

"To Mechanics."—When needing Twist Drills, ask for "Standard," or send for catalogue to Standard Tool Co., Cleveland, O. See page xi., Export Edition.

Astronomical Telescopes, from 6" to largest size. Observatory Domes, all sizes. Warner & Swasey, Cleveland, O.

Notes & Queries

HINTS TO CORRESPONDENTS.

Names and Address must accompany all letters, or no attention will be paid thereto. This is for our information, and not for publication.

References to former articles or answers should give date of paper and page or number of question. Inquiries not answered in reasonable time should be repeated; correspondents will bear in mind that some answers require not a little research, and, though we endeavor to reply to all, either by letter or in this department, each must take his turn.

Special Information requests on matters of personal rather than general interest, and requests for prompt answers by letter, accompanied with remittance of \$1 to \$5, according to the subject, as we cannot be expected to perform such service without remuneration.

Scientific American Supplements referred to may be had at the office. Price 10 cents each. Minerals sent for examination should be distinctly marked or labeled.

(1) P. L. asks (1) the best way to kill reptiles, without disfiguring them. A. Use chloroform. 2. The proper strength of the alcohol to preserve the same in? A. A diluted alcohol, about 40 per cent, is used at first, and in time the strength can be increased to 80 or 90, as may be deemed necessary.

(2) E. P. M.—Silver or any metal should not be hammered to the extent to show cracks without annealing. Heat to a low red, allow to cool until it loses the heat color, and plunge in water. To remove solder coloring, you must refinish. You should use an alcohol flame with your blowpipe.

(3) H. W. F. asks: 1. What can I use to prevent Russian stove pipe from rusting? A. Such pipe with ordinary care should not rust; perhaps a little application of plumbago would be good. 2. What kind of blacking or polish can I use to make it look like new? A. Take of:

Asphaltum.....2 pounds. Boiled linseed oil.....1 pint. Oil of turpentine.....2 quarts. Fuse the asphaltum in an iron pot, boil the linseed oil, and add while hot. Stir well, and remove from the fire. When partially cooled, add the oil of turpentine. Some makers add driers. 3. What will take the rust off the pipe? A. Dip the pipe in a solution of one part sulphuric acid and ten of water, and then immerse in a bath of hot lime water; finally rub with dry sawdust.

(4) E. M. N. desires (1) a recipe for making shaving cream that can be used without water. A. Melt 20 pounds of lard in a steam bath at a temperature of 212°, and then letting 5 pounds of caustic potash lye of 36° Baume run in very slowly during constant stirring with a wooden paddle; when the paste becomes thick, 5 pounds more of lye are added in the same manner. After several hours' stirring, the mixture becomes firm, and is finished. It is then transferred to a mortar, and triturated until the soap becomes perfectly even throughout, and assumes a pearly appearance. Attar of almonds is the perfume for almond cream, and attar of rose for rose cream. They are dissolved in a little alcohol, and added during trituration. 2. A recipe for making a shampoo mixture? A. Salts of tartar 4 ounces, pulverized borax 4 ounces, soft water 1 gallon; mix and bottle. 3. Something to make the hair grow on the face? A. Cologne 2 ounces, liquid hartshorn 1 drachm, tincture of cantharides 2 drachms, oil rosemary 12 drops, lavender 12 drops. Apply to the face daily, and await results.

(5) W. E. H. writes: I want to use the exhaust steam from a twenty horse engine for heating, or to aid in heating, a factory. What are the best methods now in use for that purpose? A. You may heat your factory with great economy by means of the exhaust steam flowing directly into coils of 1 inch or 1 1/4 inch iron pipe placed along the walls or overhead. As a rule, make the inlet or connecting pipe nearly as large in area as the areas of all the pipes in the coil. Have the coils so laid that they will drain the water of condensation in the same direction that the steam moves. Also vent the coils with a pipe equal in size to one of the coil pipe. Vent may go directly to roof, or you may join all the coils in a common vent. By making the entire system equal to or larger than the area of the exhaust pipe, you may close the exhaust with a valve and carry the whole exhaust through the heating pipes. Or by using a back pressure valve on the exhaust pipe, you may control the steam in the coils.

(6) R. S. M. writes: Thirty-six rods, with 7 foot fall, brings water to my house from a fountain 20 feet diameter, 5 feet deep, surface of water 2 1/2 feet over strainer. In winter it runs continuously, but in warm weather stops every few days, from the accumulation of air in the pipe. Can you explain the cause? The bottom of the fountain is porous clay, and quite often bubbles of air may be seen to rise. Does air accumulate in the water by this means, and thus enter the pipe? A. If your pipe is a siphon, and exposed to a warmer temperature at its apex than at the fountain, air will have a tendency to become liberated under the decreased pressure, and accumulate in sufficient quantity to stop the flow; while in winter the exposure of the siphon to lower temperature will retain the air combined with the water, and make the flow permanent. The bubbles that you speak of are probably marsh gas, or sulphureted hydrogen, arising from decomposition at the bottom of the fountain. These gases may be partially or fully the cause of stoppage in the siphon flow.

(7) A. O. asks if it is any benefit to a yacht's coil boiler to fill it with crude petroleum while she is hauled up for the winter; what effect will it have on the iron? A. It will have a preserving effect

upon the iron, and is probably the best way to keep such a boiler over winter; we are informed the Stiletto's boiler is to be thus treated when she is laid up for the winter.

(8) C. J. C. asks how to construct a brick wall partition (tenement houses) so as to prevent noise from one house being heard in other. Will a hollow wall do it? A. You may deaden sound between houses or apartments by hollow walls or furring off, and lath and plaster on both sides of a solid wall. Solid walls plastered directly on the brick are good conductors of sound.

(9) F. B. S. writes: I have a forge with large bellows with straight blast (horizontal). Can I not fix some kind of small cupola over the tuyere so as to melt cast iron to make small castings, say 12 or 15 pounds weight? A. It is considered impracticable and unprofitable to make iron castings by the use of a forge fire or bellows; 10 or 15 pounds of cast iron may be melted in a crucible by making a small brick stack over a forge fire. A small cupola should be fashioned in proportion to those in use in foundries, which we advise you to visit.

(10) C. H. P. asks: What substance other than tin and lead ashes can be melted with old glass to give it a white, opaque appearance? A. The white opacity of glass is due to the use of either arsenic trioxide, tin dioxide, lime phosphate, powdered talc, or cryolite. There are no recent books on glass manufacture in the English language. The article on glass in "Spon's Encyclopedia of the Useful Arts" is one of the best authorities that we can recommend. We can send the number containing it for 75 cents.

(11) E. B. O. writes: In SCIENTIFIC AMERICAN, No. 11, page 170, you give a mixture for gilt-coating metals. Will you please state: 1. If the mixture is thickened to a paste, or thicker, with the chalk and cream of tartar? A. It is made into a paste. 2. Can the coat be increased in thickness by continued rubbing? A. Not to any extent. 3. Will it crack or peel off if too thick? A. The peeling off depends upon the cleanliness of the article to which the paste is applied. 4. Will it wear off quickly if handled or carried in the pocket? Will it tarnish quickly, and if so can it be brightened except by rubbing with the mixture? A. The wearing off and tarnishing of the coat is entirely a matter of usage. Under any circumstances this process cannot at all be favorably compared with the electro-gilding by means of the battery. 5. Is it expensive? I am handling cutlery—plain steel and silver, and nickel plated. A. The expense is slight. The chloride of gold is the only expensive ingredient of the mixture. 6. How can I best keep it from rusting and tarnishing? A. Coat with paraffine.

(12) L. E. T.—A well constructed ice boat, on good ice, will sail much faster than the wind. Probably a wind velocity at rate of thirty miles per hour would give the boat a speed of two miles per minute, the boat and ice being in best condition.

(13) L. K. asks: 1. What is the composition of Babbitt metal? A. Add to 4 pounds of melted copper 12 pounds of Banca tin. Introduce it gradually, then add 8 pounds of regulus of antimony and 48 pounds more of tin. 2. How is phosphor-bronze prepared? A. A small quantity of phosphorus is added to an alloy of copper and tin. The phosphorus is pushed down into the melted alloy by means of an iron tube. Great care must be exercised in this operation, as well as in handling phosphorus generally.

(14) R. H. M. asks as to how porous cells are made. A claims that they are made the same as flower pots. B claims they are made with two kinds of clay. I claim they are made by mixing sawdust with the clay, leaving it porous when burnt. A. They are simply unglazed pottery.

(15) N. D. W. asks how new rubber rolls are put on clothes wringers. What is used for cement and what material is used for filling old rolls? A. The unvulcanized rubber in sheets is rolled tightly around the iron cores. The material being soft or tacky, sticks together. The roller is then put into an iron mould and pressed tightly, so that the iron core or spindle will be forced to the center. The whole is then put in the steam oven and vulcanized. Rubber cement is used for mending old work. It may be had from the rubber dealers.

(16) W. P. F. asks: What are the metals on which ammonium hydrate has no chemical action? A. It has practically no chemical effect upon any of the common metals.

(17) F. V. W. asks: What is good for sore and painful bunions? Is there any permanent cure for them? A. Bunions result from pressure and irritation by friction. This frequently causes a permanent enlargement of the joint, which it is difficult if not impossible to remove. The treatment for corns applies also to bunions, for removing the soreness; but in consequence of the greater extension of the disease, the cure is more tedious. When a bunion is forming, it may be stopped by poulticing and carefully opening it with a lancet. Gezow's corn cure consists of:

Salicylic acid.....30 grains. Ext. Cannabis indica.....10 " Colloidion..... 1/2 ounce. Mix.

(18) R. A. D. asks how to clean kid gloves, so as not to injure them? A. Stains may be removed even from the most delicately colored kid gloves by suspending them for a day in an atmosphere of ammonia. Provide a tall glass cylinder, in the bottom of which place strong aqua ammonia. Be careful to remove from the sides of the jars any ammonia that may be splattered upon them. Suspend the gloves to the stopper in the jar. They must not come in contact with the liquid.

(19) O. H. asks: Can the rear pair of driving wheels of a locomotive railroad engine be turned end for end, and rods connected when in perfect quarter, and, when so changed, will the engine operate with former perfection? A. There will be no difference in the action of the engine, provided all the bearings fit, as you will find by marking a spool at the crank

pin point, and turning it over and around to bring the pins to the same position.

(20) F. J. C. desires the formula for a cleaning and scouring compound which, when prepared, has the appearance of a large white ball. A. The following is the composition of a scouring ball which is useful for many purposes: Dissolve some good white soap in alcohol, and mix with it the yolks of four or five eggs; add gradually a little spirits of turpentine and sufficient fuller's earth to make the mixture into balls. To remove a stain, wet the spot with soft water, rub it with a ball of the above composition, then rub the cloth and wash out.

(21) E. C.—The only means of determining the strength of tobacco as a cure for scab in sheep would be by chemical analysis. Such a process would be too complicated for you to use.

(22) B. G. P. asks: What power in pounds can the average locomotive freight engine exert on its drawbar on a favorable track? Do both engines give a power there together, or is only the power of one side of the locomotive applied at a time? A. For the locomotive, about 5,000 pounds, average of both engines. Both engines add their individual power to the locomotive.

(23) W. R. T. asks: Which is the best receipt for cleaning smoke off of tile? A. If the smoke cannot be washed off with a proper soap and water, it is probable that the heat has been sufficiently high to incorporate the carbon with the glaze, whence it could not be removed without destroying the surface.

(24) J. L. asks: What material is used at the manufacturers for dressing ladies' white dress goods, especially jaconet and Swiss muslin, also how the dressing is applied? A. Take 1 part crystallized carbonate of soda; 4 to 6 parts each white wax, stearine, and pure white soap; 20 parts carbonate of magnesia or fine Paris white; 40 parts potato starch; and 160 parts pure wheat starch. Boil these together with sufficient water to make 1,600 parts altogether. A little ultramarine may be added to counteract the yellow tint of linen which is starched with this preparation, passed between rollers, and dried.

(25) J. G. H.—To remove old paint and varnish from wood and iron: Mix one part by weight of American pearl ash with three parts quick stone lime, by slaking the lime in water and then adding the pearl ash, making the mixture about the consistence of paint. Lay the above over the whole of the work required to be cleaned, with an old brush; let it remain 14 or 16 hours, when the paint can easily be scraped off.

(26) J. E. S.—We recommend you to read "Other Worlds than Ours," by R. A. Proctor, which we can mail you for \$2.50.

(27) N. W. writes: Manufacturers of house heaters (furnaces) claim that it is perfectly safe to put the hot air pipes leading from heaters in direct contact with joists 3 feet away. They say the wood never chars as it does from highly heated steam pipes. Are they right? A. It is considered by the Board of Underwriters of New York not safe at any distance. They require also insulation at registers.

(28) T. B. W. asks: How is weiss beer made? Is it a malt beer, brewed as other beers? A. Weiss beer is brewed from wheat, and in Berlin it is made from one part of barley malt and five parts of wheat malt. The process of manufacture is similar to that of ordinary beer.

(29) G. W. B. asks: What is a perforation? Webster defines it: "A hole or aperture passing through anything." Worcester: "A hole, an orifice." Stormonth: "A hole or aperture passing through." Now, is "a hole passing through anything," however made, a perforation, e. g., a metal plate is cast in a mould in which there are pins (or cores). These pins form a hole through the plate during the casting, but do not perforate it. Can such a hole properly be called a perforation? A. We should say not, although every perforation is a hole or aperture. As the verb "perforate" comes directly from Latin words meaning to "bore through," we think a nice distinction in the use of language would call for some other word to cover such apertures as you mention.

(30) C. P. K. asks: 1. What is the best glue for sizing pictures, also best varnish for pictures? A. Cover with a thin coating of gelatine, and then use a thin spirit varnish of either balsam of fir or dammar. 2. What material is best to cut on, as in cutting paper with a punch? A. Any hard, close-grained wood, such as maple or hickory.

(31) S. T. asks: What can I mix with ink to make it dry better? A. Gum, sugar, and glycerine are added to the usual ingredients with which ink is made, in order to give it the property of copying. Lessening the amount of these substances will be found desirable. See also the article on "Inks" in SCIENTIFIC AMERICAN SUPPLEMENT, No. 157.

(32) F. W. S. asks: 1. How can I keep a bouquet of flowers? A. Dip the flowers in melted paraffine, withdrawing them quickly. The liquid should only be just hot enough to maintain its fluidity, and the flowers should be dipped one at a time, held by the stalks, and moved about for an instant to get rid of air bubbles. 2. How to dissolve paraffine? A. Paraffine is soluble in hot alcohol, ether, and oils. 3. How can I paint tin covers so that they will not rust? Ordinary paint often comes off. A. You will find japan more satisfactory than paint for tin. 4. How can I coat old trays or waiters where the japan has come off? A. They must be repainted. See SCIENTIFIC AMERICAN SUPPLEMENT, Nos. 160 and 166.

(33) W. J. P. writes: I want to make a salve consisting of sal soda and soap, but do not know how to mix it. A. Heat the soap sufficiently to so melt it that the sal soda can be thoroughly incorporated or mixed while the soap is in liquid condition.

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

A. P. W.—Your specimen is pyrite, iron sulphide—of no value.

INDEX OF INVENTIONS

For which Letters Patent of the United States were Granted

October 6, 1885,

AND EACH BEARING THAT DATE.

[See note at end of list about copies of these patents.]

Table listing various inventions and their patent numbers, including items like 'Adding machine, L. W. Swem', 'Adjustable chair, invalid bed rest, and stretcher', 'Alarm, combined, F. T. Dodge', etc.