Notes & Queries

J. R.'s observations on scarlet fever and diphtheria have been handed to a prominent physician for reply.—T. E. is informed that we do not know the article he mentions.—W. H. H. can protect his iron castings from rust by the means described on p. 169, vol. 33.—G. A. C. is informed that writing paper is glazed by rolling it under immense pressure.—J. R. will find recipes for bronzing iron on brass on p. 283, vol. 31.—J. C. G. can raise the pitch of his tuning fork by filing it shorter. It cannot be lowered without lengthening it.—W.H. H.'s idea as to burning steam is a chimera.—A. K. will find a good recipe for indelible ink on p. 129, vol. 28.—C. J. C. is informed that the oxyhydrogen light will probably suit his purpose.—E. W. M. should address the Signal Service Bureau, Washington, D. C.—M. D. K. will find a recipe for a fugitive ink on p. 267, vol. 34. Straw hats can be bleached by the process described on p. 11, vol. 32.—F. A. L. will find that chloride of calcium will absorb the moisture in his refrigerator.—C. K. W.'s idea that machinery runs better at night than in the daytime is perfectly absurd.—C. A. F. will find a recipe for fulminating powder for cartridges on p. 90, vol. 31.—B. F. K. will find a good recipe for ink on p. 250, vol. 34.—A. C. G. will find that the proportions of an induction coil are fully described on p. 344, vol. 33.

(1) M. E. B. says: Please give me a recipe for removing stains from marble table tops, supposed to be caused by lemon juice? A. If the stains mentioned are from lemon juice, they cannot be removed, as the organic acids they contain attack and disintegrate the marble. Try moistening the spots with benzole and covering with hot pipe clay. If this does not remove them, it will be necessary to resort to mechanical means.

(2) F. G. asks: By what rule do the "Farmer" and "Family" almanacs give the times of rising and setting of the sun? A specimen now before me gives, for example, on November 1, sunrise, 6h. 29m.; sunset, 4h. 59m. Now assuming the time for rising to be correct, that time, taken from 12 hours, would leave 5h. 31m. as the correct time of setting. Here is an error of 32 minutes. A. On November 1 the sun is south of the equator 14° 33′, the length of the day 10 hours 30 minutes; one half of this, 5h. 15m. subtracted from 12, would make the sun rise at 0.45, but the sun is fast of true time 16 minutes on this day. This makes him rise at 6.29, and set 16 minutes earlier, 4.59, making the forenoon 32 minutes longer than the afternoon. There are only four days in the year in which the sun is on time, April 15, June 14, August 31, and December 24.

Does the attraction of magnetism vary as the square or cube of the distance? A. There are some cases in which it varies inversely as the cube, but the attraction of terrestrial magnetism varies inversely as the square, of the distance.

(3) C. M. asks: What is the number of threads per inch on the "society screw" of microscopical objectives? A. Fifty-five.

(4) D. H. asks: What color of paper is best to write upon, for a person having weak eyes? A. Green or blue, or an intermediate color, if there is light enough not to tax the eyes, as these colors reflect very little of the heat rays.

(5) E. O. K. asks. 1. Please give me a recipe for making a bright red mortar for pointing a foundation wall? A. Take Spanish brown, dry, and mix in with common lime mortar; color to suit. 2. Would red lead be affected by the lime? A. That you can try by experiment; a day or two would show.

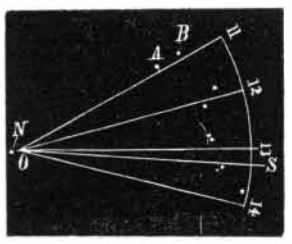
(6) S. P. M. says: What size of paddle wheels do we need on a steamer 45 feet long, and 10 feet wide at the bottom? She is built sharp at both ends, and draws, when loaded, from 14 to 18 inches of water. We have a 10 horse engine to run her, and plenty of power to spare. A. By using 10 feet wheels with your present engine, you might obtain a speed equal to 7 miles an hour, or you might get even better results by using feathering wheels of the same diameter as the present ones, 7½ feet.

(7) J. D. E, says: The flint glass of my telescope is very hazy, having a scum or smoky appearance on the outside, which will not wipe off. How can I remedy it? A. This trouble is quite common with heavy flint glass, and the only way to remove it is by polishing. When it is not very thick it can be removed by polishing with rouge on a piece of chamois leather. If this does not remove it, take a piece of yellow beeswax and make a polisher about one third the diameter of the lens. With this and a little rouge and water the lens may be cleaned. Care should be taken to go all over the glass evenly.

(8) E. C. F. asks: Can you tell how to remove a bad echo from a schoolroom, 26 x 29 feet, with 12½ feet pitch? The teacher's desk is at one end of the room, between two doors, on a slightly raised platform. The stove is a little in front of the platform. A recitation seat runs along the sides of the room, and between are low chairs and desks for nearly 100 scholars. There are three windows on each side, and two in the end opposite the doors. Teachers complain of sore throats and tired lungs after having charge of the room a short time, of a confusion of sounds when the scholars are only moderately restless, and of the great difficulty in rightly locating any noise. The room is so hard to teach in that a partition, an addition, or any reasonable remedy is to be tried if we can learn what will be best. A. It probably will be found that the difficulty in this case arises from the bad shape of the room, it being nearly square. It has been found that long and narrow rooms, with the speaker at one end, have been the best for the voice. The auditorium of the Academy of Music, which is the principal opera house of this city, is a good example of a room of this kind. If you should partition off a small room in the corner upon each side of the platform, you might help it: say 9 feet wide and 12 feet long, triangular, with the partition you insert curving outwardly towards the platform upon a radius of 13 feet.

(9) F. H. N. says: In the house I live in is a well, running down from the skylight, 8 feet x 3 feet in dimensions, for the purpose of conveying light and ventilating some rooms which have no opening on the street, and which, otherwise, would be dark and close. Now it is a great source of annoyance that all conversation on the fourth floor can be heard in the lower rooms, and *vice versa*. Can you tell me of any means or method that may be employed by which this may be obviated? Could it not be done by means of crossed wires, that is to say, wires crossing each other at angles of about 45°? A. We have no information that would warrant the success of such a plan. Can you not put in a horizontal sash, and procure means of ventilation in some other way?

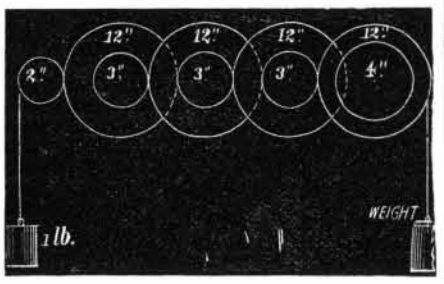
(10) C. H. asks: How may I find when the north star is on the meridian, by reference to the stars in the Dipper? A. The line, N S, represents the meridian, N the north star, O the north pole, and the lines O—11, o—12, etc., are 1 hour apart, and show sidereal time. A E are the Pointers. It will be seen that the north star and



the next to the last star in the handle of the Dipper are on opposite sides of the poles, so that when a plumb line will bisect both, they indicate the true meridian very nearly. They now pass the meridian between 5 and 6 o'clock.

(11) W. W. L. says: About four years ago, I made an upright refrigerator; but not liking the metallic taste which a metal lining gives to food, I left it unlined, but very foolishly varnished the wood inside, in consequence of which nearly every article of food placed in it tastes of the varnish. I have tried scraping and scrubbing the wood, but the smell and taste of varnish still remain. Will a coating of shellac remedy it? If not, what will? A. Coat the interior evenly with melted paraffin. It should be applied rapidly with a good brush, and is perfectly tasteless and inodorous.

(12) W. C. A. says: The inclosed drawing will show you four 12 inch gear wheels working into 3 inch ones, the last one to the left being a 2 inch. The cord at the right runs off a drum 4 inches in diameter. What amount of weight will be required to lift the 1 lb. at the left, and what is the rule for calculating the power of gears



or the amount of weight required to move them? A. Disregarding friction, the power and weight are to each other in the inverse ratio of the distances passed over by each in the same time. 2. Is there any rule for calculating the power of coil springs? A. The power of a coiled spring is the product of the force with which it tends to unwind multiplied by the distance passed over by the point of application of the force in a given time.

(13) A. I. asks: Can you recommend with a certainty of success some inexpensive formula to preserve cider? Your recipe as follows: "To 1 barrel of new cider, add ½ part sugar and 2 handfuls of fish sounds to clarify. Let stand two weeks in cool place, then rack off into a well washed cask or barrel, and add from 1 to 2 dozen whites of eggs; let stand another two weeks, and then rack off into another barrel. Add finally 2 gallons of whisky, stirring well, then bottle. This cider will keep sweet through the summer." What do you mean by ½ part sugar? A. The recipe as given is a good one, with the exception that the proportion of sugar should have been stated more definitely as about 3½ lbs. to the barrel. If the liquid is bottled, the bottle containing it should first be placed with loosened stopper in a vessel of water, the temperature of which should then be gradually raised to about 180° Fah. and the bottle tightly stoppered and allowed to cool.

(14) F. B. L. asks: What can I put fruit up in so as to preserve it in its natural form and color? I want to carry the fruit round as samples. A. Try a weak solution of good carbolic acid in alcohol.

(15) J. H. G. asks: 1. How may I distinguish pure rubber? A. Pure rubber is of a dark, semi-transparent nature, quite elastic, but easily indented with the teeth; in hot water it swells up and becomes quite plastic. 2. How is rubber dissolved in a liquid, and how long does it take? A. When plastic it should be placed in the solvent; hot naphtha or benzole is preferred, the rubber having been previously cut into as small shreds as possible. In this condition it swells up very considerably and partially dissolves in a few hours. In order to obtain a rubber cement, the solution, together with the softened pasty mass, which should be well stirred and kneaded during the operation, may be evaporated down over a water bath, until of the proper consistence.

(16) Mrs. W. C. A. asks: 1. Is there any danger of incurring diseases from using water from a well which has not been used for about 1 year? A. If the water contains any notable quantity of organic matter, there is. 2. Is there any way to purify the water if it is not fit to use? A. One of the best remedies is to keep the water running for some time before attempting to use it. The addition to the water of a quantity of finely crushed, well burnt charcoal would also be advisable under the above circumstances.

(17) W. R. B. says: I have some vinegar which I cannot clarify. I have tried sand and charcoal in a barrel, but it does not clear it. Would you advise anything in preference to a charcoal filter? A. Try the following: Warm some finely crushed charcoal or bone black, throw this into the vinegar and stir occasionally for about 24 hours; then draw off the vinegar, mix with a quantity of common (clean) paper pulp, and filter through a bag of fine linen.

(18) A. B asks: Please give me a recipe for making a polish for wooden turned work, to be used on the work while in the lathe? A. Try a mixture of boiled oil and turpentine, well rubbed in with pieces of rag. 2. Is there any other method of bluing iron or steel than by heating it? A. Dissolve 4 ozs. hyposulphite of soda in 1½ pints of water, and then add a solution of 1 oz. acetate of lead in 1 oz. water. Place your articles in the solution, and heat to the boiling point. Your articles, if of iron or steel, will be blued.

(19) A. B. says: We have two engines, 7 inches bore and of 12 inches stroke, attached to one shaft. They have reversible link motion, and are each provided with the ordinary slide valve. They make 175 revolutions per minute with a pressure of steam of 85 lbs. to the square inch. One of the engines has too much lead when on either center. We have tried several plans to shorten the stroke of the valve, but without any success. Will you please give us some information? A. You must take the lead off your valve by setting the eccentric back

(20) W. B. asks: 1. Can charcoal be obtained in a liquid form for commercial purposes? A. There is no solvent for charcoal. 2. How can oils be filtered through charcoal, and the oil residuum remaining in the charcoal be extracted and saved? A. Digest the charcoal with the adhering oil in bisulphide of carbon. The oil may be recovered by distilling off the volatile bisulphide in a suitable retort, at a gentle temperature

(21) J. C. ask: I have an iron pipe conveying water from a cistern for culinary and other purposes. The water becomes so highly impregnated with iron as to render it quite unpalatable. A. Add a little clean lime water (experience will teach you the proper quantity) and filter through a sand and charcoal tub.

(22) J, S. F. asks: How is the lime water mentioned on p. 7, vol. 34, prepared? A. Digest a quantity of good quicklime in pure water for some hours, with occasional shaking; allow to settle and draw off the clear transparent liquid without disturbing the residue. It should be kept from contact with the air when not in use.

In steam or vapor baths, how is the steam handled so that the heat does not affect the person? A. The steam simply imparts its heat and a portion of its moisture to the air by actual contact.

1. The water here (among the San Fernando Mountains, Cal.) is of several kinds. Some springs contain small quantities of petroleum, others alkali, others sulphur, iron, and alkali. The ground over which the latter springs run, and boards with which the water comes in contact, become heavily coated with a bright yellow substance like rust; while on the surface of the surrounding soil, a thick white coat of alkali forms. Can anything be done to such water to make it fit to drink? A. We do not think it would be practicable under the circumstances. 2. One spring or well 8 or 10 feet deep, by the side of a now dry stream, has no bad taste, but the water makes the excrements almost black, and causes diarrhœa. What does the water contain, and what is the yellow substance mentioned? A. It is probably due to the large quantity of iron and sulphuretted hydrogen it contains. The deposit probably consists chiefly of the hydrated sesquioxide of iron

(23) A. H. says: In what should I boil cider so as to make a good article, free from foreign color or taste? Would an iron or copper kettle do? A. It would be better to use a tin vessel or one of cast iron, porcelain-lined. The vegetable acids corrode both iron and copper.

(24) F. D. H. asks: Are the connecting rods of the locomotive at the Centennial, built by apprentices, of the character shown in Fig. 1, p. 490, SCIENTIFIC AMERICAN SUPPLEMENT, that is, with simple eyes, without means provided for taking up the wear? A. No.

(25) C. W. S. asks: What will remove deeply set tea stains from an oak table? A. Try a little ether and alcohol.

(26) A. F. G. says: 1. I have 500 lbs. leaf tobacco, of such a bright color that cigars made with it find no acceptance. What ingredients should I use to make a compound with which to give the cigars a deeper color? A. We understand that in similar cases it is a practice of some manufacturers to make an extract of the stems and other waste of the leaf by boiling the same in water, and afterwards concentrating the solution by evaporation until a very strong liquid is obtained. To this is added the various essential oils, etc., the precise nature of which is strictly kept from the public as a "trade secret." The leaves to be colored are then dipped in the preparation and dried until of the required shade. 2. I have also some very good Pennsylvania tobacco to which I would like to give the aroma of Havana tobacco. How should I make a preparation of Havana tobacco that the Pennsylvania leaf can be darkened with, that would give the tobacco an Havana taste? A. Various means similar to that given above are constantly employed, with varying success to impart to baser leaves the peculiar flavor of Havana tobacco; but we are not prepared to give to the public the precise methods.

(27) N. says: I use a copying ink pencil (made of aniline, I suspect). Can you inform me of the quickest and easiest mode of copying letters written by this pencil without using a press? A. Try thin paper moistened with a little dilute gum water and alcohol.

(28) E. C. B. says: I frequently have to clean watches which have fallen into the sea, and the steel parts get rusty. I have tried putting them in soda water and then soaking in oil, but all to no use; for after 2 or 3 months the rust will reappear as bad as ever. Will you please tell me the best remedy? A. Try a little very dilute sulphuric acid. After removal from the acid, wash