NEW BOOKS AND PUBLICATIONS.

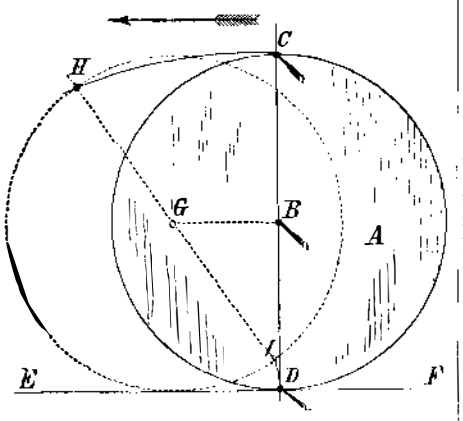
NEOPHONOGRAPHY: a System of Short, Swift, Scientific and Easy English Writing. By James Richardson. New York: Harroun & Bierstadt. 50 cents.

Another of the multitudinous attempts to provide an acceptable substitute for our common long-hand writing. It differs from the usual, however, in being strictly alphabetic, no compound or contracted characters, omissions, or other stenographic devices being admitted. The writing is cursive, singularly direct in its flow, and evidently easy to read. The author claims that it is correspondingly easy to write.

Notes & Queries

(1) L. M.—To restore a lens blurred by hydrofluoric acid, take a sealing wax impression of a portion of the face of the lens, stretch over the wax a piece of silk, apply a paste of fine putty powder (putty powder and water) to the face of the pad thus made, and rub the pad rapidly over the face of the lens with a gyratory motion until the surface of the lens is repolished.

(2) J. R. E., S. H. R., and others.—Regarded merely as a rotating body, all parts of the periphery of a carriage wheel move around its axis with the same velocity. Regarding the carriage wheel as a rolling body, the upper portion moves forward faster than the portion which touches the ground. Any point in the wheel will describe a cycloid curve as the wheel rolls on a plane surface. Our correspondents can satisfy themselves as to the proper solution of the problem in the following way: Take a disk, A, of thin wood or pasteboard, and secure at the center a pencil, B, and at the periphery at diametrically opposite points the pencils, C D. Put the disk on a plane surface, with its edge, against the straight edge, E F, and the three pencils in a line, forming a right angle with the straight edge. Now roll the disk forward in the direction indicated by the arrow. The pencil, B, which represents the axle



will move from B to G in a right line, the upper one, C, will describe the curve, C H, and the pencil, D, will make the curve, D. I.

(3) S. H. R. asks: 1. Does a small electrical machine (pocket size), such as is made for medical purposes, furnish electricity of sufficient intensity to experiment with the microphone? A. Yes. 2. Can the electric light be produced from a galvanic battery? A. Yes, by using several cells.

(4) C. D. K. asks: 1. What kind of moulds would give the best and smoothest castiugs of a mixture of tin, zinc, and bismuth? A. I? the alloy contains little zinc well dried moulds of plaster of Paris or of papier mache covered with a film of oil will doubtless give satisfaction. See also SCIENTIFIC AMERICAN SUPPLEMENT, No. 17, "Casting Medals, Medallions, etc." 2. Would it stick to copper? A. Probably.

What is the process of canning sweet corn? A. The following is the method in use by many of the large canning establishments. The corn, after removing from the cob, is filled into the clean cans so as to leave no air spaces. These are placed in a large oven or other airtight vessel, and subjected to hot steam under pressure. The harder the corn the longer the exposure required to thus cure it; it is said that in some cases as much as eight hours is requisite, but usually much less than this. A large vessel of boiling water, in which the cans are immersed, may be used instead of the steam oven, but is not so effective. On removal from the oven or water bath, as the case may be, each can (they must be filled to the cover with fruit) has the cap with a very small hole tapped in its center immediately soldered on. As soon thereafter as the can stops blowing, as the escape of steam and air through the vent is termed, the hole is quickly soldered. This must be done before the air begins to enter. Other fruit is cured and canned in like manner—tomatoes rarely require longer than 15 to 20 minutes' steam curing. Where the pits are left in fruit a longer time is requisite to completely destroy all fermentative germs.

(5) N. B. D. asks (1) if the spools of an ordinary telegraph sounder can be utilized for making a telephone, or are the spools of a relay more suitable? A. The relay spools will be best. 2. The telephone line will be less than half a mile in length. Will small copper wire do for the main line? A. Yes.

(6) G. F. D. asks: 1. What is the cheapest method for producing ozone in large quantities, so that it may be applied as an oxidizing agent? A. Coat the inside of a long glass tube with tiufoil, and pass over this a second wider tube coated with tinfoil on its outer surfaces. Between these two tubes pass a current of dry oxygen, and connect the inner and outer tinfoil coatings with the terminal wires of an active induction coil. Ten to fifteen per cent of the oxygen may thus be converted into ozone. 2. What paint or varnish would be suitable for insulating wire for electrical experiments? A. Shellac dissolved to the consistence of molasses in alcohol, asphaltum varnish, melted sealing wax or paraffin, and benzol solutions of gutta percha and caoutchouc are occasionally used. 3. How is the instrument made for measuring the resistauce of an electric current in ohms? A. It consists of a series of coils of measured resistance.

(7) P. McF. asks how to keep cider sweet all winter. A. Add from 0·125 to 0·25 oz. of sulphite of lime (calcium sulphite) for each gallon of the cider. It should be dissolved in a little of the cider before adding it to the barrel. Then roll the barrel.

(8) H. M. D. asks for the best way to make gelatin or glue moulds for plaster casts. A. Glue is softened by digesting it in cold water and then melted in the water bath. This affords a very thick paste, to which pure glycerin is added in the same quantity by weight as that of the dry glue taken. The mass is then further heated and stirred for some time in order to evaporate the excess of water. This mixture does not adhere to well oiled moulds, and is very elastic when cold.

How are autumn leaves preserved? A. The fresh leaves are spread and pressed into a suitable dish with alternate layers of fine, thoroughly dry sand, as hot as the hand can bear. When the sand has cooled they may be removed, smoothed under a hot iron, dipped for a few moments in clear French spirit varnish, and allowed to dry in the air. By many melted white wax or paraffin is preferred to the varnish. These latter must not be too hot. The dried leaves are dipped in the melted wax, drawn several times over the edge of the vessel to remove excess, and hung up until the film of wax has thoroughly cooled and hardened.

(9) "Watch Hand" asks how to anneal watch hands that have to be swaged three times after each annealing. A. Place the hands in charcoal dust in a cast iron box. Close and lute the box, bring it to a red heat, and allow it to cool very slowly.

(10) F. D. asks what acid to use to lessen the harsh effect of borax in soap without destroying its qualities. A. The addition of a little glycerin to the soap will render it less harsh if the saponification has been properly conducted. Acids are not employed in the way you suggest.

(11) C. F. L. asks: 1. What are the most approved methods of using petroleum under steam boilers? A. Most of the processes are patented, and by inserting a notice in the "Business and Personal" column you may open communication with the inventors. 2. Can steam be practically superheated for combining with oil, by running it through a coil of ¾ inch pipe 10 or 15 feet long, placed in the firebox? Would any danger attend the use of such a pipe in a hot blast? A. This is perfectly practicable, but the arrangement may not prove very durable. It will not be specially dangerous if means are provided for shutting off the apparatus promptly when required.

(12) H. A. L. writes: I wish to heat four barrels of water, sometimes less; which is best, a large kettle set in brick with a grate, or a small boiler 3 feet long by 15 inches diameter, with six two inch flues? Would such a boiler with 20 or 30 two inch flues, set as described, run a 4 x 5 cylinder at 300 turns, steam at 80 lbs.? A. The boiler would be preferable, and would answer for the engine.

(13) G. P. M. writes: There is a fluid instantaneous ink eraser on the market. Of what is it composed? A. The fluid eraser referred to is probably a strong, cold aqueous or acetic acid solution of calcium or potassium hypochlorite—bleaching powder or eau de Javelle.

Can I make a patented article if I make and use it myself? A. See "Rights of Investigators," p. 128, current volume of the SCIENTIFIC AMERICAN.

Can I electroplate with a Callaud battery? A. Yes; two or three cells will suffice for small work.

Is there a cheap process by which I can obtain tolerably fair copies of my own handwriting, and how is it done? A. Write with a 20 per cent aqueous solution of glycerin, sprinkle the writing with excess of finely powdered gum arabic, dust off excess, and dry in a warm place for some time. From this a cast may be taken in fusible metal. Another method is to coat a smooth metal plate with a film of wax, through which with a fine steel point to the metal below the characters are etched. The lines and surface are then blackleaded, and a copper electrotype taken in the usual manner. Still another way is to write upon a prepared block of chalk with lithographer's ink or a preparation of glue and sugar or molasses, after which the parts unprotected by the ink are etched out somewhat with a dilute acid and the block hardened by immersing it for a time in strong water glass solution.

What is used in, and what is the process of zincography? A. It is similar to lithography—a plate of zinc being used in place of the stone.

Does the SCIENTIFIC AMERICAN, Export Edition, contain "Notes and Queries" also? A. Yes.

(14) A. J. F. suggests the use of drums for turning angles in thread telephone lines. At each angle he places a drum having two heads. The thread is sev ered and the ends pass through the drum heads and are knotted.

(15) F. P. H. asks for a method of making cider. A. See p. 315 (8), current volume.

(16) N. E. S. writes: The Second Avenue Railroad Company have been experimenting with a car to run by compressed air instead of steam; the cars to be charged from a stationary reservoir, into which the air has been forced at a high pressure by a stationary engine. It is claimed, by some persons, that the stationary engine has not enough power to draw as many cars as it can supply with air and keep running; but I claim that it has. Who is right? A. We agree with you, as we understand your meaning.

(17) A. H. G. asks how to dissolve amber to be used as a varnish. A. Amber, 10 parts (by weight); melt in a suitable vessel over a moderate fire, and add boiled linseed oil, 20 to 30 parts. The caldron in which this operation takes place should not be more than two thirds filled; and the mixture of oil and resin kept boiling for 10 minutes. The vessel is then removed from the fire (into the open air), allowed to cool down to about 280° Fah., and from 25 to 30 parts of oil of turpentine gradually added. See also Meredith's process, p. 35, current volume, SCIENTIFIC AMERICAN.

(18) C. H. asks (1) how to make oxygen gas in a cheap and simple way for experiments. A. Mix dry potassium chlorate with about one fourth its weight of pure black oxide of manganese, and heat the mixture in a copper retort over the flame of a spirit or gas lamp. The retort should not be more than one quarter full. The gas should be passed through water to free it from traces of chlorine, etc. 2. Is there any danger of explosion from the above gas when it comes in contact with a flame, that is, when no other gas is mixed with it? A. No.

(19) W. S. R. asks for a good recipe for red and blue stencil ink. A. Shellac, 4 parts; borax, 1 part; dissolve by boiling in a small quantity of water, and dilute with hot water to the consistency of very thin sirup. To this add a sufficient quantity logwood or Brazilwood extract, or the soluble coal tar reds. For blue add to the lac solution soluble Prussian blue, or blue carmine.

(20) D. H. A. writes: A paper mill in this place is supplied with turbines. The tail race is 3 feet higher than it need be. Which will add most to the power of the wheel, to deepen the tail race and lower the wheels, or to deepen the tail race, let wheels remain where they are, airtight tubes being fitted to the wheels and extending to the water in tail race? A. As we understand the statement, we think that the increase of power would be about the same in either case.

(21) G. B. G. asks: 1. What is the composition of bright dipping acid for brass? A. Ordinary nitric acid diluted with one or two volumes of water. The work must first be cleansed from all traces of grease or oil by hot soda solution or scouring. 2. What is the mixture into which the article is dipped which gives it