Business and Personal.

The Charge for Insertion under this head is One Dollar a line for each insertion; about eight words to a line. Advertisements must be received at publication office as early as Thursday morning to appear in next issue.

NEW BOOKS AND PUBLICATIONS.

MATERIALS AND CONSTRUCTION. By Francis Campin, C.E. London: Crosby, Lockwood & Co.

The aim of the author has been to produce a brief yet comprehensive, theoretical, and practical treatise on the strains, designing, and erection of massive works of construction, and to do it thoroughly without introducing the higher branches of mathematical investigation. Great stress is laid upon simplicity of calculation, the work being specially designed for those who wish to master the subject for practical application and not as a mathematical exercise.

FOUR LECTURES ON STATIC ELECTRIC INDUCTION. By J. E. H. Gordon, B.A. New York: D. Van Nostrand.

These lectures, by the Assistant Secretary of the British Association, were delivered at the Royal Institution two years ago.

ELEMENTARY PROJECTION DRAWING. THEORY AND PRACTICE. By S. Edward Warren, C.E. New York: John Wiley & Sons.

The fifth edition of a text book of industrial science drawing which has been for many years a classic. Improvements have been introduced in each division, and an entirely new division, on the elements of machines, has been added.

MODERN ARCHITECTURAL DESIGNS AND DETAILS. New York: Bicknell & Comstock. Part 5. Plates 33–40.

The fifth part of this series of designs and details of low-priced dwellings is devoted to details of cornices, belt courses, etc., doors, windows, mantels, in wood, and other construction elements. Plate 38 gives a perspective view of a handsome suburban residence, with elevations, plans, etc. The publishers have prepared a portfolio which serves the present purpose of holding the loose sheets, and will answer also for a permanent cover when the series is completed.

A STUDY OF SAVAGE WEAPONS AT THE CENTENNIAL EXHIBITION. By Edward H. Knight. Washington: Government Printing Office. 1880.

This reprint from the Smithsonian annual report of 1879 puts in convenient form Mr. Knight's valuable study of the savage weapons exhibited at Philadelphia. The 144 engravings show the forms of two or three hundred primitive clubs, axes, knives and swords, spears, shields, bows and arrows, etc. The text describes the construction and modes of using not only the weapons figured, but a multitude of related forms.

Notes & Queries

HINTS TO CORRESPONDENTS.

No attention will be paid to communications unless accompanied with the full name and address of the writer.

Names and addresses of correspondents will not be given to inquirers.

We renew our request that correspondents, in referring to former answers or articles, will be kind enough to name the date of the paper and the page, or the number of the question.

Correspondents whose inquiries do not appear after a reasonable time should repeat them. If not then published, they may conclude that, for good reasons, the Editor declines them.

Persons desiring special information which is purely of a personal character, and not of general interest, should remit from $1 to $5, according to the subject, as we cannot be expected to spend time and labor to obtain such information without remuneration.

Any numbers of the SCIENTIFIC AMERICAN SUPPLEMENT referred to in these columns may be had at this office. Price 10 cents each.

(1) F. G. asks how to protect apple trees from the borer. A. In the first place, be careful to remove all sprouts, suckers, and grass from the roots of the tree. Secondly, keep the bark near the surface smooth and clean by frequent scouring or rubbing with the naked hand. This should be done at least once a week during the months of May and June. This will brush off the eggs. Another remedy, and perhaps a more effectual one, is to take one pint of sulphur, add to it one gallon of soft soap, and tobacco water sufficient to make it of the consistency of common paint. Apply it with a brush in May or June on the body of the tree at the surface, and two or three inches below.

(2) R. E. H. asks how to join lead plates. A. The edges are brought together, hammered down into a channel cut out of wood and secured with a few tacks. The hollow is then scraped clean with a scraper, rubbed over with tallow, and a stream of hot lead is poured into it, the surface being afterward smoothed with a hot plumber's iron.

(3) M. M. asks: 1. Can you give me the composition of the perfume known as West End? A. 1 pint of each of the following extracts: Cassie, violet, tuberose, and jasmine; esprit de rose, triple, 3 pints; extract of musk and of ambergris, each half a pint; otto of bergamot, 1 oz. 2. How is aromatic vinegar made? A. Concentrated acetic acid, 8 oz.; otto of English lavender, 2 drachms; otto of English rosemary, 1 drachm; otto of cloves, 1 drachm; otto of camphor, 1 oz. First dissolve the bruised camphor in the acetic acid, then add the perfumes; after remaining together for a few days, with occasional agitation, filter. Vinaigre a la rose is made by shaking together 1 oz. of concentrated acetic acid with half a drachm of otto of roses. All concentrated vinegars are used by pouring three or four drachms into an ornamental smelling bottle previously filled with crystals of sulphate of potash.

(4) E. C. E writes: 1. In SCIENTIFIC AMERICAN SUPPLEMENT No. 133, in article on how to build a "working phonograph," will you please explain what is meant by the diaphragm being "damped by two or three pieces of elastic tubing?" Does it mean that short pieces of gum tubing or hose are cut off and fastened to the diaphragm; if so, what size hose and how think cut the pieces? A. Any elastic pressure will answer to damp the diaphragm; all that is necessary is to make the damping adjustable, so that the pressure may be varied to secure the best effect. Pieces of elastic rubber tube are mentioned as being the most convenient, as pieces of various sizes may be used to vary the pressure. 2. What became of the large Corliss engine used at the Centennial? A. It is running the new Pullman car shops near Chicago.

(5) D. W. C. D. writes: I have a desire to learn to be a good engineer. Where and how shall I begin? A. You should make personal application to a good engine building shop as a first step, and afterward extend your experience.

(6) W. I. T. asks for a cement that will mend a broken oil stone. A. Dissolve isinglass in the smallest possible quantity of proof spirit by the aid of gentle heat (over a water bath). In two ounces of this dissolve 10 grains of gum ammoniacum; triturate to effect solution, then add half a drachm of gum mastic dissolved in 3 drachms of rectified spirit. Stir well and keep stoppered when not in use. Liquefy by gentle heat when required for use. Clean the stone with hot potash lye, rinse thoroughly, and dry before cementing.

(7) W. E. S. writes: A friend was telling me of some coke being dumped between two large walnut trees and left there for some time, causing the trees to die, and it affected other trees in the same way some 15 or 16 feet away. Have you ever heard of a similar circumstance? His theory was that the rain washed something out of the coke which affected the trees injuriously. A. The cause assigned may have been the correct one, as gas coke from the front of the retort and imperfectly exhausted sometimes retains various hydrocarbons which are very destructive to vegetation.

(8) E. W. S. asks. Is there any practical way of making animal fat soluble in water? A. A sufficient quantity of caustic potash or soda added to a hot mixture of grease and water renders the grease soluble by saponifying it.

(9) W. W. S. asks: 1. Can electric lighting be adapted to a single dwelling conveniently and profitably? A. No. 2. What kind of a telephonic arrangement would be best and cheapest for communication throughout a two or three story house, and could one be adapted to such use without a battery, and language be conveyed so that none could hear but the one at the instrument (receiving end of course); and could or would a switch fixture be possible or advantageous? A. Speaking tubes are cheaper than telephones, and are preferable for your purpose.

(10) W. McG. asks how to recover saltpeter from damaged gunpowder. A. Dissolve the powder in warm water, filter the solution through fine linen bags, and then evaporate the water by boiling until the solution is of sufficient strength to crystallize.

(11) W. R. M. asks how to oxidize silver plated articles. A. Dissolve sulphate of copper, 2 dwts.; nitrate of potash, 1 dwt.; muriate of ammonia, 2 dwts.; in a little acetic acid. Warm the article and apply the solution with a camel-hair pencil and expose to the fumes of sulphur in a closed box. Parts not to be colored must be coated with wax.

(12) C. D. asks how to draw in gold on japanned work. A. The ornaments are formed by a camel-hair pencil with japanner's gold size, made by boiling linseed oil with gum animi and a little vermilion. When the size is nearly dry, gold powder or gold leaf is applied. In all cases where gold is fixed on by means of linseed oil, it will bear being washed.

(13) H. & B. ask how to refill a mercurial barometer so as to avoid the presence of air in the top of the tube. The bottom of the tube dips in a small jar of mercury. A. Invert the tube, and place in it a small quantity of mercury, say enough to fill the tube for six inches, then carefully heat the tube until the mercury boils. Add more mercury and boil again, and so on until it is full, then invert it in the cistern. Great care should be taken to not inhale the fumes of the mercury. If the tube is perfectly clean and the mercury pure it generally answers well enough to pour the mercury into the tube and cause the air to escape by gently jarring it.

(14) C. P. says: I have some valuable papers which were so thoroughly baked in a fireproof safe as to fall to pieces upon handling, and wish to know if there is any method of restoring strength to the paper by saturation or otherwise. A. The most successful method that we call to mind is to coat the charred sheets with collodion.

(15) C. E. F. asks: 1. Will an intensity current induce a quantity current? For example, I send a battery current through the primary coil of an inductorium, and produce an induced current in the secondary coil. Now, if I send that current through the secondary coil of a precisely similar inductorium, will it induce a quantity current, like the original battery current, in the primary coil? A. No. 2. Is an induced current always of greater intensity and less quantity than the inducing current? A. Yes. 3. In the first case above, which current would overcome the most resistance in flowing through a circuit, the galvanic or the induced current? A. The induced. 4. Which would overcome the most resistance, the induced current in the secondary coil, or the "extra currents" in the primary coil? Supposing the "extra currents" and the galvanic current to meet the resistance, which would be stopped and which pass through the resistance? A. They are of much the same nature, and, under like conditions, we think there would be no difference. 5. Where can I purchase Faraday's 158 philosophical papers called "Experimental Researches on Electricity," and what is the cost? A. Write the industrial publishers who advertise in our columns. 6. Have you published an index to contents of SUPPLEMENT before the half year ending December 31, 1880? A. Yes. 7. The SUPPLEMENT is a very valuable paper, but the lack of an index has been a great drawback heretofore. In how many volumes back have they had the index? A. Every volume is indexed.

(16) J. G. writes: If a machine run at a speed of 50 revolutions, and then the speed is increased to 100, will it require twice the amount of power? Three-fourths of the power is consumed in friction. What proportion of power will it require to maintain the above speed? A. The power required to overcome the friction will increase as the speed; if the work done by the machine in a given time is doubled, the power must be doubled.

(17) W. T. D. writes: 1. I am making an induction coil (for shocking) according to directions in SUPPLEMENT, No. 160. My coil measures 4½ inches between the heads, with a center core of No. 18 iron wire five-eighths inch diameter. Primary coil consists of two layers of No 18 cotton covered and well insulated from each other. The secondary coil consists of 1,000 feet of No. 32 cotton covered copper wire well insulated from the primary coil, and with one Grove cell I do not get a current strong enough to feel above the elbows. The secondary was wound in a continuous coil from end to end, but has been unwound, and I will try winding in halves with an insulating medium in the center according to directions. Where is the fault with my coil—I do not use a condenser? A. Your secondary wire is too large and not long enough. Use No. 36 or No. 40, and double the length. It would be an improvement if you were to use three layers of primary wire instead of two. 2. How can I govern the current given out of this coil by sliding a cylinder over the coil? A. The cylinder is a simple brass cover sliding over the coil. You can make a greater variation by soldering together the iron wires of your core and allowing them to slide with the cylinder.

(18) M. C. writes: I have a house built on the bank of a small stream. The bank is about 30 feet high, and the house is distant from the water about 100 feet. I cannot easily get water by digging near the house. The soil is sandy. What would be the best, cheapest, and easiest way of getting the water from the stream to the house? If by damming the stream to 3 or 4 feet of a head could it be made to send the water that height by means of a small endless chain or copper wire carrying very small buckets? A. By damming the stream so as to get 4 to 6 feet head, you can use a hydraulic ram to elevate water to your house.

(19) Z. M. L. asks if there is any process of toughening pressed glass (say pieces 2 inches square, one-eighth inch thick) so that they would bend slightly and not break. Could they be colored black? A. We know of no satisfactory way of toughening the glass after pressing. The glass may be colored in the pot by introducing a suitable quantity of a soft glass highly charged with strongly calcined umber and reduced to powder. It may be superficially stained by coating the

surface with a mixture of 1 part highly calcined umber and 2 parts of borax ground to a fine powder, and then heating the glass in an oven until the coating becomes vitrified. Consult "A Treatise on the Origin, Progressive Improvement, and Present State of the Manufacture of Porcelain and Glass." Address the bookdealers who advertise in this paper.

(20) S. A. H. writes: I have for some time been using a gasoline gas machine which I have made, but I find it rather unsatisfactory, as the gas when burning in a close room gives an unpleasant odor causing headache. A. The cause of the bad odor is doubtless due to the supersaturation of the air with the vapor of gasoline, so that the combustion is imperfect, certain hydrocarbons mixed with much carbonic oxide escaping unconsumed. 2. I cannot get from a gallon of gasoline 88°, more than 100 feet of gas, or the equivalent in light of 100 feet of good coal gas. How much should I get from a gallon? A. About 118 feet under favorable circumstances. 3. My blower is of peculiar construction, and the air when entering it has to pass through a fine spray of water, and thus become saturated with watery vapor. May the odor not be caused by a partial decomposition of this vapor while passing through the flame? I am led to think so from the fact that during intense cold the gas burns without odor, in which case I think the watery vapor is retained in the pipes by freezing. A. The odor is not due to the water. See article on gas machines, page 1, vol. xliii.

(21) "Subscriber" asks: Can you tell of anything that can be worn or used to destroy body odors that daily bathing will not accomplish? Also a deodorizer for bedrooms and bedding? A. Add a little soda to the water used for bathing, and bathe frequently. Frequent changes of bed linen and plenty of airing are the most practical means.

(22) W. S. asks for a method of hard soldering solid gold set rings such as amethyst, cameo, garnet, etc., which will not crack or change the color. Please let me know what mixture, or what would be best. A. Jeweler's solder with gold of a somewhat lower title than article to be soldered—borax, flux, and blow pipe, enveloping the other parts with tissue paper and whitening or plaster of Paris.

(23) A. M. G. asks for a receipt for making a blue colored fire, same as used in fireworks. I have tried receipts with only sulphur, nitrate of potassa, and antimony, but they are not satisfactory. I think that realgar (red arsenic) or orpiment (yellow arsenic) are used, but what proportions of each I do not know. Please give me some receipts which you may know to be good and not be very expensive. A. 1. (For theatrical fires, etc.)—Sulphur, sulphate of potassa, and ammonio-sulphate of copper, each 15 parts; niter, 27; chlorate of potassa, 28. 2. Sulphate of copper, 7 parts; sulphur, 24; chlorate of potassa, 69. 3. (For pyrotechnic mixtures)—Chloride of potash, 9 parts; sulphur and carbonate of copper, each 3 parts. 4. (For lances)—Chlorate of potassa, 6 parts; Chertier's copper, 1; calomel, 5; sugar, 4.

(24) E. F. H. asks for information as to curing, removal of fat, and the fishy odor of bird skins, especially salt water birds. I do a great deal of gunning, and should like to prepare some good skins. A. Scrape off as much of the flesh and fat as possible with a blunt knife, and immerse them for 48 hours or more in the following solution: Salt, 4 lb.; alum, 1 lb.; water, just sufficient to dissolve. On removing wash in a weak solution of soda and water.

(25) H. M. P. asks: 1. How much power is required to drive the dynamo-electric machine described in No. 161 of the SCIENTIFIC AMERICAN SUPPLEMENT? A. About one-sixth of a horse power. One man power will drive it. 2. Will a piece of wrought iron pipe 8 inches in diameter do for the shell of a small boiler? What pressure would it stand? A. Yes; it would probably stand 200 lb. per square inch safely, but should be tested to 400 lb. before being put in use.

(26) E. E. T. asks: 1. Could I obtain good results by constructing a dynamo-electric machine with electro-magnets consisting of a piece of gas pipe (wrought iron) of extra thickness, split lengthwise so as to form the two poles, and wound circumferentially with wire? Also, would the armature made of a cross-shaped section be any better than if made according to Dr. Siemens' plan? I constructed a machine, as described in SCIENTIFIC AMERICAN SUPPLEMENT, No. 161, and am much pleased with it. A. A dynamo machine constructed according to your plan would prove a failure. 2. I am working in a sugar house with a view of learning the business. Do you consider the analysis of sugar a special branch of chemistry, and how long would it take a man of average intelligence to learn it? A. Yes. To become expert in the use of the saccharometer under favorable circumstances does not require many weeks' study. To become thoroughly acquainted with sugar chemistry may require a year of application. 3. Will sponge platinum become luminous in ordinary coal gas? A. Yes, when freshly prepared. 4. In making phosphorescent sulphides, as described in SCIENTIFIC AMERICAN of February 5, 1881, is it necessary to heat red hot? A. Yes.

(27) W. T. asks: 1. What is meant by electroplaters' machines, and is any apparatus necessary for silver plating besides Bunsen's battery? A. Dynamo-machines, used in large electroplating establishments in place of batteries. 2. Can I obtain any publication with the latest methods for electroplating? A. See pp. 81, 116, 3, and 33 current volume, and 153, vol. xliii., SCIENTIFIC AMERICAN. 3. How is aqua-ammonia, as sold in the drug stores, prepared, and can I prepare it for my own use and how? A. Usually by decomposing the ammonia salts such as the chloride (sal-ammoniac) by means of lime, with the aid of heat, and passing the ammonia (gas) evolved into water which absorbs it and becomes aqua-ammonia (ammonia water).

(28) W. C. asks for a receipt for a good black polish for leather suitable for cartridge boxes and belts. I want a polish that will not wash off, and make a good appearance at inspection. A. Shellac, 12 parts; white turpentine, 5; gum sandarac, 2; lampblack, 1, spirit of turpentine, 4; alcohol, 96. Stir and digest in a covered vessel until solution is complete. 2. What is the cause of center punches and cold chisels becoming magnetized when used for a short time? I think it is caused from the friction of the center punch on the iron. A. The magnetism is derived by induction from the earth. Articles of steel when held in certain positions and repeatedly struck become magnetic.

(29) D. A. S. asks: Is there any known substance that, if placed between a magnet and steel, will prevent attraction? A. No.

(30) C. M. E. asks: 1. To what height will an ordinary steam suction pump lift (not force) water and work successfully? A. About 26 feet. 2. In ascertaining such height in the winter, when the river is frozen over, would you measure from the top or under side of the ice? A. Underside.

(31) J. R. K. writes: In your January number of SCIENTIFIC AMERICAN, in answer to J. R. S. No. 35, you give following receipt for making those pads, etc.: "Water, 130 parts; sulphate of baryta, 75 parts; sugar, 30 parts; gelatine, 30 parts; glycerine, 180 parts." Wanting one of the articles badly, I took your paper to a chemist in this city, to have the articles prepared, and he informed me that sulphate of baryta was insoluble in water, and he advised me to send East (there being none of the article in this town) for a pound of sulphide of barium. Will you in next issue of your paper let me know about correctness of the above, also whether sulphide of barium will answer for sulphate of baryta, as stated in receipt? A. The sulphate of baryta is simply mixed, not dissolved; it gives consistence and color to the composition. The sulphide cannot be used instead.

(32) G. A. N. asks: What is the best way to remove white paint from the surface of white pine house stair steps? A. Moisten the paint well with naphtha or good benzole, repeating as often as necessary. As soon as the paint becomes soft remove by means of a rag, aided by a scratch knife and stiff brush, moistened with the naphtha or benzole. A strong aqueous solution of caustic potash is sometimes used to destroy such paint, but it is apt to stain the wood or unfit its surface for receiving a fresh coat at once.

COMMUNICATIONS RECEIVED.

On a Meteor. By C. P. K.

On Extraordinary Parhelia of the Sun and Venus.

On Remarkable Parhelia. By M. B.

[OFFICIAL.]

INDEX OF INVENTIONS

FOR WHICH

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February 1, 1881,

AND EACH BEARING THAT DATE.

[Those marked (r) are reissued patents.]

A printed copy of the specification and drawing of any patent in the annexed list, also of any patent issued since 1866, 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. We also furnish copies of patents granted prior to 1866; but at increased cost, as the specifications not being printed, must be copied by hand.

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Ore crusher, C. Forster, Pittsburg, Pa.
Sewing machine, J. H. Morley, Holyoke, Mass.
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