Business and Personal Wants.

(CONTINUED.)

VALUABLE U. S. PATENT FOR SALE.—I will dispose of the American rights of my Patent Thill. A necessity for farmers and drivers. Price reasonable. Address Harry Turner, Koolunga, South Australia.

Inquiry No. 6630.—For the address of the manufacturer of Golden's all metal weather strips; or for makers of any other weather strips.

Manufacturers of Hardware Specialties Contract, Manufacturers and will market articles of merit.
Larimer Manufacturing Company,
153 S. Jefferson Street, Chicago, Ill.

Inquiry No. 6631.—For apparatus for making and burning charcoal.

We Manufacture on Contract anything in light Hardware. Write us for estimates. Edmonds-Metzel Mfg. Co., 143-153 South Jefferson Street, Chicago.

Inquiry No. 6632.—For a machine for sifting sand and gravel, also for lifting the same into cars at height of 20 to 30 feet.

FOR SALE.—Modern Brush Plant, Solid Back Machines, Woodworking Machinery. Everything complete. Will sell entire plant including buildings and real estate, or any portion of the equipment. Address Plant, Box 773, New York.

Inquiry No. 6633.—For makers of the silver or "G" strings for violins, guitars, mandolins, banjos, etc.

Patent No. 777,363, 13th of December, 1904, regarding conveyor-band, consisting of metal rods, arranged one behind the other. Hitherto the ends of these metal rods have been connected by drain-links or the like. Offers solicited by Habicht, Braun & Co., 177 Franklin Street, New York.

Inquiry No. 6634.—For makers of woven wire pillows.

FOR SALE.—A Manufacturing Article of Very Great Merit.—Well protected with patents; mechanical details of manufacture all worked out; reasons for selling, profitable business in another line taking up all of owner's time. A fine opportunity for engaging in a lucrative business. Address
D. W., Box 773, New York.

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 This is for our information and not for publication.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.
Buyers wishing to purchase any article not advertised in our columns will be furnished with addresses of houses manufacturing or carrying the same.
Special Written Information on matters of personal rather than general interest cannot be expected without remuneration.
Scientific American Supplements referred to may be had at the office. Price 10 cents each.
Books referred to promptly supplied on receipt of price.
Minerals sent for examination should be distinctly marked or labeled.

(9553) S. F. B. asks: Please be so kind as to inform me what alteration should be made in the winding of the 8-light dynamo in order to make it suitable for lighting 110-volt 16-candle-power lamps. Also which of the two armature cores is the better, and do you consider this dynamo a practical electric lighting machine, and do you have the plans for a more up-to-date machine for electric lighting of about the same capacity? A. The 8-light dynamo is a practical machine, even now, seventeen years since it was designed. Many of them are in operation and doing their work well. We have not published the plans for any other machine of this size. The armature composed of sheet iron disks is much to be preferred to a wire-wound armature core. Some very good alterations have been made in this dynamo by certain parties who have built it. These are described in answers to queries No. 8250 and 8316. These you may have if you have kept the back numbers of the paper. To make a 110-volt shunt-wound machine from the same castings for the armature use No. 22 B. & S. cotton-covered magnet wire, 24 coils of 25 turns each; for the field use No. 23 B. & S. cotton-covered magnet wire, 3,640 turns on each magnet. A resistance box to regulate voltage should have about 200 ohms.

(9554) H. G. R. says: Can you tell me what is generally considered to be the proper degree of humidity for rooms in a dwelling house? The hygrometer in my house varies from 20 to 40, even when I evaporate water on the registers. The house is heated by a hot-air furnace in which is a receptacle for evaporating water, but this does not seem to have much effect. Can you suggest an easy and practical method of getting the right degree of moisture in the air and of maintaining same? A. There is no recognized degree of humidity which is regarded as better than any other. It is usually considered that a very dry atmosphere is more healthful than a damp one, and the opinions of physicians differ regarding the value of increasing humidity in dwelling houses during the winter by the evaporation of water. The only ground on which the practice can be justified is that it may tend to make the variation of humidity in the atmosphere of the dwelling less from day to day than would otherwise be the case.

(9555) C. K. K. asks: I want to silver-plate on wood or other substances. Have you any reasonable-priced book on this subject? Electro-plating, I presume it is termed. A. Electro-plating on wood does not differ from plating on any other material electrically. It is necessary to coat the wood with some material impervious to water, and then cover it with plumbago to render the surface a conductor of electricity. Soaking the wood in hot paraffine may close the pores so that it will not soak water, and the paraffine will take the plumbago very well. The plating process is well described in the book "Modern Electro-plating," by Van Horne, which we can send for $1. Another method for coating a surface and making it a conductor is given quite fully in answer to Query No. 8661, Vol. 87, No. 7.

(9556) J. E. W. asks: Would you please explain through your columns how an incandescent lamp is made, and what materials are used in electric lamps, and how is the vacuum put in the globe? A. The making of an incandescent electric lamp involves a great many processes. The glass bulb is blown, and the several parts which can be seen from the outside are each made by different hands and fastened in their several places, thus forming the lamp as it is finally used. Upon the large end of the bulb is a piece of glass tubing by which the lamp is connected to an air pump, and the air in the bulb is finally pumped out, thus producing the vacuum. The vacuum is not put into the lamp, but the vacuum is made in the lamp by removing all the air. A full description of the making of a lamp may be found in our SUPPLEMENT No. 1377, price ten cents.

(9557) G. W. N. asks: Will you kindly inform me if there is a non-freezing solution for cooling gasoline engines? I have 4½ horsepower with 25 gallon tank. Also what chemical effect, if any, same has on the castings? A. There are three common methods of keeping water in the cooling coils of automobiles from freezing. 1. Use a mixture of four parts water and one part wood alcohol. The difficulty with this method is that the wood alcohol tends to evaporate out from the water and has to be replaced from time to time. 2. Use a nearly saturated solution of calcium carbonate. The difficulty with this solution is that it has a slight tendency to corrode the metal it comes in contact with. 3. Use a mixture of four parts water and one part gylcerine, to which should be added about one pound of ordinary washing soda for every ten gallons of the mixture, to correct a slight tendency toward acidity from the glycerine. It is possible to freeze any one of the above mixtures if the temperature is sufficiently lowered, but none of them is likely to freeze at a temperature above about zero Fahr. Any one of the three mixtures will give satisfactory results, but in our judgment perhaps the third is the best. If a mixture is desired for a temperature below zero degrees, we would recommend adding wood alcohol to the third mixture. While we have had no experience with this, we believe it would give good results.

(9558) D. L. G. asks: Being a subscriber to your paper, I will ask a few questions. We receive a bundle of paper here every week, and once in a while it becomes electrified, it attracts other paper. How does this become electrified? Where does it get its electricity? Does the turbine wheel resemble a Pelton wheel? Are the turbines they use in boats like the Pelton waterwheel? A. Paper is easily electrified by friction in cold and dry weather, so the paper bundle by being tossed about and rubbing against other things becomes electrified. It does not need to get electricity from anywhere outside of itself. There is electricity in everything, and anything we do to produce electricity, as we call the operation, only causes the *manifestation* of electricity, which was in the thing before we made it manifest itself. We do not call any electricity into existence, we can only make visible the presence of electricity which was not visible before. The steam turbine acts on exactly the same principle as the Pelton waterwheel, the only difference being that the steam turbine has a very large number of small buckets, and the steam which acts on them enters the buckets at an angle instead of at right angles to the axle of the wheel, and at as many different points as there are buckets in the circumference of the turbine. Also with the steam turbine there are a number of rows of buckets mounted on the same shaft, and the steam after leaving one set of buckets passes fixed vanes which alter its direction before it reaches the second row of buckets. In this way the steam turbine is like a compound Pelton wheel having a number of wheels parallel with one another on the same shaft, arranged in such a way that the water passes through one after leaving another.

(9559) G. C. E. asks: Have you any back numbers telling how a telephone transmitter is made, both carbon and induction, and which is counted the best, say for a two-mile line, and why? Same in regard to receiver. Could a battery be used in place of magnets for call, and how many cells with twelve galvanized line wire? Same with copper wire? Is metallic circuit necessary, or can one wire grounded at each end do? I mean for the telephone. Are both receiver and transmitter necessary, or can one be used for both purposes for that distance? Also, I wish to know how to make a microphone, or number of paper describing same. A. We have published in our SUPPLEMENT, No. 966, and in the SCIENTIFIC AMERICAN, Vol. 72, No. 4, full descriptions for the making of a carbon telephone transmitter and induction receiver. The two are not used at present, interchangeably; the receiver can be used as a transmitter, but the action is so poor that no one would think of relying upon it in regular service. A bell rung by a battery can be used for a call, as well as to ring the bell by a magneto. The number of cells will depend upon the manner in which the line is put up. Probably four to six will ring the bell; if not, add more. One would not put up a copper line for so short a distance and not very frequent service. In the country, away from other electric lines, a return wire is not needed; but if the line passes near other electric lines, a metallic circuit is necessary. A microphone is made by arranging two pieces of carbon so that they are loosely in contact. A current of electricity sent through the poor joint is varied by the changing pressure of the pieces of carbon upon each other. A great many forms of this have been devised. SUPPLEMENT No. 163 gives figures and description of several forms. SCIENTIFIC AMERICAN and SUPPLEMENT copies are mailed on receipt of 10 cents each.

(9560) P. R. J. says: Give process for mounting ordinary newspaper cuts so that they may be used as lantern-slides. A. Newspaper cuts cannot be mounted so that they can be used very satisfactorily as lantern slides. The best way to prepare them is by coating the picture with varnish; a fine spirit varnish should be used, or a negative varnish might answer. Rub the print face down on the glass until all air bubbles are expelled. When dry soak the paper with water, and rub the paper off the glass very carefully with the finger, so as not to remove the varnish and ink of the picture. If successful, the picture will remain on the glass when the paper has been removed. In Hopkins' "Experimental Science" you will find a description of a method of projecting pictures and solid opaque objects directly upon the screen without transfer to glass. Photographs can thus be projected with good effect. It is much better than any transfer of a picture to glass.

(9561) A. F. S. asks: What is smoke in terms of molecular physics? Is it composed of single molecules of carbon or flakes of the same, or is it a fixed chemical compound combustible or gas modified by carbonic acid? A. The visible portion of smoke is the unconsumed carbon which has passed up the chimney and is lost to the fire. It is not in molecular particles, but in masses, as any one may know who gets it into his eyes. Molecules are too small to be perceived with any of the senses. When the smoke is consumed, the gases which escape from the chimney are invisible to the eye, since they contain no solid particles. The carbon is then changed into carbon dioxide—carbonic acid gas.

(9562) A. F. D. says: When I stand before a mirror, with outstretched arms, I observe that my hands are reversed—an object held in my right hand appearing in my left in the mirror. Why are not my head and feet also reversed? A. Your head and feet are reversed in a plane mirror in exactly the same sense as your hands are; that is, the image which you see in the mirror will wink its left eye if you wink your right eye; its left foot is opposite your right foot and is an image of your right foot, etc. The entire image of yourself as seen in a plane mirror is a reversal of yourself; it faces in the opposite direction to that in which you are facing, and looks you in the face. Your outstretched arms and hands are not upside down, in the image, and yet you seem to ask that your head and feet should exchange places and your image be seen standing on its head. This cannot be, in fairness. The image is an optical counterpart of yourself, and because it faces you, its right hand is opposed to your left hand; its right cheek and foot are opposite to the same members of your body. Each point of the image is formed by lines which enter the eye after reflection from the mirror. The image is a geometrical construction. The method of making an image can be found in all the textbooks of optics, and need not be given here; but the idea that there is any reversal in the hands which is not also to be seen in the head and feet, is quite correct. Your image in a mirror could not possibly face in the same direction as you do, so that you could see its back, as you would that of a man who stood in front of you and faced in the same direction as you did.

(9563) E. A. W. asks: Please state in your column of Notes and Queries what substance or material the coil spring is made of in the little hygrometer made in Germany. A. We have no idea to what hygrometer you refer in your inquiry for the material a little spring is made of. If it does service as a spring, it is doubtless made of steel or bronze. It is too indefinite to ask for a hygrometer made in Germany. Many forms are made there.

(9564) G. W. P. asks: I am desirous of finding something about reversing the image by development in a photographic dry plate. I would like to know what experiments have been made. After exposing a plate as usual, I want the image to be a positive instead of a negative. A. The photographic image is reversed by greatly increasing the time of exposure. The image then develops as a positive instead of a negative.

NEW BOOKS, ETC.

KNAUER'S MANUFACTURERS OF THE UNITED STATES STANDARD REFERENCE BOOK. New York: The Manufacturers' Red Book Publishing Company, 1905. Large 4to.; pp. 2,700. Price, $15.

The present edition is the fifth of this extremely useful book of reference, which enumerates and classifies the names and addresses of 512,734 American manufacturers and their output of 52,596 different articles. The book itself has grown from a small 46-page pamphlet, weighing 3 ounces (published in 1882) to the present large volume, weighing 12½ pounds. The book is made up largely of lists of manufacturers of all kinds of articles, and after the name of each manufacturer is printed the amount of capital invested in his business. In cases where this information is not stated, any subscriber can obtain it from the publisher upon application. Besides a complete index of articles catalogued in the work, there is a complete list of the export and commission merchants of the United States. The book is brought up to date annually by the addition of an appendix.

SPANISH-ENGLISH DICTIONARY OF MINING TERMS. By Frederick Lucas. London: Technological Institute. 16mo.; pp. 78. Price, $2.

An important book for those who have mining interests in the Spanish-speaking countries.

NATURE STUDY WITH COMMON THINGS. By M. H. Carter. New York: American Book Company, no date. 12mo.; pp. 150.

This is an elementary laboratory manual. The lessons are planned to set forth what a child can learn for himself about a given thing in one hour, not to teach all that is known, or even all that he himself can know by unlimited study upon it. This is not a handbook of information, but a practical classroom guide, intended solely to develop the method of *learning how to learn*. It is an excellent elementary treatise on the subject.

CULTIVATION AND PREPARATION OF PARA RUBBER. By W. H. Johnson, F.L.S., F.R.H.S. London: Crosby Lockwood & Son, 1904. 8vo.; pp. 99. Price, $3.

This book is intended to give practical advice to all persons interested in the growing and preparation of Para rubber for market. It is written by a man who has had wide experience and has made a study of the methods employed in Ceylon in cultivating the rubber tree. After describing the Para rubber tree, and its cultivation, the author tells of the insect pests and fungoid diseases to which it is liable, the methods of collecting the rubber, and the preparation of the latter from the latex. The yield of Para rubber from cultivated trees is also discussed, and the closing chapters deal with the establishment and maintenance of a Para rubber plantation, and the commercial value of the oil of hevea seeds.

TWENTY-SEVENTH ANNUAL REPORT OF THE STATE BOARD OF HEALTH OF THE STATE OF CONNECTICUT FOR THE YEAR 1904. With the Registration Report for 1903 Relating to Births, Marriages, Divorces and Deaths. New Haven, Conn.: Tuttle, Morehouse & Taylor Company, 1905. 8vo.; pp. 295.

This book, as usual, is of great interest to all who have to do with the general health of the communities mentioned in it. It contains a number of charts, showing the death rate per thousand, during a considerable number of years, from various common diseases. It also contains the annual reports of the County Health Officers. It is interesting to note that the State Entomologist has made a considerable number of surveys of mosquito-breeding places in the State, prepared topographical maps of these localities, and given instructions to the local authorities for their treatment. Another important service rendered by the Board of Health is the monthly examination of water supplied to the various cities, and the analysis and bacteriological examination of samples of water from wells and springs suspected of being dangerous to the public health. Analyses are also made of sewage effluents in connection with the inspection of sewage purification works made by the Board's inspector.

SUBURBAN HOMES, THEIR ACCESSORIES AND EMBELLISHMENTS. By J. H. Woolfitt. London: Guilbert Pitman, 1905. 16mo.; pp. 122. Price, 50 cents.

This brochure contains directions for making articles of considerable size which will be found both useful and ornamental in one's home. The articles described are a novel hall cabinet, a desk and revolving bookcase for the study, a cabinet bookcase and winter and summer fireplace for the dining room, a combination music seat for the drawing-room, as well as several forms of scroll brackets: a dresser cabinet for the kitchen; a useful shed for the garden, and a semi-rustic and Queen Anne porch for the exterior of the house. Although