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.

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) J. H. writes: 1. I want to make a cylinder of sheet platinum. Can you tell me how I can make the necessary joints so that they will stand intense heat? A. Platinum can be welded upon itself at a high temperature. The metal can be heated hot enough in a good forge fire. It should be embedded in quicklime to protect it from the carbon. 2. Is Professor Dolbear's telephone patented? Your article last week did not state so. A. Yes.

(2) W. H. C. says, in answer to B. W. B., page 409 (4), vol. xliv.: "According to Hager, the 'Encre pour les Dames' (iuk for ladies), characters written with which fade out in about four weeks, consists of an aqueous solution of iodide of starch."

(3) E. S. asks for a receipt for making a first class shoe blacking. A. See page 218 (15), vol. xliv. 2. How can I dye glass a blue or red shade? A. Colors are usually imparted to glass in the melting pot: for blue, oxide of cobalt is used; for red, sub-oxide of copper or gold. Glass is stained by painting its surface with a fusible colored glass ground to a fine powder and mixed up with gum water or turpentine, and after drying then heating the painted glass in a furnace until the coating fuses. Collodion, shellac, or spirit copal varnishes, properly colored with one of the coal tar dyes, can in some cases be advantageously employed as a colored wash for white glass.

(4) J. G. P. asks how to dye blonde hair to a light brown. A. The expressed juice of green walnut shells diluted with water is used for this purpose.

(5) C. F. P. asks: How can elastic rubber be melted so as to be run into moulds? A. Rubber cannot be melted as you propose. It decomposes at a temperature high enough to melt it. Pure, unvulcanized gum rubber (caoutchouc) can, however, be softened by a gentle heat (or by hot water) so as to admit of moulding with pressure.

(6) J. E. asks: Is there any process known for hardening oils, say, for instance, tar oils, to thickness of paste, without boiling or soap? A. We know of no way of thickening tar oil or similar oils except by adding to them a sufficient quantity palm oil, lard, or other solid or semisolid substance.

(7) E. H. writes: Please state the difference in your paper of benzine, benzole, naphtha, and methyl alcohol. A. Naphtha and benzine are light products of the distillation of petroleum; the former has the lowest specific gravity. Benzole proper, is one of the distillates of gas tar. Methyl alcohol, or wood naphtha, is an alcohol obtained as one of the products of the destructive distillation of wood.

(8) T. K. writes: I am doing some work in a building where there is a radiator 75 feet long, 10 pipes high, made of 1 inch pipe with a header on each end; it is provided with air valves, and has one-eighth of an inch descent to the foot, and yet it is constantly air bound. It is supplied with steam through a 1¼ inch pipe and drained by a 1 inch pipe. If I cut this radiator and make two radiators of it will it remedy this trouble? A. We think cutting and giving the pipes more descent would be effective. 2. Can steam pipes have too much descent? A. No, provided they be kept clear of water.

(9) P. R. writes: 1. I have made a Holtz electrical machine from directions in SCIENTIFIC AMERICAN, No. 16, and SCIENTIFIC AMERICAN SUPPLEMENT, No. 278. I followed directions, and the mechanical part is well done, but I am unable to charge it or to get any trace of electricity. If I have made any mistake it must be about the paper inductors, as I had at first inductors only on the posterior face of the stationary disk and gilt paper on outside of inductors; but I altered in accordance to your answer to G. W. G., query 29, in SCIENTIFIC AMERICAN, June 18, with no better result. A. With the most perfect of Holtz machines it is impossible to generate a current in the warm sultry days of summer unless the plates are warmed and kept dry. It is probable that your machine would work well anytime after August and before May. If you try it every day through the summer you will discover that it will work on some days quite well and at other times not at all. 2. If the ends of the two paper inductors are flush with the edge of the hole or window, and the two projecting serrated ends of the gilt paper to reach the center of the window, are these two serrated ends to be left apart or pasted together? A. They are pasted together. 3. Please explain the action of the cross arm, G. A. The cross arm equalizes the charge on the revolving plate and prevents carrying the negative charge to the positive inductors, and prevents the positive charge from being carried to the negative inductors.

(10) W. M. asks: Which will stand exposure to the weather, the best zinc or best quality of marble? A. Zinc (if pure), under ordinary circumstances.

(11) F. A. H. asks: 1. In estimating the evaporative capacity of steam boilers, is the surface of the furnace sheets considered more effective than the surface of the flues? If so, what is the accepted ratio? A. Yes, four to six times more effective. 2. In estimating the surface of the flues or tubes, is the internal or external surface to be considered as heating surface? A. External, or water surface. 3. What proportion of the flue or tube surface is considered effective? A. From 25 to 40 feet heating surface to one of grate, depending upon diameter of flues or tubes and length. 4. What is the usual allowance of effective heating surface per horse power? A. From 10 square feet in plain cylinder boilers, 12 square feet in flue boilers, and 15 to 17 feet in tubulars. 5. What are some good reliable books on the subject of boilers? A. "Barr on Steam Boilers" would suit you.

(12) G. A. G. writes: 1. I have SUPPLEMENT, No. 252, on telescopes. Will the terrestrial eyepiece, Fig. 7, used with an achromatic object lens, answer for astronomical purposes, as well as the meniscus lens and the eyepiece described and figured on pp. 4015? A. The terrestrial eyepiece is not so powerful as the astronomical eyepiece, but it may be used for astronomical observations. The achromatic objective is to be preferred for all purposes. 2. Please give the dimensions of focal lenses for astronomical eyepiece. A. This information is given in full in the article referred to.

(13) H. W. B. asks: 1 How many cells of gravity battery I need to run the simple electric light mentioned in SCIENTIFIC AMERICAN, vol. xli., No. 18, November 1, 1879, page 274? A. The gravity battery is not adapted to electric light. Use 12 to 18 cells of Bunsen's battery. 2. Also please give simplest mode of making carbon plates or pencils from gas retort carbon. A. Select bright clean coke and pulverize it finely. Mix with it a small proportion of fluely ground bituminous coal and ram into a mould. Put the mould into an iron box, and surround it with coke dust. Seal the box with clay, and heat to a red heat in a muffle for several hours. When cool soak in thin treacle and bake as before.

(14) A. B. F. asks: 1. Who or what nation or race of people adopted the present mode or style of making figures as is in use generally? The Romans, I suppose, were the originators of the letters for figures. A. Ancient Indians (of Hindostan). 2. Who was the originator of the higher branches of mathematics (algebra, etc.)? A. The originators of the figures. The systems were improved by Descartes, Newton, Leibnitz, Laplace, Euler, and others. 3. How many comets are visible at this time? A. One. 4. Will you please give a good receipt to make sherbet. A. Sherbet is simply lemonade.

(15) E. P. writes: 1. I am building an engine the cylinder of which is 3½ inches by 5 inches. What horse power will it be? How do you find the horse power of an engine? A. See SUPPLEMENT, No. 253, for this information. 2. What size boiler will the engine need? A. A boiler with about 100 square feet heating surface, say, vertical tubular, 32 inches diameter by 46 inches high. 3. What size boat will it drive? A. 26 to 28 feet length by 5½ feet beam. 4. What will be the size and weight of the screw or propeller needed? A. 26 inches to 30 inches diameter by 33 inches to 36 inches pitch. 5. At what speed will it drive a boat of proper dimensions per hour? A. Probably seven miles.

(16) O. R. M. wants a good process of making vinegar quickly. A. What is known as the German process is the most rapid method of making a good vinegar. In this, dilute alcoholic liquor to which one one-thousandth part of honey or extract of malt has been added is caused to trickle down through a mass of beech wood shavings previously steeped in vinegar and contained in a vessel called a vinegar generator (*essigbilder*). It may consist of a large oak hogshead or barrel furnished with a loose lid or cover, a few inches below which is fitted a perforated shelf, having a number of small holes loosely filled with packthread about six inches long, knotted at the upper end to prevent their falling through. Several small glass tubes long enough to project slightly above and below the shelf are also fitted in perforations in the shelf to serve as air vents. The vessel at the lower part is pierced with eight or ten holes equally distributed around the sides at about six inches above the bottom, to admit of the entrance of air. A small siphon tube, the upper curve of which is an inch below the air holes, serves to carry off the liquid as fast as it accumulates at the bottom. The alcoholic liquid at a temperature of 75°–83° Fah., is run in on the shelf, and slowly trickles down through the holes by means of the packthread, diffuses itself over the shavings, slowly collects at the bottom, and runs off by the siphon exit. The air enters by the lower holes, passes freely through the shavings, and escapes by the glass tubes. The temperature within the apparatus soon rises to about 100° Fah., and remains stationary at this point while the action goes on favorably. The liquid generally requires to be passed three or four times through the cask before its acetification is complete.

(17) G. F. M. asks: What is the capacity of the Corliss engine used in Machinery Hall at the Philadelphia Centennial, also that of the Sound steamer Providence, and of the largest ocean steamer running into New York—I mean the nominal horse power? A. The Centennial engines were 40 inches cylinder and 10 feet stroke, and called 500 horse power. The Providence is 110 inches cylinder by 14 feet stroke, about 2,000 horse power; the new Cunard steamer Servia, it is expected, will develop 10,000 horse power. There are several Transatlantic steamers that develop over 5,000 horse power.

(18) S. M. writes: We wish to make a covering for stacks of grain or hay, etc., and we saw an article in the SCIENTIFIC AMERICAN, giving a method of waterproofing cloth, on page 394, and wish to inquire whether this is one of the best methods to waterproof cloth, and whether it will prevent the grasshoppers and crickets from eating it? A. Dissolve about 8 ounces of soap in a gallon of boiling water (soft), and with this thoroughly saturate the cloth; wring out the excess of the liquid, and digest the cloth over night in a solution of 10 ounces of alum in a gallon of water; wring out, rinse in clean water, and expose to the air until thoroughly dry. Cloth thus treated is not attacked by insects or animals, resists mildew and moisture, and is sufficiently waterproof for the purpose mentioned.

(19) J. F. F. writes: I should like to experiment with the Plante secondary battery illustrated in recent issue, but before commencing should like to ask a few questions: 1. Can I not make the battery by taking two sheets of lead, six inches wide by three and one half feet long, covering with flannel and red lead same as for plates, and rolling them up together? I think of doing this because of difficulty of obtaining square glass jars here. Both sheets would have same surface as ten plates. A. Yes. 2. How many cells would be required to produce the electric light, using one of Edison's lamps? A. Probably 10 to 15. We have no experiments in this direction, and cannot say definitely. 3. About what candle power lamp would you recommend as being best for experiment or use in a room? A. 16. 4. How should the cells be connected to lamp—for quantity or tension? A. Tension. 5. Could I charge them with four to six cells Calland battery? A. Yes; one at a time, but very slowly. 6. Could they be charged all together, or should they be separate? A. See answer above. 7. How long should they be connected with battery to obtain maximum charge? A. It depends on the strength of the battery.

English Patents Issued to Americans.

From June 28 to July 1, 1881, inclusive.

Bags, coating, I. T. Tichenor, Auburn, Ala.
Cigar lighter, W. W. Batchelder, New York city.
Deadeye, W. P. Healey, Massachusetts.
Electric lighting apparatus, J. J. Wood, New York city.
Engine for compressing air, E. Hill, S Norwalk, Conn.
Exercising machine, J. R. Judd, New York city.
Fare collector, J. J. Greenough, Syracuse, N. Y.
Fog signal, W. B. Barker, Hoboken, N. J.
Fruit storing, G. A. Cochrane, New York city.
Grain treating, T. A. Jebb *et al.*, Buffalo, N. Y.
Hair removing machine, F. Lambert *et al.*, N. Y. city.
Hat bodies, felting, G. Yule, Newark, N. Y.
Lamp, E. P. Follett *et al.*, Rochester, N. Y.
Liquid measure, G. Woolf, St. Louis, Mo.
Saw sharpener, F. Myers, New York city.
Smoke consumer, H. A. Hogel, New York city.
Spinning machinery, P. Townson, Thompsonville, Conn.
Steam, appar. for distributing, B. Holly, Lockport, N Y.
Steam, appar. for distributing, B. Holly, Lockport, N. Y.
Violin, E. Berliner, Boston, Mass.

NEW BOOKS AND PUBLICATIONS.

THE COMPLETE BREAD, CAKE, AND CRACKER BAKER. Chicago: J. Thompson Gill, Manager "Confectioner and Baker" Publishing Company.

A practical hand book for the confectioner and baker, comprising. (I.) The science and art of baking; (II.) Formulæ and memoranda. The first part contains a brief statement of the scientific principles underlying the breadmaking processes, the selection and preparation of materials, the practical operations of mixing, and the construction and use of the ovens and other machinery employed by bakers. Part II. contains a great variety of practical recipes, the proportions being usually expressed in terms to permit of easy subdivision or multiplication for smaller or larger batches. Though specially designed for the professional baker the work is likely to be a useful adjunct to every kitchen.

WATER WORKS STATISTICS, 1881. London: Charles W. Hastings.

The first issue of British water works, statistics after the style of Mr. Hastings' compilations of gas works statistics. Returns are given from 134 towns, most of them giving full information touching the source of water supply, quantity, mode of distribution, cost, character of service, price per 1,000 gallons, etc., etc.

DIE DARSTELLUNG DES EISENS UND DER EISEN FABRIKATE. (Manufacture of Iron and Iron Articles.) By Edward Japing. Wien. Pest. Leipzig. A. Hartlebens. Verlag. 1881. 244 pp.

The author of this work has taken great pains to give all information possible in a thorough manner and in precise clear language. The first chapter describes the appearance, characteristics, and classification of iron ores and iron. The second chapter treats of the various methods of producing the different kinds of cast and wrought iron and steel; and the third chapter describes the methods of casting iron and steel, the furnaces used, implements, etc. The remaining seven chapters treat of the manufacture of wrought and rolled iron, sheet iron, boiler iron, wire, tubes, plating tinning, galvanizing, enameling, cutting, punching, annealing, tempering, planing, etc. The last chapter describes the manufacture of small iron articles such as nuts, screws, chains, wire netting, cutting devices, etc. The entire field of iron industry is thoroughly explained, and the publication will be found to be a great help to the young ironworker. The work is provided with numerous illustrations.