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J. G. H. can keep his cistern water fresh by the means described by M. A. G. on p. 156 of our cur-rent volume. - J. P's mineral specimen has not reached us.-J. H.C.'s query as to an amalgam is not intelligible -F. H. F. will find a description of the Wilson process of making steel direct from the ore on p. 35, vol. 30.-C. A. B. does not send sufficient data as to calculating the power of a locomotive engine.-C. will find direc tions for waterproofing cloth with rubber variable on p 282, vol. 29.—A. H. Y. will find directions for making nickel salts on p.187, vol. 28.-C. P. H. will finds full description of the first locomotive in Smiles' "Life of George Stephenson, "-J. C. T.'s wife will find a de scription of painting on glass on p. 123, vol. 30.-F. G. will find a recipe for liquid glue on p. 250, vol. 30, and an explanation of the pressure of the wind on p. 878 vol. 30 - X. X. X. will find directions for polisbing meer schaumon p. 155, vol. 31.-S.H.S. should consult a soap boiler.-N.G. N. should apply to D. Van Nostrand for Auchincloss' book on "Link and Valve Motions."-W. N.can galvanize castings by the process described on p. 59, vol. 24.-C. D. E. can kill ants by the means de scribed on p. 234, vol. 27.

(1) A correspondent says: I have read with much interest the very able articles on "Practical Mechanism," written for your valuable paper by Mr. Rose; and find that they contain much information, useful not only to apprentices but also to men who have worked for years at their trade. But I beg leave to dif fer from Mr. Rose on some points of the article pub lished under date of August 15, in which he says: "The only clearance necessary is to ease off the top of the teeth backwards from the cutting edge, which will give the teeth sufficient clearance to make them cut clean and leave the sides of the thread to fit the thread being cut." I maintain that it is necessary to have clearance on the top, bottom, and sides of the teeth of a tap, in order to make it cut freely; otherwise it will jam its way through instead of cutting. I think that all prac-tical machinists, who have used taps with clearance only on the top of the teeth, as proposed by Mr. Rose especially for tapping steel, will agree with me on this point; such taps require as much power to turn them back as to force them in, and will frequently snap off in the hole. In another part of the article, Mr. Rose says: Three flutes are all that are necessaryt o small taps, which leave the top stronger and less liable to wobble especially in holes that are not round, than if it had four flutes. Taps of a larger size may have more flutes, but the number should always be an odd one, so that the tap may do its work steadily." My experience has been that, for a hole not round, a tap with four or more

£ represents the outline of a hole not a true circle. B is a section of a tap with three flutes. When in the position shown, the point, A, does not touch, and the diam-eter of the hole being greater across C D than where the other two flutes, E. F. of the tap are cutting, the tap will be forced back until the point, A, touches, and each tooth in succession, as it comes around, will drop into the same place; thus the tap will follow the irregu larities of the hole. A spiral form of flute is the best. A. Taps will cut freely and clean without having clearance on the sides or bottom of the thread, as evidence

(2) F.C.M.asks: What difference is there in ensure of the power disengaged by the action of dilute acid on the metallic plates, as in a cell battery, and that evolved by the friction machine commonly used for medical purposes? A. There is still much uncertainty as to the real effects of electricity on the human system, the cases in which it is to be applied, and the pest mode of applying it. Practical men prefer the use of currents to that of statical electricity, and, except in a few cases, they prefer discontinuous to continuous currents. There is, finally, a choice between the current of the battery and that of induction. Electrical currents should not be applied in therapeutics without a thorough knowledge of their various proper-ties. They ought to be used with great prudence, for their continued action may produce serious accidents. Matteucci, in his lectures on the physical phenomena of living bodies, expresses himself as follows: "In com-mencing, a feeble current must always be used. This precaution now seems to me the more important, as I did not think it so before seeing a paralytic person seized with almost tetanic convulsions under the action of a current from a single element. Take care not to continue the application too long, especially if the current is energetic. Rather apply a frequently interrupted currentthan a continuous one, especially if it be strong;

(3) G.R.McC.asks: Is there any simple meth-od by which glass and china ware may be marked with a name or initials? A. Glass ware maybe indeliblymarked by means of a diamond, or very hard steel.

but after 20 or 30 shocks at most, let the patient take a

few moments' rest."

(4) W. H. M. asks: What is the meaning of coldpressedcastor oil? A. Castor oil is made by press ing the castor oil bean in a cold or warm state. When pressed sold, it is called cold pressed castor oil.

What work on chemistry do you consider the best? A. If you desire an elementary work, we would recom-mend Bridge's edition of Fowne's "Elementary Chemistry." A more advanced work is Miller's "Elements of Chemistry.'

(5) C.O.D. asks: 1. How can I keep the head a bacjo from becoming dry and wrinkled? With what can I clean the fly dirt off without injuring the head? A. Try a small quantity of powdered rosin. 2. Doesit damage the strings to always keep them in tun ing order, and to leave the bridge always in a standing condition? A. Yes. How can I remove fiesh worms from the face? A.

Bathing the face with bay rum has been recomm but perhaps the better recipe would be to abstain from intemperate diet and eat only plain food.

(6) I. I. Y. asks: 1. What can I use to hardén butter in summer instead of ice? A. Numerous devices for the production of a low degree of tempera ture by artificial means have been fully described in the SCIENTIFIC AMERICAN, MADY of which might be made applicable to your purpose. 2. What can I use to color hutter vellow ? A. Butter is often artificially colored by aid of annatto, turmeric, or infusion of calendula ^lowers.

(7) C. H. M. says: You stated recently that the artificial employment of electricity would aid sometimes induce, and accelerate the crystalization of substances. Please explain, more specifically, under what arrangement or circumstances this is the case, and to what extent. A. Every metal is thrown down in a crystaline state, when there is no evolution of gas from the negative plate, and no tendency thereto.

(8) S. H. G. asks: Do the born blind ever "see stars," resulting from a blow or strain? Pressure with the thumb and finger on the closed cyclids can be made to produce sensations of color. These tints, in certain conditions of the nervous system, are exquisite ly beautiful, and have no connection with the memory They are simply colored pictures evolved out of the darkness by mechanical pressure upon the ball of the eye. Are the blind susceptible of this? If so, they may have ideas of color without having ever seen a ray of light. A. Violent concussion will produce 'stars" even in a blind person. You could obtain bet-teranswers to the remainder of your question by con sulting a person devoid of sight, than from us.

Can the locust crop out west be utilized for stock, or otherwise? A square acre of solid living meat ought to be worth something in this age of the world. A. As far as we know, this has not yet been done.

(9) O. H. asks: Can you give me a recipe formaking gelatin, such as is used in making moids for molding plaster of Paris? A. Gelatin is formed by the action of boiling water on white fibrous tissue, cellular tissue, the skin, organic constituents of bone, etc. When the solution is evaporated to dryness, it leaves the gelatin as a brownish yellow mass. Common glue is an impure form of gelatin, and is generally employed for making such molds as you speak of.

(10) H. asks: Does the color black attract heat? A. A black substance is one which absorbs all rays of light which fall on it, and converts them into heat, with a corresponding rise in temperature.

(11) F. H. asks: In a discussion on the ad ance of chemistry, I stated that one chemist had suc ceeded in making alcohol from its elements. On being asked what the substances used were, I namedgraph ite, hydrogen, and oxygen. One gentleman objected and said graphite was not an element. I insisted if was. Is graphite an element in the sense in which l used it in the discussion? A. No. Graphite, though a form of carbon, is not pure C, as most specimens con tain iron. Instead of graphite, you should have said carbon. (12) A. D. B. says: I have a large barometer hanging on the wall; just under it, about 4 feet away, are the steam pipes which heat the room. As the barometer does not indicate rightly, can the steam pipes underneath have any influence on it? A. In all observations with barometers, whatever be their con-struction, a correction must be made for temperature. Mercury contracts and expands with different temperatures ; hence its density changes, and consequently the barometric hight, for this hight is in the inverse ratio the density of the mercury; so that, for different atmospheric pressures, the mercurial column might have the same hight. Accordingly, in each observation, the hight observed must be reduced to a determinate temperature the choice of this is quite arbitrary, but that of melting ice is always adopted. By the aid of tables, which have been prepared for this purpose, the hight of the barometer is readily reduced to zero.

(14) E. B. asks: Does each point on the circumference of a wagon wheel, as it to come to a perfect rest? A. Yes.

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(15) T. A. J. says : In silver plating German silver spoons, the battery seems to work well; but when I come to burnish the spoons, the coating peels off. Can you tellme how tomake a good job of it? A. Place the articles to be plated in strong lye water to remove all grease, and then for a moment in dilute sulphuric acid. Wash inclean water and place immediately in your bath. Careshouldbe taken to handle the work as little as possible in placing it in the bath.

(16) C. H. M. says: We have a hand car worked by a perpendicular rod from a walking beam. Will the carrunany easier with this power applied at theend near the perpendicular rod than at the other end? A. No.

(17) T. C.W. asks: Which is the coldest ice 1) Inches thick with snow on one side of it, or ice 26 inches thick, solid? A. The ice which is made from the coldest water will last the longest. 2. Does not lake ice frozen in or near Chicago last longer in a water cooler than ice frozen in Kentucky? A. Yes.

When water is boiling, can it be made hotter by having a heavy fire under it? A. No. What is that liquid which barbers use in shampeoing?

A. Borax is commonly the principal ingredient of the compound.

Can a locomotive be constructed to run 75 miles an hour? A. It is doubtful whether the locomotive could be kept upon the track at such speed.

(18) F. D. B. asks: Can I make a miniature electric machine with a glass plate only 1½ inches in diameter? Will it produce electric sparks in fifty (or less) rapid revolutions? A. If perfectly constructed. electrical action would undoubtedly take place, as in larger machines; but on so small a scale, we doubt much if any visible phenomena would occur. The pres-ence of electricity might be determined by the use of a delicate electrometer.

(19) B.A. J. says: I have a wire connection between a waterwheel and my house, which is 500 feet distant. Do the wires increase the danger of the house from lightning? A. Yes. You should have an extenion from the wire into the ground, and the terminal should have an enlarged surface in the ground. As to your other question, try the experiment

(20) H. H. asks: How are carbon cylinders or plates for galvanic batteries made? A. Powdered charcoal is put into a mold, then plunged into a concentratedsolution of sugar, after which it is dried, and exposed to an intense heat in a covered vessel. As to your ther queries, address a manufacturer.

(21) J. McC. says: I am running 4 hydrau-ic pumps, using linseed oil for getting on the pressure The diameter of plunger is % inch, with 5% inch stroke. Each pump has a receiving valve and check valve. The openings in pipes are % inch, with an average length of about 10 feet. Safety valve 1 lb., lever 2 lbs., with a weight on it 30 ibs ; distance of fulcrum 11/2 inches; distancefrom center of safety valve to where the SO lbs. weightisfastened on, B% inches. Opening under the safety vaive, % inch. The hydraulic press cylinders are 14% inches in diameter. How many lbs. pressure does ttake to raise the safety valve off its seat, so as to allow the oil to escape through an opening above the seat? How many lbs. pressure are there on the 14% inches press cylinder, and how many to the square inch when the pump raises the safety valve, loaded in the above way, off its bearing? A. You do not send quite enough data; but the pressure is about 2,500 lbs. per square inch when the valve is lifted.

(22) A. P. S. asks: What publication would be of the most use in helping me to run an engine? A. We donotknow of any work that will aid youvery much. You will find many useful hints in Bourne's "Catechism of the Steam Engine." We may add that a person who learns torun an engine by reading a book will have to learn it over again when it comes to the actual practice. At least, this is true in the present con dition of the literature of the subject.

(23) J. H. G. says: I have a lead lined tank, the seams of which are soldered and are corroding. Please tell me what kind of varnish to use to prevent this, and also to prevent injurious effects of lead in newlylined tanks. The varnish must be insoluble in water. A. Tinning will be the best resource.

(24)W.E.B.says: In your issue of August 29,

(a) (i) (i) (i) (ii) (iii) (i of the latter, I think the following much more simple in practice : $C=2R \sin \frac{1}{2}A$.

(25) W. M. K. says, in reply to B. H. S., who states that his steam pipe is 5 inches, and his connection from the boilers to the steam drum Sinches in diameter: If you make your connections to the steam drum 6 inches, you will have no more trouble. It wil equalize the pressure in the three boilers. [We believe that the best way to fix the boilers is as we have already indicated: Arrange them so that the water cannot be forced from one into the other.-EDS.]

(26) H. L. M. says, in answer to I. S.N., who asked how to straighten a rifle barrel : Take two pieces of hard wood, one about 30 inches long and thick enough to stand the pressure required. Take off about half an inch of the thickness in the middle, leaving it fullon the ends. Put your rifle barrel with its hollow sideagainstit. Then take the other piece of wood,3 or 4 inches long and about 14 inch thick, and put it on the other (the round) side of the barrel, and then put the whole in a strong vise, and screw up till the barrel is straight.

flutes is better than one with three. The engraving D 637

Stetson, 23 Murray St., New York.

Gas and Water Pipe, Wrought Iron. Send for price list to Balley, Farrell & Co., Pittsburgh, Pa.

Forges-(Fan Blast), Portable and Station ary. Keystone Portable Forge Co., Philadelphia, Pa. Brown's Coalyard Quarry & Contractor's Ap-paratus for hoisting and conveying materials by iron cable, W. D. Andrews & Bro., 414 Water St., New York.

For Solid Emery Wheels and Machinery send to the Union Stone Co., Boston, Mass., for circular

Lathes, Planers, Drills, Milling and Index Machines. Geo. S. Lincoln & Co., Hartford, Conn.

Bydraulic Presses and Jacks, new and sec ond hand. E. Lyon, 470 Grand Street, New York.

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in the celebrated Whitworth taps. If the teeth have clearance on the sides, the cuttings are apt to jam the top in turning it back. Again, a tap without clearance will back out as easily as is compatible with a closely fitting thread. A tap with three flutes only has more of the circumference of the thread guiding it in the hole and hence is steadier in using and less liable to wabble or to follow any inequalities in the configuration of the hole. A spiral form of flute is difficult and expensive to cut, and must be sharpened by hand instead of by the much more rapid and desirable method of the emery

(13) H. W. SAYS: I am told that a 1 inch beit running at 1,200 feet per minute will transmit one horse power. I am using a 4 inch beit. Am I using 4 horse power? A. There have been careful experiments made which show how much power a belt will transmit under average conditions; but it is difficult to say how much a beltdoes transmit, in any particular instance, without a test. See p. 257, vol. 28

(27) C. B.says, in answer to T.S.S. who asked to wooden linings to locomotive drive wheel tyres : as to Locomotive drivers do sometimes have linings of wood peneath the tyres. According to a recent method the wheel is cast with a number of projections, like teeth, distributed at short and regular intervals on the periphery. Into the spaces between these teeth are driven blocks of wood somewhat thicker than the length of theteeth.and over these blocks the tyre is shrunk on.

A.McQ. says, in reply to G. W. S., who asks if there is any device for taking steam out of a boller by a tube, and conveying it under the grates of the fireplace to keep the fire down when the engine is stonged : In some steam fire engines, a small tube from the upperpart of the boiler conveys steam and discharges it over the top of the flues for the purpose of checking or extinguishing (as the case maybe) the fire in the fire box.

(29) J.A.M.says: To soften the tone of a vio lin, string it up to the required pitch; take a small gum elastic band, and make it fast to one side of the violin