

Cleaning Out Waste Pipes.

The annoyance arising from the stoppage of waste pipes in country houses, although very great, is but a small matter compared with the dangers which may follow obstructed pipes. The "sewer gas," about which so much has been written and which is so justly dreaded, is not, as many suppose, the exclusive product of the sewer. Indeed, the foulest, most dangerous, and deadly gases are not found in the sewers themselves, but in the unventilated waste pipes and those which are in process of being clogged by the foul matters passing through them. Any obstructions in the soil or waste pipes are therefore doubly dangerous, because it may produce an inflow of foul gas into the pipe, even though the entrance to the sewer itself has been entirely cut off.

The question is how to get rid of the accumulations in pipes partly stopped or already closed. Digging up and cleaning out is a costly remedy, often ineffectual by reason of careless workmen. The second is the plumber's force pump, which is usually only a temporary relief. In pipes leading from the house to the cesspool there is a constant accumulation of grease. This enters as a liquid and hardens as the water cools, and is deposited on the bottom and sides of the pipes. As these accumulations increase, the waterway is gradually contracted, till the pipe is closed.

When the pipe is entirely stopped, or allows the water to flow away by drops only, proceed thus: Empty the pipe down to the trap, or as far as practicable, by "mopping up" with a cloth. If water flows very slowly, begin when the pipe has at last emptied itself. Fill the pipe up with potash, crowding it in with a stick. Then pour hot water upon it in a small stream, stopping as soon as the pipe appears to be filled. As the potash dissolves and disappears, add more water. At night a little heap of potash may be placed over the hole, and water enough poured on so that a supply of strong lye will flow into the pipe during the night. Pipes that have been stopped for months may be cleaned out by this method, though it may call for three or four pounds of potash. The crude kind, however, appears to act as well as the best. If the pipe is partially obstructed, a lump of crude potash should be placed where water will drip slowly upon it and so reach the pipe. It is also well to fill the upper part of the pipe with the potash as before, and allow hot water to trickle upon it. Soda and potash are both used for the purpose of removing greasy obstructions, and the usual method of application is to form a strong lye and pour it into the pipe. It is better to put the potash into the pipe, because the water which it contains, instead of diluting, helps to form the lye. As water comes in contact with the potash it becomes hot, thus aiding in dissolving the grease. Potash, in combination with grease, forms a "soft" or liquid soap, which easily flows away, while the soda makes a hard soap, which, if not dissolved in water, would in itself obstruct the pipe.

When a pipe is once fairly cleaned out, the potash should be used from time to time, in order to dissolve the greasy deposits as they form, and carry them forward to the cesspool or sewer. The potash is very valuable for this purpose, because, in addition to its grease-solving powers, it is exceedingly destructive to all animal and most vegetable matters. The most dangerous and deadly gases appear to come from urinals and wash-basin pipes, these, in many cases, seeming to be more foul than those from water closets. The decay of the soap and animal matter washed from the skin

appears to be the sources of the gases. The potash will be effective in keeping these pipes clear, and in this way may lessen the dangers.—*A correspondent in the American Artisan.*

A Method for the Purification of Commercial Carmine.

BY JOHN S. ADRIANCE, A.B., F.C.S.

Of all substances used for staining in histological work, carmine is perhaps the most important, but the impure state in which it is sold prevents entire dependence being placed upon it. Commercial carmine contains many impurities and adulterations, more especially fatty matter, tyrosine, talc, carbonate of lead, vermilion, and dust. Pure carminic acid, which is the basis of carmine, is easily soluble in water and alcohol. This is taken advantage of in its purification; very often three-quarters of the commercial article is

BURMAH.

The English possessions in India have lately been augmented by the annexation of the territory of Upper Burmah. The King, Theebaw, managed to get into a dispute with the English, who hold lower Burmah, or that portion bordering on the Indian Ocean, including Rangoon and the mouth of the Irrawaddy River. The result was, the English sent a military force up the river on steamers, and the capital of Upper Burmah, Mandalay, including the King, was soon captured. Burmah is a great place for elephants.

We present illustrations from the *Illustrated London News* of the King's "sacred white elephant" and the employment of working elephants in the removal of teak, which valuable kind of timber, superior to oak for ship building, is one of the most important products of Burmah. It is sent down the river from the

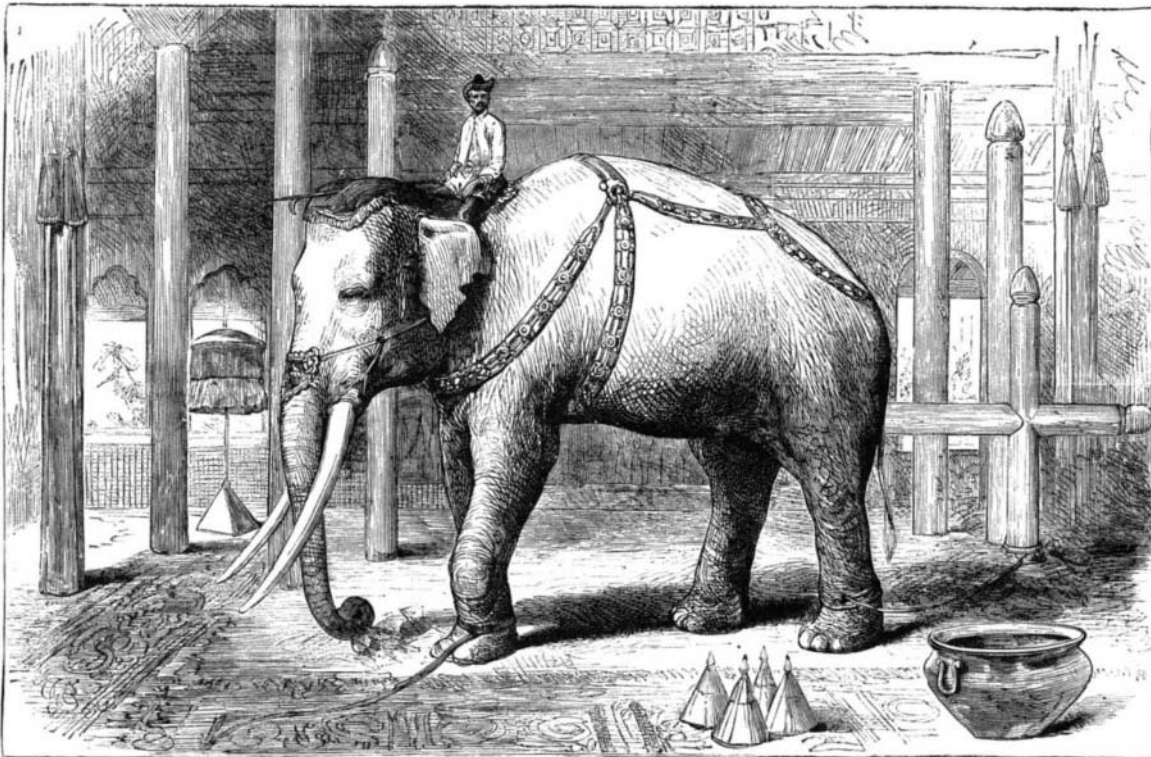
forests beyond the British frontier to Rangoon and Moulmein, whence it is mostly exported to British India; and the recent dispute between King Theebaw and the British Commercial Company in his dominions had reference to the cutting of teak.

Mandalay, the royal city and capital of Upper Burmah, with a population of 100,000, situated on the left bank of the Irrawaddy, is 350 miles above Rangoon. The city and sheltered suburbs measure four miles square. The city is three miles from the banks of the river, and is entirely commanded by the hill, on the top of which is the pagoda. The city proper is within a broad moat, on which King Theebaw had two state barges, and there are five bridges across it. Next to the moat is a high brick loopholed wall, one mile square, on which are forty-eight pagodas, and which is backed by an earth embankment to within six feet of the top. In the center of the city is the palace, occupying a space of a quarter of a mile square, and surrounded by a high stockade and inner wall, with four entrances, and another inner stockade and wall. In the palace yard are the late King's tomb, the Mint, High Court, Tower, with bell and drum, and the celestial elephant. All the buildings, including the palace itself, but excluding the Mint, are gilded, and are of wood or bamboo.

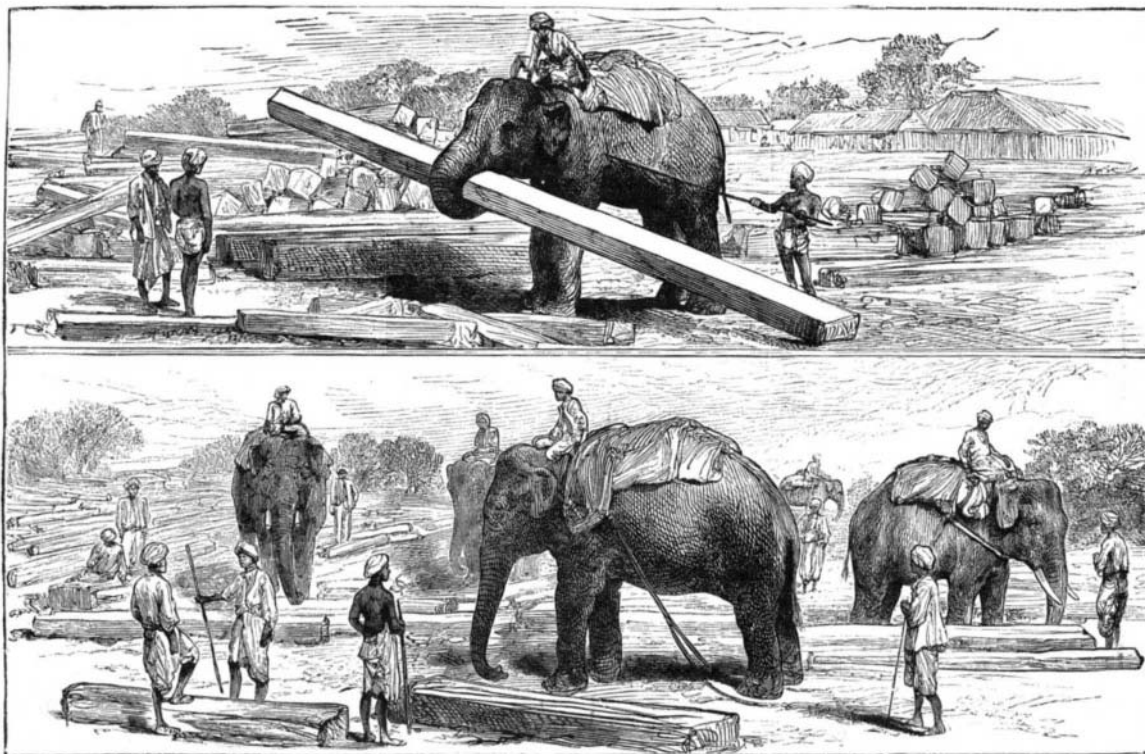
The Treatment of Frost-bitten Fingers and Toes.

Dr. Lapatin, in the *Proceedings of the Caucasian Medical Society*, advises that fingers and toes which have been slightly frost-bitten, and which subsequently suffer from burning, itching, and pricking sensations, should be painted, at first once, and afterward twice a day, with a mixture of dilute nitric acid and peppermint water in equal proportions. After this application has been made for three or four days, the skin becomes darkened and the epidermis is shed, healthy skin appearing under it. The cure is effected in from ten to fourteen days. The author has found this plan very effectual among soldiers, who were unable to wear their boots in consequence of having had frozen feet. They were, in this way, soon rendered capable of returning to duty.—*British Medical Journal.*

THE Rothschilds, it is said, invested 800,000 francs in the experiments of M. Marcel Duprez for transmitting power over long distances by means of electricity. The motive force is conveyed by a comparatively feeble current, thereby doing away with the apprehension of dangerous friction and resistance. Niagara Falls may yet be utilized to operate engines in New York or Philadelphia by electricity.



THE SACRED ELEPHANT OF BURMAH.



ELEPHANTS CARRYING TEAK TIMBER—BURMAH.

worthless for coloring. The following method may be found of service:

Extract the carmine with boiling water, washing the residue several times; treat the liquid with lead acetate acidulated with acetic acid until a drop of the solution is colored by hydric sulphide (H₂S). Wash the precipitate by decanting twice, then bring on a filter, decompose with sulphuric acid (H₂SO₄), and filter; repeat this last operation twice, the second time using hydric sulphide (H₂S) instead of sulphuric acid (H₂SO₄). Evaporate to dryness on a water bath, as the acid is decomposed at 136° C., wash with absolute alcohol, and filter; allow the alcohol to evaporate spontaneously, when crystals will be distinctly seen; wash with warm water, filter, and evaporate to dryness over a water bath. Dissolve the residue in ether, and allow the ether to evaporate spontaneously, when crystals of pure carminic acid will appear. Preserve for use in glass stoppered bottles. If your work has been accurate, an alkaline solution of iodine will entirely destroy the color.

ENGINEERING INVENTIONS.

A cable grip has been patented by Mr. Lewis B. White, of New York city. The gripping jaws are on the lower ends of levers operated by a piston working in a cylinder, the piston making the grip take hold on the admission of compressed air to the cylinder, and allowing the hold to be released when the compressed air is permitted to escape.

An apparatus for making steel has been patented by Mr. Alfred Davy, of Sheffield, England. It is arranged for enabling the operation of Bessemer steel making to be carried on in a converter which is portable in the sense of being suspended from a crane or other overhead movable support, and which will answer the double purpose of a foundry ladle and converter.

AGRICULTURAL INVENTIONS.

A stack binder has been patented by Mr. Adolphus J. Laundry, of Clyde, Kan. It is made with a rod having a foot at its lower end, and with arms and a nut and washer, whereby the stack can be compressed by forcing the arms down upon the top, while the ends of the binding arms have sockets to receive poles to hang down along the sides of the stack.

A cultivator has been patented by Mr. Lucian C. Chamberlin, of Lathrop, Mo. It has hinged runners, with rods and levers for adjusting them, a cross bar connecting the beams, having a lever for raising the cutters from the ground, and a rear cross bar having a roller to crush lumps and clods, with other novel features, for cultivating corn and other crops planted in rows or drills, and destroying weeds etc.

A cultivator and harrow recently patented by Mr. Dalton Walls was noticed in the SCIENTIFIC AMERICAN of Dec. 19, but our notice should have stated that the address of the inventor was Appleton City, St. Clair County, Mo.

MISCELLANEOUS INVENTIONS.

An auger has been patented by Mr. George F. Stearns, of Chester, Conn. The blade and shank are made of separate parts joined together, the auger having a steel blade, a wrought steel or iron shank extending to the blade, and a cast worm.

A vehicle wheel has been patented by Mr. James Fishwick, of Mason, O. It has a metal tire, with steel wire spokes, the alternate ones being expanded away from each other at the hub to form two series, which are thrust apart and kept in tension somewhat after the manner of the bicycle wheel.

A cuff adjuster has been patented by Mr. Lucien A. Stillwagon, of Greencastle, Ind. A flat metallic bar forms the body of the adjuster, having at one end a button adapted to enter the button holes of the cuff, and at the opposite end a pivoted spring-acted clamp for receiving the edge of the shirt sleeve.

A butter worker has been patented by Mr. Edward Krueger, of Youngville, N. Y. The bottom is arranged with the grain of the wood at right angles with the length of the frame, and there are other novel features, whereby the operating mechanism of the machine will not be affected by the swelling and shrinking to the bottom of the tray.

A portable fence has been patented by Mr. Henry W. Butterfield, of Griggsville, Ill. Combined with overlapped ends of the panels and recessed sills supporting them are binding brace wires, so devised as to make a strong and inexpensive fence, which can be readily and quickly set up and taken down and moved from place to place.

A pocket knife has been patented by Mr. Robert G. Hunter, of Palatka, Fla. It has a shoulder formed at the juncture of the back of the blade with the heel, and an open slot leading from the back edge of the heel inward and rearward to the usual pivotal point, so that the blade will be held steadily and firmly, however it may be placed.

A counterboring attachment for bits has been patented by Mr. Edwin F. Lindsey, of Bristol, R. I. The device is calculated to hold adjustably a counterboring or countersinking tool, so that a hole may be bored or drilled and countersunk or counter-bored at the same time without removing the bit or drill from the hole.

A lock and latch combined has been patented by Mr. George E. Bower, of Auburn, N. Y. This invention covers a novel construction and combination of parts in a mechanism which may quickly be adjusted to serve either as a lock or latch, providing for varying keys, so that each latch, when adjusted as a lock, can be opened from the outside only by its own key.

A medical compound has been patented by Mr. Charles J. Ulrici, of Havana, Cuba. It consists of pitch deprived of the lighter distillates, such as wood spirit, the acetones, aldehydes, creosote, etc., and combined with glycerine and alcohol, after a certain manner and in special proportions, the compound to be applied externally for sores and skin diseases.

A pulp grinder has been patented by Mr. William Wilkeson, of Youngstown, N. Y. It has a conical running stone rigidly mounted on a vertical shaft, surrounded by an outer running stone with a casing, the ends of which rest on chilled iron balls contained in circular pockets, with other novel features to reduce friction and facilitate the grinding of wood pulp.

A glass tube cutter has been patented by Mr. Samuel G. Lawson, of Portland, Oregon. It consists of two rods pivoted together, with suitable handle, a cutting disk or point being attached to the end of one rod and a gauge plate to the other rod, making a simple device for squaring the ends of glass tubes or cutting rings from long tubes.

An extension table has been patented by Mr. George Schmitt, of New York city. It is so constructed that the table can be extended or contracted without disturbing the people sitting around the middle part or anything that may be thereon, with other novel features to promote simplicity of construction and renders such tables less liable to get out of order.

A hop box shade has been patented by Mr. Alfred Engle, of West Amboy, N. Y. It has a fold-

ing shade supporting frame carried by a central standard, instead of end standards, being designed to protect the gathered hops and the pickers while at their work, and also to support the hop poles and facilitate the work of picking.

A moulding clamp has been patented by Messrs. Charles A. Phelps and William W. Sterns, of Humboldt, Iowa. It is a novel form of vise for holding the mitered corners of picture frames and other mouldings while being nailed, and keeping them rigidly in a convenient position as desired, leaving the hands of the operator free to more readily do his work.

A hitching device has been patented by Mr. Lewis Lewis, of Ironton, O. It consists of a stock through which passes a sliding rod connected at one end with spring arms and having at the other end an eye, springs being so arranged as to draw the jaws of the arms firmly together, and the device being quickly attached to or detached from the bit ring.

A check rein holder has been patented by Mr. William D. Taber, of Rockville, R. I. Instead of the usual hook a rectangular metallic frame is secured to the saddle carrying a cam-faced clamping tongue loosely mounted, and arranged to closely approach the lower interior surface of the frame, making a device by which the check rein can be quickly adjusted to a proper length.

A fastener for sap bucket covers has been patented by Mr. Burt F. Couch, of Garrettsville, O. It is detachable, and composed of two main parts, a clasp piece and a loop piece, of spring wire or other suitable material, making a hinge designed to project above the edge of the bucket, making a fastening with which the wind will not disturb the cover, and so the stream of sap will not be choked or caused to sputter.

A marine drag has been patented by Mr. William H. Hart, of New York city. It is made with a pyramidal body having a spar attached to one side of its mouth and jointed metal rods to the other sides, ropes or chains from the corners of the mouth of the drag being connected with a hawser from the vessel, and the apex of the drag having a trip line extending along the hawser to facilitate the taking in of the drag.

A window hanging has been patented by Mr. Caleb Dellenbeck, of Portland, Oregon. Combined with a sash is a lug projecting therefrom having projections on its under side, a screw rod passing through an aperture in the lug, a nut with grooves in its top screwed on the rod, and a sash cord connected with the rod, the device facilitating the adjustment of the length of sash cords.

A hinge has been patented by Mr. James W. Whitmore, of Richmond, Va. Its leaves have sockets, one of which is fitted to turn and slide up and down the other, in combination with a screw fitted by a nut in the interior of one socket, and a coupling applied to the other socket, so that the door or gate on which the hinge is used may be made self-closing or not as desired.

A pipe for floorings, ceilings, and other building purposes has been patented by Mr. Ferdinand Ephraim, of San Francisco, Cal. The invention consists of a special construction of iron or other pipes, with a longitudinal tongue on one side and a longitudinal groove or socket on the other side, whereby any number of pipes may be laid parallel and matched or interlocked so as to be self-supporting.

A stop and waste cock has been patented by Mr. Douglas Westervelt, of Chicago, Ill. Its construction is such that the supply and waste ports cannot be opened at the same time, and the latter being below all other pipes, the service pipe and its mechanism may be entirely cleared of water to prevent freezing, the device being especially intended to prevent any possible escape of sewer gas.

A method of transferring patterns for embroidery has been patented by Mr. Heinrich E. Kramer, of Leipsic, Germany. The invention consists in a strip or sheet of paper provided with a layer of starch, upon which the design is printed in one or more colors, the printed matter having a covering of dammar or other gum or varnish, so that the pattern with all its colors can be easily transferred.

A chromatic printing machine has been patented by Mr. Joseph B. Underwood, of Fayetteville, N. C. This invention provides a novel construction whereby, at the same impression, different colored inks may be used on the sheet as desired in different places on the form, and the rollers carrying the different colored inks may be easily adjusted to ink only the places desired.

A breast strap iron has been patented by Mr. Harry Merrymon, of Carbondale, Ill. Its design is such that with it a much shorter breast strap may be used than with common irons with the strap applied in the common way, thus effecting economy in leather, and the iron is given freedom to slide upon the central portion of the strap, so equalizing its wear as to increase its durability.

An ore separator and concentrator has been patented by Mr. Ira F. Monell, of Sugar Loaf, Col. This invention embodies in one machine concentrators which operate in part by concussion, and employ swinging tables and those in which traveling belts are used to facilitate the separation and escape of the tailings, a leading object of the invention being to get rid of the tailings as fast as they collect.

A spring bed has been patented by Messrs. Luther J. Van Delinder and Amasa W. Nash, of Garfield, Iowa. It has a head rest frame in which the longitudinal bars are in line with and have a bearing on the corresponding bars of the main frame, so that less strain is thrown on the side braces, ratchets, and pawl, the rest being easily manipulated by a single attendant, and automatically taking a level position.

An egg timer has been patented by Mr. William H. Silver, of New York city. It consists of a sand glass, with such a support that it may be hung upon the wall of a room, or otherwise conveniently placed, the glass being reversible, and on both ends being marked by a graduated scale indicating minutes and half minutes, and also with letters indicating "hard," "soft," "medium," etc.

A hair clipping machine has been patented by Mr. George F. Sack, of New York city. It is more particularly designed for horse clipping, and has a swiveling connection of the stationary cutting plate and certain connection with its gearing of the reciprocating plate, giving increased facility for operating the machine, and adapting the cutters to work over different parts and in different directions as regards the cut.

A shaving case has been patented by Mr. James H. Flagg, of New York city. It has a main compartment for the razor strop and separate compartments for razor and soap and brush box, arranged upon either or both sides of the main compartment, with flaps for closing the several divisions, so that the whole may be carried conveniently in a traveling bag or in the pocket.

A weather strip has been patented by Mr. William Harrison, of Kingston, Ontario, Canada. It is pivoted, and has a bar projecting upward, with a spring for pressing the strip and bar downward and holding them, a catch on the door frame and a lug on the bar, etc., whereby the weather strip is automatically raised and locked in place when the door is opened and automatically forced down when the door is closed.

A dip net has been patented by Mr. William A. Obenchain, of Bowling Green, Ky. It is formed of four rods united at the ends by joints, netting being secured to the rods, and there being also suspension rods with link joints and netting at the lower ends of these rods, so that the net will adjust itself automatically when resting on the bottom or being raised, and can be compactly folded.

A coffee pot stand has been patented by Mr. Joseph Linders, of Winfield, W. Va. It is so made that the coffee pot will be supported thereby above a drip pan or trough, the pot being placed upon a tilting frame to avoid the trouble and inconvenience of lifting the pot when the coffee is being poured, and there being provision for keeping the coffee hot by the use of a small lamp.

A nut lock has been patented by Mr. John Bare, of Mount Union, Pa. It is for use in connecting sections of railroad rails, and has a T-shaped spring bar, with the cross portion designed to bear beneath two nuts of the fish plate, the stem portion having a bend or set, with a perforation, the bend allowing the stem, when forced down and spiked to the cross tie, to exert an elastic tension against the lower sides of the nuts.

A combined scarf ring, band, and collar stud has been patented by Mr. Henry W. Aberlin, of Bayswater, Middlesex Co., Eng. The clasp is made in two parts hinged together, with a pin or stem affixed to its rear side having lateral lugs, with a collar stud having a pillar of flattened section, with other novel features, whereby the correct position of the band, ring, or clasp, and the necktie, is insured, and there will be no danger of loss of either.

A machine for mending stereotype plates has been patented by Mr. Jacob North, of Lincoln, Neb. This invention covers a novel construction and arrangement of parts whereby the plate will be firmly held while the necessary holes, slots, etc., can be conveniently made for the proper connections, so that the type will fit snugly, and the projecting parts be readily cut off and the plate bushed at each side of the inserted type.

A voltaic battery has been patented by Messrs. Desmond G. Fitz-Gerald, of Brixton, Surrey Co., Eng., and Thomas J. Jones, of Princes St., Hanover Sq., Middlesex Co., Eng. In the negative element, combined with the conductive support and the depolarizing agent, is a waterproof layer containing peroxide of lead interposed between the conductive support and the depolarizing agent, and being in contact on one hand with the support and on the other hand with the depolarizing agent.

NEW BOOKS AND PUBLICATIONS.

LABRADOR: A SKETCH OF ITS PEOPLES, ITS INDUSTRIES, AND ITS NATURAL HISTORY. By W. A. Stearns. Boston: Lee and Shepard, 1884.

Labrador is to most people an undiscovered country. Such vague impressions as one gains from occasional magazine articles are not calculated to induce a desire for further information if it must be gained by personal contact. Yet the journey, when made in a comfortable armchair at home, by means of Mr. Stearns' book, will afford considerable pleasure to those who have a love for traveling and like to know what their neighbors are doing. The unfavorable impression will scarcely be removed, for the bleak headlands and frozen isolation are shown to exist in reality. But the people and their industries will be found to be sufficiently characteristic to attract interest. To students of natural history, the addition to the area of explored nature will prove attractive.

A TEXT-BOOK OF TANNING. By Henry R. Procter. New York and London: E. & F. N. Spon.

The writer of this book has had several years' practical experience in an English sole leather tannery. He has devoted himself more to a consideration of the chemical questions involved in tanning than any other writer upon the subject, except possibly Professor Dussauce, whose book, written some twenty years ago, is now out of print; but Mr. Procter has endeavored to state his views and the results of his experience in such terms as may be readily understood by the average tanner. This is no easy task, considering the difficult nature of the questions involved. The exact differences between tannins obtained from a variety of vegetable substances has never yet been determined, and competent chemists often make quite different figures as the result of analyses for the quantity of tannin in two specimens of the same material. Then, too, the amount of tannin in oak and hemlock bark, in sumac, and in most other tannin producers, varies widely, according to the climate and soil, the age of the plant, and the after curing before the tannin is extracted. These are all questions directly affecting the value of the tanning material, but, this once determined, there are yet more important considerations in-

volved concerning the reactions which take place in the handling of the tan liquor in connection with the hide and skin in the manufacture of leather, and about which the best tanners, as well as the chemists who have studied the question, by no means agree. German and Austrian chemists have given a great deal of attention to the subject for the past ten years, and there are now several technical schools there for the education of young tanners in the chemistry of their business. There is also an effort on foot among the tanners here to employ a chemist to devote himself exclusively to such experiments as the trade may call upon him for, a circumstance which renders this volume especially well timed. In addition to the chemical features, however, the book gives a practical description of the leather manufacture, more particularly as it is carried on in England, and presents many points well worth the attention of American tanners.

ELECTROLYSIS. By Hippolyte Fontaine. Translated by J. A. Berly. New York and London: E. & F. N. Spon.

This book gives a great deal of valuable information relative to the treatment of metals by electricity, including the fullest details yet published of the best French practice in nickeling, coppering, gilding, silvering, and the refining of metals and treatment of ores. The department of electroplating is presented with great thoroughness, with illustrations of representative establishments and descriptions in detail of the appliances. In mentioning the fact that, in silver plating, the Messrs. Elkington, of England, and Christofle, of France, have long had a kind of monopoly of the business, the author says that "there are not more than ten factories in Paris where the silver plating business is conducted on a really industrial footing; the small installations do not succeed." It is stated that the Messrs. Christofle annually deposit more than 6,000 kilogrammes of silver (equal to 13,227 pounds avoirdupois) the average thickness of the deposit equaling 300 grammes (10½ ounces avoirdupois) per square meter. The description of the electrical refining of copper and lead includes explanations of the work done at establishments at Hamburg, Frankfurt, Marseilles, Birmingham, England, and other places where the work has been done on a large scale.

Business and Personal.

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