By R. D. S.

[OFFICIAL.]

INDEX OF INVENTIONS

FOR WHICH

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

September 17, 1878,

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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