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Notes & Queries

S. C. M. asks how to whiten the red of white ash.

N. H. H. asks how to put a polish on steel after it is filed.

A. C. T. says: Please give me a method of making a japan of superior quality.

C. F. D. asks: What can I put on a copper exhaust steam pipe to make paint stick?

J. H. asks: How can I make the best paste or cement to use in making paper cop tubes?

G. L. F. asks: What color should a mill pick be when cooled, to cut the hardest quality of burr?

J. H. says: Please inform me what will make ink used for ruling machines dry faster than alcohol.

W. L. asks what is the quickest way to season elm hubs which are bored through first and then rounded up in the lathe.

E. B. C. wants recipes for making red and blue stenciling ink for marking unplanned wood. "I prefer a liquid to dry ink."

W. H. G. asks: Is there any way that mica, used as windows in anthracite coal stoves, can be kept clean and transparent? If so, how?

W. E. says: W. T. B. tells us that he drives a 4 1/2 feet millstone with a 12 inch belt. Will he tell us the size of pulleys and the speed of his belt?

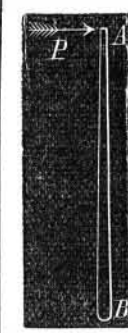
T. N. asks: What can I mix with wood charcoal to make it in a solid mass and still be porous? I want to use it for a filter, for water to drink.

G. W. S. says: Can you inform me what preparation is used for the bright yellow lacquer on brass castings, such as gas fixtures, and how it is made?

E. F. L. asks: How can a varnish, made from resin dissolved in boiling water by means of carbonate of soda, be made insoluble by water after being applied and dried?

S. says: The V of a railroad terminates in solid limestone in the foot of the mountain; its thickness is about 15 feet. I propose to bank up the cut with several car loads of slack coal and refuse coke, which are worthless, and set them on fire. Would that lessen the labor of deepening the cut and to what depth would the stone probably be burnt?

E. C. M. says: A body weighing 5 lbs. descends vertically and draws a weight of 6 lbs. up a plane whose inclination is 45°. How far will the first body descend in ten seconds? (We would like a solution of this problem, relating to accelerating forces, from any reader who may have more leisure than we have to devote to intellectual gymnastics.—Ed.)



E. W. H. says: I should like to have the opinions of some of your readers on the following problem, as it may elicit some original ideas. A rigid body A. B. is supposed to be without weight and in a state of rest in space, uninfluenced by any external forces, Required the motion imparted by a given force, P, applied at any point as A, supposing there be no resistance of the air. (This is a neat problem in the higher mathematics which we suspect will be respectfully considered by our readers, and of which we shall be pleased to see a concise solution.—Ed.)

E. B. C. asks: Will iron, that has been boiled in oil, rust?

W. E. says: I wish to run a stone with a belt without the twist, and sometimes I wish to run the rest of the mill without the stone. How can I disconnect in the simplest manner?

M. M. H. asks: How can I preserve or keep meat, such as beef and mutton, sweet and good for table use, for a week, during the summer months? I have a large ice chest, but I find that the meat sometimes sours.



Owing to the illness of one of our editors, the replies to several of our correspondents relating to chemical subjects have been delayed, but will shortly be given.

G. McK. says: Of what metals and in what proportions does the enclosed specimen consist? Answer: It is lead with a trace of mercury.

F. W. says: I have an induction coil of sufficient power to give a spark about the eighth of an inch in length, and I wish to know if I can make a gage for determining the number of pounds a person can hold on it; if so, how? How should I proceed to charge a Leyden jar, or a tumbler of water? Answer: A simple method of constructing an electric gage is to connect one end of a silk thread with the iron wire core of the coil, and have the other end wrapped around a small shaft (a darning needle will do) with a pointer, a fine cambric needle, soldered at one end so as to indicate, on a graduated disk, as the iron core is withdrawn; any gage you may use is to be understood as relative, that is, it is not like pounds pressure, supported by steam. Your machine has not quite sufficient power to charge a jar satisfactorily; connect the outside coating of the jar, with one end of the secondary coil, and bring the other end to within an eighth of an inch of the brass knob.

W. C. V. says: I wish to prepare a battery composed of blue vitriol, copper, porous cup and zinc. 1. Will common sheet copper, such as can be had at tin shops, answer the purpose? 2. After the battery is set up, how long will it be before action commences? Answer: 1. Yes. 2. About eight minutes, or as soon as the solution soaks through the porous cup.

E. B. asks: Is there any such thing as a watch that will tell the distance you walk? Answer: Yes. Watches of this kind are to be had in this city for \$15.

H. says: I had you a specimen of a peculiar sand found in Iowa. It lies on a kind of peat and is mixed with it. What is it and can it be used beneficially as an artificial manure; and if so, on what class of soils? Answer: It is calcareous tufa, deposited from water. We do not think it would benefit the soil.

J. H. C. says: I am running an engine (14 x 22, driving a 54 inch saw) which requires 96 lbs. of steam to drive it properly, which I think is twice too much, as I have run more than double the amount of machinery with the same boiler, but a different engine. The boiler is 32 inches diameter x 24 feet long, with two 18 inch flues. Engine and boiler are in good order. If we work at a lighter pressure, the steam soon runs down. We have no trouble to make steam with saw dust. The engine is only eight feet from boiler, connected by a three inch pipe, but it works more water in cylinder than I like. There is a plain slide valve, and a steam chest on top of cylinder. She lets on steam just before passing her centers. Answer: Try valve and piston, and see if there is no serious leak past either. Take off valve chest bonnet; see if valve has a little lead on steam side, cuts off at about two thirds and does not close exhaust until stroke is nearly completed. If this examination results in discovery of no fault, see if steam and exhaust passages are not choked by faults in the casting. Is it certain that the boiler is all right? A careful examination of that, and the application of an indicator to the engine would be very certain to detect the fault if in either boiler or engine.

H. D. N. asks our price for replying to a question relating to the use of belting. We reply that the subscription price of the SCIENTIFIC AMERICAN is three dollars per year, in advance. We make no other charge, and we believe that we meet with some success in our effort to give our subscribers more than an equivalent for their money. H. D. N. will find his question answered in the article on "Driving Power of Belts," which will be found in the editorial columns of this issue.

P. P., Jr., says: I contemplate building a small boat to be worked with a screw by hand; and my object is to attain as great a speed as possible. I would like to know what size of screw it would take, and how many blades it should have; and if it would make any difference if the wheel would project below the bottom of the boat. The dimensions of the boat are to be as follows: Length of keel 18 feet, beam 2 1/2 feet, depth of hold 1 1/2 feet. Answer: Make the screw as large as possible. There would, in most cases, be found fewer objections to so placing the screw as to project above the water than below the keel. The great objection to the latter plan is the liability to take the ground. We should suppose a screw of 2 feet diameter and 2 feet pitch with either three or four blades would answer, and could be put in.

J. H. H. asks: What is the relative proportion of size of the cylinders of a compound marine engine? 2. I have been informed that there is no way of effectually governing the compound engine, the theory being that the live steam cylinder gives off enough steam to drive the condensing cylinder from 12 to 20 revolutions (the screw being out of water and the engine having only itself to carry) and that it is only after the emergency has passed that the governor begins to act; and then, probably, is the time when the engine requires all the steam it can get. I claim that, by a different arrangement of valves, a compound engine can be made to govern instantly. I have consulted a mechanical engineer on the subject, but although he says he believes there is something in it, yet he does not think that a mere change of position of the component parts of a machine is patentable. What I want to know is this: If I can accomplish a result not before attained, does it matter by what means I accomplish it, in order to make it patentable? Common sense would seem to suggest that, if by simply turning a hitherto useless thing upside down, it could be made of great value, the discoverer of that fact was entitled to profit thereby. Answer: The proportions vary in every individual case. If desirous of obtaining designs, consult some able mechanical engineer who has had some opportunities to learn the proper proportions. A common proportion gives the high pressure cylinder not far from one half the diameter of the larger. 2. We should consider your ideas correct, but can form no idea of the value of the proposed device without seeing it. The problem attacked is certainly a difficult one.

D. H. P. asks: Can sheets of metal, either plain or with numerous apertures left in, 3 feet square or over, and of a thickness of from .001 to .008 of an inch be obtained by the electrolytic process? If so, what will be the time required in making such a deposit, and what will be the probable cost if copper is employed? Could such a sheet of metal be deposited on paper so as to adhere firmly? Answer: 1. Yes. 2. Ten cells of Daniell's battery, to plate the surface and thickness mentioned, would require about two hours. The cost would depend mainly on quantity; no price could be mentioned without a preliminary trial. 3. By rubbing plumbago into the pores of the paper, thereby making it a conductor, and then plating it with copper, we have no doubt but that the metal will adhere as firmly as you may need. Will not gold or silver leaf paper answer your purpose?

N. C. sends three samples of rock said to be rich in silver and cinnabar. Are they of any value? Answer: The specimens received show no signs of either silver or cinnabar.

L. P. asks: 1. Is the strength of wood impaired when the wood is dried by steam? 2. Does a large wagon axle draw more easily than a small one? Answer: 1. Wood consists of carbon, oxygen and hydrogen, the latter gases being in the proper proportion to form water. When in its ordinary state, wood also contains some uncombined moisture which is removed by drying or seasoning. If the process is carried on, whether by steam or otherwise, at a temperature which is not much above 212° Fahr., the drying takes place without injury to the wood. If the temperature is carried much above the boiling point, however, the wood is charred, losing all its water of combination, and only charcoal is left. If this occurs, even partially, the strength of the timber is impaired. 2. The smaller the axle the easier the draft, provided that the bearing surface does not become too small to allow of proper lubrication, thus inducing "cutting" of those surfaces.

S. P. S. asks: What is the largest diameter of the drivers in use on the English locomotive engines, and also that of the American? Answer: The diameter of the largest drivers generally used in England is six feet. The same size in this country.

T. G. G. asks: Could an engine be constructed with two steam cylinders, one in front of the other, and use the same steam twice, once in each cylinder? For instance, let the piston rod run through one cylinder into the other. Then let the steam in at the front end of rear cylinder, and let it pass out through a pipe to rear end of front cylinder, so as to get power twice from same steam before it passes out. As the steam enters the back end of rear cylinder, let it pass through a pipe to front end of front cylinder, etc. Answer: Our correspondent describes a "compound engine." With cylinders of equal size, no more power would be obtained, per pound of coal consumed, than with one alone. If the second cylinder be made larger than the first, as T. G. G. will find them proportioned on nearly every steamer now built for ocean navigation, expansion will occur and economy will be effected. The subject of compound engines is too extensive to be treated of here. Our correspondent should know that Nature never gives anything without receiving an equivalent. The same power cannot be obtained twice from the same steam under any conditions.

W. S. D. asks: How can I remove plaster of Paris after it has set hard in metal sockets without injuring them? Answer: Calcine the plaster by putting the socket in a hot fire.

S. E. M. says: 1. I would like some advice in regard to a steam blower. We have a 25 horse boiler for steam heating, etc. The boiler sets about 10 feet from the chimney, and a 16 inch pipe connects the boiler and chimney. I put a spiral coil of 3/4 inch pipe, with numerous 3/4 inch holes opening upward to create or increase the draft; but it does no good. This coil of 3/4 inch pipe enters the smoke pipe near the top of the boiler. If a jet were carried into the chimney, would it do any good? 2. Could I use a hydraulic press for making fluid extracts from roots and barks? 3. Do you think it good practice to test a steam boiler by filling it full of water and starting a light fire? I propose to test ours so once in a while, unless there is some good reason why it should not be done. Answer: We should expect a jet to work better in the chimney. A jet is never as efficient as a blower. 2. We should not expect a press to work as satisfactorily as the usual method of steeping. Steeping first and the use of the press afterward should extract the juices very completely. 3. Boilers are sometimes tested as proposed. We should prefer heating the water to the boiling point and then using the pump. Water heated under a pressure of 100 lbs. per square inch may reach a temperature 126 degrees above its ordinary boiling point. Should rupture occur, scalding hot water and as much steam as this excess of temperature would suffice to form—that is, about one eighth the total weight of water in the boiler—would be set free to do, possibly, no little damage.

F. S. A. says: I send herewith specimens of formations found in the boilers of the steamship R. R. Cuyler. The tubes were covered with these crystals. Can you tell me of what they are composed? The vessel has been in South American waters off the Pacific coast. Answer: The specimen is an unusually large crystal (considering its method of formation) of gypsum or sulphate of lime, and was derived from the water, which must have been exceedingly "hard."