

FENCE.—Lorenzo M. Shirtcliff, Lynnville, Ill. This inventor has devised an improved wire fence with metal channel bar posts, each having a foot flange seated on and attached to an angle-bent anchor plate, another angle anchor plate being attached to the side flange. Diagonal brace bars are also used at the corners, and there is a flexible guy connection between the brace bar and anchor blocks buried at different angles. The improvement also comprises novel wire-stretching devices for the end or corner posts.

WINDOW GUARD.—Charles E. Sowaal, New York City. To prevent people from falling through open windows, this inventor has devised a cheap and strong guard, which is readily applied or removed, and which permits of raising or lowering the window with the guard in place. It consists of a frame of pivoted uprights and cross slats, with diagonal braces having a sliding connection at one end, the frame being normally not wide enough to reach across the window frame, but by moving the top and bottom of the frame slightly toward each other, the frame locks itself into the window frame so as to be securely held.

WHIFFLETREE.—Lorenzo D. Brown, Shawnee, Ohio. This whiffletree has a bearing ring on its underside, the base plate having a groove to receive the ring, and an upturned hook on the base plate engaging one side of the ring, while a slide bolt engages the opposite side. It may be attached to the cross bar of a vehicle without boring a hole through and thus weakening it, and it is held in place in such a way that it cannot accidentally get loose. It is mounted to turn very easily, and may be readily released from the vehicle so as to tilt and unhitch the traces, thus permitting the horse to go free.

HEATER.—Herman Gutschmidt, Jersey City, N. J. For conveniently and rapidly heating a room by the employment of a lamp this inventor has devised a simple form of heater in which water is made hot and caused to circulate rapidly in a corrugated shell presenting large exposed surfaces to the air. The heater has a series of connected and vertically disposed water circulating compartments, the corrugations taking the place of water-circulating tubes.

BLACKING CASING.—Louis Nearing, Morris Run, Pa. This is a simple form of casing adapted to contain blacking, a dauber, and a brush, the back of the brush forming the lid of the casing, and the dauber and a blacking bottle being received in side pockets. The article may be cheaply made and takes up very little room, so that it may be conveniently carried in a valise or trunk.

DETACHABLE COFFIN HANDLE.—Jacob Klar, Rodney, Miss. Each handle bar is, according to this invention, connected by a flexible depending loop with a flexible carrier strand adapted to be passed under the coffin, there being a transverse bearing block held in a bight in the strand, to be brought into position at the lower corners of the casket. The improvement is designed to obviate the necessity for permanently affixed handles.

NOTE.—Copies of any of the above patents will be furnished by Munn & Co., for 25 cents each. Please send name of the patentee, title of invention, and date of this paper.

NEW BOOKS AND PUBLICATIONS.

PROCEEDINGS OF THE INTERNATIONAL ELECTRICAL CONGRESS HELD IN THE CITY OF CHICAGO. August 21 to 25, 1893. New York: American Institute of Engineers. 1894. Pp. xxiv, 488. Price \$3.

It seems hardly necessary for us to do more than give the title of this work. The proceedings of the institute have acquired so high standing that any of their publications may be pronounced a sine qua non in every scientific library. As a matter of course, the present work represents the highest grade of publication in its own line. We may note that this volume is largely given up to alternating current work, and thereby the tendency of the day is indicated. The papers are not the only contents of the book, the discussions thereon forming most important reading. The paper on the Tesla oscillators is too brief, but is most welcome as a convenient memorandum of the great investigator's most recent work.

INEBRIETY OR NARCOMANIA: ITS ETIOLOGY, PATHOLOGY, TREATMENT, AND JURISPRUDENCE. By Norman Kerr. Third edition. New York: J. Selwin Tait & Sons. Pp. xxxv, 605. Price \$3.50.

This exhaustive monograph represents an enormous amount of labor. It reviews the particular subject from the medical standpoint in the first part of the work, and afterward in the medico-legal aspects, the latter, of course, referring to the English court procedure. It contains a vast amount of very curious information, personal traits of inebriates, instances of false arrests and of decisions by magistrates in these cases. A most excellent index is appended, which consists of over twenty pages of fine type, worthy to be instanced as an example to authors and publishers of how a scientific book should be made. We do not hesitate to recommend it to our readers.

A TREATISE ON INDUSTRIAL PHOTO-METRY, WITH SPECIAL APPLICATION TO ELECTRIC LIGHTING. By A. Palaz. Authorized translation from the French. By George W. Patterson and Merib Rowley Patterson. New York: D. Van Nostrand Company. London: Sampson Low, Marston & Company. Limited. 1894. Pp. vii, 322. Price \$4.

The astonishing development of photometry has been brought about largely by the electric light. This book is very complete, being written in the well known French style of exactness; yet, although France is not an island, we do find a certain amount of insularity in its treatment of the subject, some apparatus very extensively used in England and America being entirely

omitted. The indexes seem hardly adequate to the amount of text. It is possible that upon looking through the book we might find much which the index does not show. We do not find the jet photometer for instance, and the registering jet photometer operated by the photographic process is not given either. The word burner and the proper name "Sugg" do not appear in the index at all. It would be impossible to imagine an American author writing on photometry without mentioning Sugg's London Argand gas burner as a standard burner for valuing gas. It is, however, but fair to say that the work is written with especial application to electric lighting, which would, of course, excuse, to a certain extent, the omission of gas photometry, something whose inclusion in the work would certainly have added much to its value.

THE FOREST TREE PLANTER'S MANUAL. 1894. By J. O. Barrett. Minneapolis, Minn.: The Progressive Age Publishing Company. Pp. 128.

We take especial pleasure in noticing this little pamphlet, which is sent free to all applicants who will remit 4 cents for postage. It gives a popular description of a number of trees and their availability, tells how to manage forest seedlings and cuttings, teaches applied entomology, zoology, and the economic and climatic conditions of the science of forestry and the local aspects thereof.

BREAD FROM STONES. A new and rational system of land fertilization and physical regeneration. Translated from the German. Philadelphia, Pa.: A. J. Tafel. 1894. Pp. 135. No index. Price 25 cents.

This work, translated from the German of Julius Hensel and others, touches on the subject of fertilization and advocates the use of clean fertilization. In the primeval rocks, it claims, can be found adequate fertilizers; these rocks being reduced to dust to become assimilable by plants or decomposable by the soil influences are the fertilizer it recommends. The subject is a curious one, and whether its premises are all correct or not, there is no question that the fine pulverization of barren material often makes it assimilable by plants under the influence of earth acids.

SCIENTIFIC AMERICAN BUILDING EDITION.

JANUARY, 1895.—(No. 111.)

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1. An elegant plan in colors, showing a Colonial cottage at Williamsbridge, N. Y., recently erected for Chas. H. Love, Esq. Two perspective elevations and floor plans. Cost complete \$4,250. Mr. Arthur C. Longyear, architect, New York City. A pleasing design.
2. A Colonial residence at New Rochelle, N. Y., recently erected for J. O. Noakes, Esq., at Iselin's Park. Two perspective elevations and floor plans. Cost \$5,000 complete. Mr. Manly N. Cutter, architect, New York City. An attractive design.
3. Colonial residence at Montclair, N. J., recently erected for Sylvester Post, Esq. Two perspective elevations and floor plans. Messrs. W. S. Knowles & A. H. Thorp, architects, New York City. A pleasing design.
4. A seaside cottage recently erected for C. H. Manning, Esq., at Kennebunkport, Me. Two perspective elevations and floor plans. A picturesque and unique design after the "New England" lean-to roof order. Mr. H. P. Clark, architect, Boston, Mass.
5. A residence at East Orange, N. J., erected at a cost of \$7,000. Architect Mr. W. F. Bower, Newark, N. J. Perspective elevation and floor plans.
6. The First Presbyterian Church at Stamford, Conn. Two perspective elevations and ground plan. A design of great architectural beauty, treated in the Romanesque style. Mr. J. C. Cady, architect, New York.
7. A residence at Scranton, Pa., erected for E. B. Sturges, Esq., at a cost of \$5,000 complete. Architect Mr. E. G. W. Dietrich, New York City. Perspective elevation and floor plans.
8. A summer residence at Cushing's Island, Me., recently erected at a cost of \$3,100 complete. Two perspective elevations and floor plans, also an interior view. Mr. John C. Stevens, architect, Portland, Me. An excellent example for a summer home.
9. View of the Army of the Seventy-first Regiment, New York City. Architect Mr. J. R. Thomas, New York City.
10. Perspective view and floor plans of the fourteen story Reliance Building, Chicago.
11. Miscellaneous contents.—Buff brick popular.—Ceiling and cornice tinting.—Home ground arrangement of plants, illustrated.—Stone dressing by compressed air, illustrated.—Brick dust mortar.—Interesting ruin of cliff dwellers.—Removing the front wall of a warehouse, with sketches.—Improved woodworking machine, illustrated.—Buff brick in New York.—Ceiling paper.—"Deco-re-o," a new material for decorative purposes, illustrated.—Improved gutter hangers, illustrated.—Draughtsman's supplies, illustrated.

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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. 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.

(6357) Old Mechanic writes for information with regard to the process of tempering edge tools called the lead process. Is the steel injured in the process of heating in lead, and what of the uniformity and toughness of such temper? A. The lead heating process for hardening edge tools is almost in universal use in all large establishments, and was only so largely adopted for its uniform control of the proper heat for hardening. By this process the burning of corners and thin edges is prevented by maintaining the temperature of the lead pot at the exact heat for hardening any particular brand of steel. There is nothing in the contact of the hot lead that will injure the steel, but rather, on the contrary, preserve it from burning or overheating, which is a great drawback in the uncertainty of fire heating.

(6358) L. D. W. writes: To answer a question, please state through your paper whether or not more steam is required to run a given amount of machinery when the exhaust from the engine is used for heating purposes than is required when the exhaust is allowed to escape in the open air? If so, please state what per cent more. A. To use the exhaust steam for any purpose is economy of the first order. Even if a small additional back pressure is made upon the engine. No high pressure engine exhausting through a pipe to and above the roof is free from back pressure. When a delicate pressure gauge is attached to the exhaust pipe close to the engine, the back pressure in most engines will be found to be from 1/2 to 1 1/2 pounds. From the lowest pressure of 1/2 to 1 1/2 pound, it is a saving to take the exhaust steam in a direct line from the exhaust port of the steam chest to be used for heating purposes, and, with proper precaution in the use of large pipe and its best distribution for facilitating the circulation with the least obstruction, it should not increase the back pressure. There are many examples in and around New York where a 3/4 inch back pressure has been reduced to 1/4 inch by the proper lay-out of an exhaust heating system.

(6359) D. S. says: I have made violin as described in SCIENTIFIC AMERICAN SUPPLEMENT, No. 930. I have done a good job and wish to have it finished in the best manner. Please let me know what to stain it with, also the kind of varnish to use. A. Dissolve Sandarac.....12 parts. Shellac.....6 " Mastic.....6 " Elemi.....3 "

In 150 parts 95 per cent alcohol which has been colored red with cochineal, or if a darker red is required, add dragon's blood gum. When the above is dissolved add 6 parts Venice turpentine. As this varnish is highly inflammable, use caution as to fire. Find the tone of a piece of wood by direct comparison with similar notes on the piano or any standard instrument. A violin in tone at the proper pitch by a tuning fork is very convenient. Tone of Wood for Same.—Dissolve by heat 2 ounce's amber in oil of turpentine, 5 ounces, and drying linseed oil, 5 ounces. Color with dragon's blood or extract alkanet root. The tone given by a piece of wood depends upon its size, thickness, etc. Therefore, a test must be comparative. Cut square plates of equal size and thickness of a known wood and of the wood to be tried. Place the center of the plate upon end of a cork or spool placed upon a table near the edge. Press the center of the plate of wood with the thumb and bow it near one of the corners. This will give the lowest note such a plate can produce, or the normal tone. The higher the tone, the better the wood. From the "Sci-

entific American Encyclopedia of Receipts, Notes and Queries."

(6360) H. L. S. says: Will you advise me as to the best preparation for filling worm holes in wood? A. Put any quantity of fine sawdust of the same kind of wood into an earthen pan, and pour boiling water on it; stir it well, and let it remain for a week or ten days, occasionally stirring it; then boil it for some time, and it will be of the consistency of pulp or paste; put it into a coarse cloth and squeeze all the moisture from it. Keep for use, and, when wanted, mix a sufficient quantity of thin glue to make it into a paste; rub it well into the cracks, or fill up the holes in your work with it. When quite hard and dry, clean the work off, and if carefully done, you will scarcely discern the imperfection.

(6361) A. J. B. says: Will you please inform me, through the columns of your valuable paper, to what species does the whale belong; is it a fish or an animal? A. A whale is an animal inhabiting the ocean; it belongs to the class of mammals, tribe of mutilates and family of the cetacea.

(6362) C. E. McM. writes: 1. I saw some time ago that a storage battery would give approximately one ampere for each square foot of positive plate; does that mean the entire surface of positive plate? A. A discharge rate of 6 amperes per square foot of positive plate may be allowed. This is per square foot of plate immersed, not of area. It is one-half the area. 2. I have two storage batteries, 8 plates each, plates 6x7, and are pasted with red lead. What would be about the electromotive force and internal resistance of each? Can I run a one candle power incandescent lamp with them both? A. For each couple allow two volts, and calculate discharge rate as above. The resistance may be very much less than the above would give—perhaps 001 ohm. Your batteries should be ample for the lamp named.

(6363) H. C. L. asks (1) how to make the best kind of batteries to run sewing machines by? A. Practically speaking, you can only use a storage battery. The primary battery is expensive and troublesome. See our SUPPLEMENT, No. 845, for storage batteries. 2. How much will it cost per day? A. We cannot give accurate figures—probably two or three dollars. 3. What are the rules for calculating the resistance to give electro-magnets at various distances from the battery, as in telegraphy? A. In general the resistance of the line and battery are made equal. There is no exact rule for what you ask. 4. How many watts are necessary to run a sewing machine? A. Twenty to fifty, according to size and work done.

(6364) C. G. C. writes: I have an electro-magnet (horse-shoe form), 1 1/2 inch between poles; spools are 3/4 inch diameter. What size horse-shoe magnet would I have to use with it to make a satisfactory magneto-electric machine for medical use? A. Use a 6 or 8 inch machine magnet. 2. In building tall chimneys for factory use (say 100 feet) is it usual to lessen the size of flue toward the top? A. No. 3. What is Lapis Calaminaris, and what is its use? A. Zinc silicate or calamine, an ore of zinc. 4. From whom can I buy the weights and measures of the metric system? Is it probable that the system will before long come into general use in this country? A. Address Queen & Co., Philadelphia, Pa. It seems doubtful if they will come into general use for many years.

(6365) F. B. C. asks: How many cubic feet of illuminating gas (from gasoline) can be compressed into a vessel containing 10 liquid gallons, at 5 pounds and 10 pounds pressure per cubic inch? A. If a permanent gas is made, then at 5 pounds pressure the vessel will hold about 13 gallons, and at 10 pounds about 17 gallons. If the gas is partly condensed to a liquid under the given pressure, much more will be held.

(6366) M. F. P. asks how gas can be prevented from smoking. A. If the gas is very rich, it should be burned in small size excavated head burners. Proper burners prevent gas from smoking. The richer the gas, the harder it is to overcome this trouble.

(6367) H. I. P. asks for more information about Mr. Vaughan-Sherrin's new electric boat, described in SCIENTIFIC AMERICAN SUPPLEMENT, No. 786, January 24, 1891. A. We have nothing additional to the article referred to.

(6368) T. P. M. says: Will you please give me a good receipt for an oil wood filler, and one that is not an oil filler, for hard woods where a very fine surface is required? Also a filler for cast iron, such as the fields of dynamos and castings of engines, etc. A. Hard Wood Filler.—Use boiled oil and enough corn starch to make a very thick paste. Add a little japan, and reduce with turpentine. Add no color for white oak; for dark ash and chestnut use a little raw sienna; for walnut, burnt umber and a very little Venetian red; for bay wood, burnt sienna. Use enough color to cover the white of the starch. Apply with brush and rags. Let it dry forty-eight hours, or until it is in condition to rub down with No. 0 sandpaper, without much gumming up, and if an extra fine finish is desired, fill again with the same materials, using less oil, but more of japan and turpentine. The second coat will not shrink, it being supported by the first coat. When the second coat is hard, the wood is ready for finishing in any desired style or to any degree of nicety by following up the usual methods. This formula is not intended for rose-wood, and will not be satisfactory if used therefor. American Wood Filler.—Apply to the wood with a brush the following mixture: Pulverized starch by weight, 3 parts; heavy spar, 3 parts; 1/2 part by weight of siccativ, with enough turpentine to make the consistency of ordinary varnish. For dark woods add to the siccativ umber up to 1/2 part. Rub across the grain of the wood with a piece of felt fastened to a piece of wood. Let the wood dry about eight hours, rub with glass paper, then polish and varnish. Composition to Fill Holes in Castings.—1. Dry clay, 6 parts; borax in solution, 1 1/2 parts. Mix. 2. Make a thick paste of pulverized binoxide of manganese and a strong solution of silicate of soda.

(6369) R. W. S. asks: 1. With a potential of 25 volts and a current of 8 amperes, how many