

ENGINEERING INVENTIONS.

A rotary engine has been patented by Mr. George Barr, of La Center, Washington Ter. It consists of a hollow revoluble shaft carrying a hollow cross arm or tube, the ends of which are closed, and which has side ports passing through opposite sides of the arm near either end, with other novel features of construction and combination of parts.

A railway plow has been patented by Mr. Frank Nearing, of Schuylkill Haven, Pa. A truck constructed to run upon a railway track has plows connected by means of pivoted side bars to the frame of the truck, so as to run in contact with the ground at either side of the track, and there are means for raising and lowering the plows and of tilting them upon the truck.

A car coupling has been patented by Mr. Donald E. La Lone, of Miles, Iowa. The draw-head is arranged with three independent recesses or sockets, each adapted to receive a coupling link, and has pivoted heavy plates, with their forward ends beveled to assure easy entrance of the link into any of the sockets, with other novel features, whereby high or low cars may be coupled together automatically with an ordinary link.

A steam generator has been patented by Mr. Albert M. Bowers, of Newark, N. J. Combined with a boiler are two or more sets of steam generator tubes, each set connected to end reservoirs common to all the tubes of the series, a supply reservoir, connections between it and the boiler, and between it and the end reservoirs, and between the generator tubes and the boiler, with other novel features, to promote circulation, clear the water of sediment, and economically generate dry steam.

AGRICULTURAL INVENTION.

A combined straw carrier and stacker has been patented by Mr. William C. Buchanan, of Belleville, Ill. It is so made that it can be easily and quickly adjusted on uneven ground, and the stacker can, when the machine is in motion, be swung in any direction, it being generally attached to the rear part of the thrashing machine, but so it can be transported independently thereof.

MISCELLANEOUS INVENTIONS.

An improvement in overalls for the use of artisans and laborers has been patented by Mr. Jesse F. Diggs, of Baltimore, Md. It consists mainly in using a re-enforcing strip on each side, which extends from the seam at the seat around the outside of the hip and down across the knee to the inseam of the leg.

A combined window ventilator and shade has been patented by Mr. Thomas Dean, of Paterson, N. J. Combined with a U-shaped frame pivoted to the lower end of the window casing are folding strips secured to the sides of the casing and to the sides of the frame, a window shade being secured to a roller mounted on the frame.

A portable cooking apparatus has been patented by Mr. Gustav Warnecke, of Frankfort-on-the-Main, Germany. Combined with a cooking vessel formed with a central tube to serve as a fire chamber is a ball bent at its middle to form a grate for the fire chamber, while it can be used in the ordinary way upon a stove or over an open fire.

A photographic paper roll holder has been patented by Mr. Erastus B. Barker, of New York City. The invention includes a movable frame for carrying the rollers and paper, devices controlled by pressure for making and breaking connection with the indicator which controls the measure of the paper as it is unrolled for use, and various other novel features.

An axle box has been patented by Mr. Frederick J. Wiles, of Grassy Point, N. Y. The journal portion of the axle is made hollow to receive oil, and has small orifices for its escape to the surface of the axle, the axle having a collar over which the axle box fits, the latter being held in the hub of the wheel by a nut that closes the end of the hollow axle.

A bottle holder has been patented by Mr. Austin F. Jackson, of Taunton, Mass. It consists of a bottle-shaped body having pins projecting horizontally in opposite directions, with a detachable cup-like base having perforated lugs or sockets, both the body and base being lined with flannel or some other soft material.

A composition of matter for plastering walls, etc., has been patented by Mr. Geo. H. Wooster, of West New Brighton, N. Y. It consists of gypsum, marble dust, and an adhesive material, as glue, gum arabic, or sugar, prepared and combined in a novel manner, and mixed with water to make cornices and other decorations, with a hard finish.

A mosquito net frame has been patented by Mr. Albert C. Lottman, of Houston, Texas. It has two standards with rounded heads, united by a horizontal bar, carrying side bars with a cross piece, all adjustably united, in such way that the frame may be easily attached to a bed and the frame may be frequently taken apart and joined again without damage.

An automatic dam has been patented by Mr. Horace Harding, of Tuscaloosa, Ala. It is so constructed as to give increased waterway over dams in time of freshets, and is an improvement on a former patented invention of the same inventor for that purpose, each valve for the escape of water to be automatically opened as the water rises.

A sleigh brake has been patented by Mr. Edward C. Selle, of Embarras, Wis. This invention covers a novel apparatus for use in connection with any of the ordinary forms of sleigh by which the driver may regulate the speed of the sleigh in going down hill, and, in ascending, it may be readily applied as a stop for the purpose of giving the horses a rest.

A miner's outfit has been patented by Messrs. Edward Williams, Jr., and David E. Keller, of

Centralia, Pa. The invention covers a novel construction of a practical and convenient supply case for carrying squibs, paper, small tools, etc., affording separate compartments and protecting the contents from dampness.

A sled has been patented by Mr. Jacob H. Nicholson, of Oxford, Md. The rear portion of the seat is adjustable to occupy a plane above the forward portion, or it can be adjusted to form a back, or the two sections of the seat may be adjusted to occupy the same plane, so that the rear portion of the seat may be firmly locked in either of three positions.

A garment supporter has been patented by Messrs. Theodore Gentzsch and Gustave A. Witte, Jr., of Brooklyn, N. Y. It consists of a plate with slotted end, a loop and eye on opposite sides of the slot, a needle-carrying arm being pivoted to the plate, making a cheap and effective device for supporting stockings and shirt sleeves, and for similar uses.

A gate has been patented by Mr. John S. Heaton, of Shelbyville, Ky. This invention relates to that class of gates adapted to be opened and closed by the operation of levers within reach of persons walking, or on horseback, or in vehicles, the gate being simple in construction, and latching automatically in both open and closed position.

A picture frame has been patented by Mr. Michael Hogan, of Pelham, N. Y. The object is to produce a frame in which the picture will be flush with the front surface, the picture being mounted in a depression in the frame, and secured by covering the outer surface and a portion of the outer upper surface of the picture with a flexible material.

A halter trimming has been patented by Messrs. Bion E. and D. Everett Martin, of Sycamore, Ohio. The invention consists of a web-holding device designed more especially for use in web halters, for holding the web and for adjusting it to diminish or increase the size of the halter, any strain upon the web rendering it self-binding in the adjuster or holder.

A defecator for cane juice has been patented by Mr. Leon F. Hauptman, of New Orleans, La. It consists of a vessel having a double steam coil arranged to receive steam from the center and discharge the steam and the water of condensation from the outer ends of the coil, with other novel features for utilizing the waste steam.

A circle scribing attachment for squares has been patented by Mr. William F. Seargeant, of Marshall, Mo. This invention covers an improvement on a former patented invention of the same inventor, making an improved implement for marking weather boards where they abut against the window casings or corner boards, and for other uses.

An apparatus for making and storing gas has been patented by Mr. James J. Powers, of Brooklyn, N. Y. The invention covers a simple apparatus of generator, tanks, and pipes, in connection with a holder, for making chlorine or similar gas by mixing or volatilizing chemicals, and storing the gases to prevent escape by permeation of a liquid seal or evaporation.

An improvement in trousers has been patented by Mr. Aaron J. Shriver, of New York City. Combined with the knee part is a diamond-shaped strip of fabric, secured at two opposite points of its sides only, with a tape attached to the upper edges of the strip and to the trousers near the waistband, the improvement being also applicable to the elbows of dresses and coats, to prevent stretching or bagging out.

A water elevator has been patented by Mr. George W. Mefferd, of Stephenville, Texas. It has a suspended bucket and means for raising and lowering it, a tilting fork receiving the raised filled bucket, with an arm catching under the bucket to tilt it to discharge its contents as the fork is tilted, making a simple and improved device for lifting water from wells or cisterns, etc.

The ornamenting of window shades forms the subject of a patent issued to Mr. Edwin P. Benjamin, of Minnetonka, N. Y. The shade is made of translucent fabric, with designs on both sides, so that at certain times the inner design only will be visible, at other times only the outer design, and at some periods, according to the light within or outside of the room, both designs will show.

A nut lock has been patented by Mr. Benjamin N. Deblieux, of Bay St. Louis, Miss. The nut has a concave spring flange slotted radially, some of the arms being of greater thickness to exert a greater force when under strain, and allowing the expansion or contraction of the bolt or body clamped by the bolt, without danger of breaking or straining the bolt or nut.

A method of subdividing and designing land has been patented by Mr. William A. Baugh, of Melbourne, Fla. It consists of a method of dividing the land into sections, numbered successively, and then dividing each section into four equal squares, each of which is divided into four equal squares, and each of the latter again into four equal squares, all being designated by numerals or letters.

An attachment for hat pouncing machines has been patented by Mr. George Van Wart, of Yonkers, N. Y. It is applicable to all forms of machines employing a revolving roller, combining with the pouncing roller a wood block, bow spring, and metal plate, and other novel features, whereby both surfaces of the material are given a comparatively uniform and similar working at the same time.

A clay press feeder has been patented by Mr. Thomas F. Anderson, of Walker's, Ohio. It consists of a revoluble plate or disk partially surrounded by a cylindrical curb, with an opening leading to a chute to which the clay is delivered by means of a fixed scraper, the chute delivering the clay to a revoluble cylinder arranged to throw the clay into the press, as it may be required to be fed.

A hook attachment for doubletrees has been patented by Mr. William A. Foris, of Hills-

dale, Mich. It is designed to take the place of the usual center clevis, and consists of a swivel hook composed of two hooks on opposite sides of its body, one a close and the other an open hook, combined with a tapering eyebolt on which it swivels, the eye of the bolt freely engaging with a staple that detachably fastens the whole to the doubletree.

A loom for weaving tufted fabrics has been patented by Messrs. John J. Devitt and John Corcoran, of Yonkers, N. Y. The invention consists of improvements in the construction and operation of the shuttle race and carrier, the tension device for the weft thread, the nippers that draw the tuft yarns down through the warp, the knives that cut the tufts, and the comb that lifts the tuft yarns up through the warp, in looms more especially designed for weaving moquette carpets and similar fabrics.

An equalizer for drawers has been patented by Mr. Joseph H. Knaus, of Fayette, Mo. It is to enable furniture drawers to be drawn out evenly, without cramping and binding, for which purpose a shaft is journaled in the drawer, around which is wound at each end a cord, one end of the cord being attached to a stationary part of the drawer casing at the back, and at the other to the front part of the casing, the pulling out of the drawer winding and unwinding the cord upon the shaft.

Metallic alloys form the subject of four patents issued to Mr. Charles Auguste Paillard, of Geneva, Switzerland. The materials composing the alloys are palladium, copper, nickel, gold, platinum, silver, steel, and iron, some of the alloys having only a few of these ingredients, and all of them being in varying proportions, with special methods for their combination. The object sought by this invention is to make metallic alloys especially adapted for different parts of clock, chronometer, and fine watch work, which shall be neither oxidizable nor magnetic, with small capabilities of dilatation, and having hardness and elasticity, and more or less of the properties of steel, according to the particular use to which the alloy is to be put, and the grade of watch, clock, or chronometer to be made therewith.

SCIENTIFIC AMERICAN BUILDING EDITION.

AUGUST NUMBER.

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Special.

KEEN AS A SURGEON'S KNIFE.

On the Chicago Limited Express, one of those splendid trains that leave New York over two of the great trunk lines of this country and make the dash to the metropolis of the West with such remarkable speed, an elderly gentleman was, a few days ago, seized with a violent attack of asthma. He had been a sufferer for many years, and his efforts to breathe were dreadful to witness. A physician was found on the train, but relief seemed impossible. Everything was done for the comfort of the passenger, but he speedily grew worse. His face assumed a livid hue, and it appeared that he had only a few minutes to live. Suddenly a lady in the car seized the porter by the arm, sent him flying to the range in the dining car for boiling water, while from a satchel she drew out one of Drs. Starkey & Palen's Compound Oxygen Inhalers. By the time the porter had returned with a salad bowl filled with boiling water, the lady had the corks out of the bottle, the glass tubes fitted, and, in less time than it requires to tell it, the inhaler was immersed in the heating liquid. A moment more and the ozone began to evolve and the inhaling tube was placed in the sufferer's mouth. He was so exhausted that he could only breathe the gas in a spasmodic manner, but at the end of a minute his inhalations became more lengthy and regular, and at the end of five minutes the wheezing ceased, and he was able to rest easily. Of course the sufferer was greatly weakened, but he had no recurrence of the attack. The entire train rang with praises of Compound Oxygen during the balance of the journey.

Apropos of this case, J. B. Kenyon, a merchant of Bedford, Ohio, writes to Drs. Starkey & Palen, September 11, 1886:

"Your Compound Oxygen has worked wonders with me; has made a new man of me. I have not had an attack of asthma since using it, though I was in very bad shape when I began. I would not do without the 'Compound Oxygen' for ten times its price. On retiring at night I go to sleep at once, and never rested better in my life than I do now. Shall recommend it to all my friends."

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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.

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Timber Gaining Machine. All kinds Wood Working Machinery. C. B. Rogers & Co., Norwich, Conn.

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For the latest improved diamond prospecting drills, address the M. C. Bullock Mfg. Co., 138 Jackson St., Chicago, Ill.

The Railroad Gazette, handsomely illustrated, published weekly, at 73 Broadway, New York. Specimen copies free. Send for catalogue of railroad books.

The Knowles Steam Pump Works, 113 Federal St., Boston, and 93 Liberty St., New York, have just issued a new catalogue, in which are many new and improved forms of Pumping Machinery of the single and duplex, steam and power type. This catalogue will be mailed free of charge on application.

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Hoisting Engines. D. Frisbie & Co., New York City.

Curtis Pressure Regulator and Steam Trap. See p. 253.

Tight and Slack Barrel Machinery a specialty. John Greenwood & Co., Rochester, N. Y. See illus. adv., p. 28.

Rod, pin, and dowel machines, 1,000 to 3,000 lineal feet per hour. Rollstone Machine Co., Fitchburg, Mass.

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NEW BOOKS AND PUBLICATIONS.

THE ECONOMIC THEORY OF THE LOCATION OF RAILWAYS. By Arthur Mellen Wellington. New York: John Wiley & Sons and the Engineering News. Pp. xx, 930. \$5.

This is a greatly enlarged edition of a volume put forth by the same author ten years ago, which was received with great favor at the time, and has since been considered among the standard works upon the subject. In this volume there is much new matter. The theory

of the effect of variations in velocity on the motion of trains is fully treated; the mechanics of curve resistance is discussed from the standpoint of a large amount of data obtained from actual experience; the theory of various details of the locomotive is set forth, with ample references to the numerous designs which have proved most effective, as well as the greater number where innovations have proved unwise; and the whole work is written with the practical end of railway construction ever in view—the relation of cost to probable traffic and revenue. The writer has been a regular contributor to publications making a specialty of railway construction and operation for many years past, and has thus kept abreast of the topics which most interest practical men in this line, while he has also filled engagements as an engineer in the location and surveys of the Mexican National and Mexican Central Railways, and the American line from Vera Cruz to the city of Mexico. The volume is well printed and fully illustrated.

ELEMENTARY PRACTICAL PHYSICS. Vol. II. ELECTRICITY AND MAGNETISM. By Balfour Stewart and W. W. Haldane Gee. London and New York: Macmillan & Co. Pp. xviii, 497. \$2.25.

In this book the text is subdivided into a series of lessons, 83 in all, each descriptive of something to be done by a definite method with definite apparatus, the divisions being made in a way calculated to lead young investigators to a more systematic study of electricity and its manifestations by a plainer marking of the steps from the simple to the complicated. The first three chapters or 22 lessons are introductory, and largely elementary, but the matter which they contain is presented in attractive form, with a clearness of arrangement and conciseness of statement that make a good foundation for the study of the less elementary portions of the subject that follow. The book is, throughout, conspicuously free from vague generalizations, setting forth theories concisely, defining questions, describing apparatus, and presenting numerous experiments for practical trial, with full precautions and instructions for doing the work.

SHORT LECTURES TO ELECTRICAL ARTISANS. By J. A. Fleming. London and New York: E. & F. N. Spon. Pp. 206. \$1.50.

These lectures were delivered by the author to the pupils and workmen of an English firm largely engaged in electrical work, to better instruct those thus practically engaged in the business as to the principles underlying modern electrical engineering. They are most entertaining in form, abounding in anecdote and reminiscence, and happy in the use of comparisons likely to fix troublesome data in the memory, and cannot fail to meet with a large audience among the great numbers who are now interesting themselves in electrical investigations, besides those who find their occupation in this field.

The Vulcanite Emery Wheels Price List of the New York Belting and Packing Company is an instructive pamphlet, which all users of goods in this line would do well to consult. It is herein urged that for all general work, wheels should be run at a high speed—with a circumferential travel of 6,000 feet per minute and over; and the mode of manufacturing the vulcanite wheel is described, to show how it is that they are not liable to burst, even when run at the very highest speed which users may desire. It is also claimed that the compressed vulcanized rubber in which the particles of emery are held in the wheel forms a just sufficiently elastic backing to present in most effective form the cutting edges of the emery to the work, making the wheel as durable as it is capable. The book is full of valuable and interesting information.

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. 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.

(1) A. J. A.—Professor L. O. Howard, of the Division of Entomology, Washington, says: "The small brown beetle which you find in your flour is the common Sitona papaveris, a species which is found in almost all parts of the world, and which is a very general feeder. It is particularly fond of stored food products, and will breed in large numbers in many of the dried roots which are kept in drug stores. From its great diversity of food it is a difficult insect to fight, and the method of treatment of course will depend upon the individual case to be treated. The vapor of bisulphide of carbon can be successfully used where the insect infests any substance which can be placed in a tight box or barrel, and which will not be injured by the fumes. Occurring in a house in the manner described (and I think I never heard of an exactly parallel instance), it will probably be found by careful examination that there is some particular spot or some particular substance in which the beetles breed and from which they spread; or it will be found that the shop from which food supplies are purchased is infested. The beetle would not develop without a plentiful supply of some kind of food, and it will not be difficult to eradicate it by going carefully over the storeroom and examining all the food supply on hand, destroying that which is badly infested, and afterward fumigating the room

with the bisulphide. The other specimen is a small, active, silvery white insect about a quarter of an inch in length and elongate-ovate in form. It belongs to the genus Lepisma, and although badly crushed in the mail it seems to be Lepisma domestica, which Dr. Packard described from specimens found commonly around fireplaces in Salem, Mass. This insect feeds upon the paste in book bindings and wall papers, and will eat the surface of glazed paper of any kind. It can be destroyed by a free and persistent use of Persian insect powder or buhach."

(2) E. K. writes: I wish to employ a metal screw to work in iron and steel. What would be the best metal of which to make the screw, to prevent any rusting of screw or corroding? A. Use gun metal—copper 1 lb., tin 3 oz.—or phosphor bronze.

(3) J. L. B. asks: 1. Can cast iron be mended in any way? A. See page 98 of this issue for a practical method of soldering. 2. How can a person most easily melt copper and zinc? A. Melt copper in a crucible in a furnace or forge fire, and add the zinc if you wish to make brass. Otherwise melt zinc in an iron ladle over a fire. 3. How can copper, zinc, magnesia, sal ammoniac, quicklime, and cream tartar be compounded, and where can each be obtained? A. You can buy the materials through the drug and hardware trades. Mechanically compounded, they would only make a mixture without cohesion and of no value, and they are not susceptible of chemical combination. 4. How can moulds be made which can be used to mould badges? A. Moulds for brass may be made in fine moulding sand. For metals that melt at a low heat, moulds may be made of brass or iron. See Brass Founder's Manual, by Graham, which we can mail you for \$1.

(4) J. F.—The sample arrow head you send is not of unusual shape; they are found of almost all conceivable shapes in New Jersey. Their being of white or black flint or jasper depends upon the source of supply of the material. You will find a most interesting account of the implements of the "stone age in New Jersey," fully illustrated, in the Smithsonian report for 1875, by Dr. C. G. Abbott, of Trenton. The flint implements are supposed to have been chipped with hammers of the same material upon anvils or bowlders, also of flint.

(5) G. W. R. writes: I have an old fashioned Siemens H-armature taken from a generator which I have tried to use in a motor, but there is a dead center where the armature hangs. How shall I remedy the difficulty? A. The armature will have a dead center, but when the strength of the magnetism of the armature is about equal to that of the field magnet, there will be no "hanging," provided the commutator is properly adjusted. Possibly you may have a commutator such as is used for alternating currents. If so, you will need to modify it somewhat. See SUPPLEMENT, No. 161, for full information on the subject.

(6) H. S.—The plant which you send to be named is Erodium glutinosum, or vulgarly "Yerba santa." The leaves are the parts used in medicine. These have balsamic properties, and have long had a reputation among the Spanish settlers in California in diseases affecting the mucous membrane, such as chronic coughs, catarrhs, consumption, etc. A sirup prepared from the leaves is extensively used as a vehicle for the administration of quinine, as it has the property of extinguishing the bitter taste of that alkaloid, and of presenting it in a readily assimilable state.

(7) S. A. S. asks (1) how to clean nickel plate easily, without injuring the nickel. A. Use rouge, electro-silicon, whiting, or fine chalk, mixed with water. 2. How to make a glossy black, enduring enamel for polished steel? A. Use black japan varnish painted on the metal and baked hard in an oven at about 270° temperature. 3. A remedy for an obstinate case of catarrh in the head? A. For catarrh and its cure, see SCIENTIFIC AMERICAN SUPPLEMENT, Nos. 216, 84, 262.

(8) T. K. asks (1) if the tide flows up the Hudson River as far as Troy. A. It cannot be said that the tide flows up thus far; but the current of the river is affected by the tides as far north as the Troy dam, six miles above Albany. The fall of the Hudson River from Albany to its mouth, according to the U. S. Coast Survey reports, is only about five feet, which is a little less than the ordinary difference between high and low tide at New York, while it is a good deal less than some of our very high tides. 2. Was New York Bay frozen over during the revolutionary war? A. During the winter of 1779-80, New York Bay was frozen over from Staten Island, and 200 heavily laden two-horse sleighs crossed on the ice in a body at one time, escorted by 200 horsemen.

(9) W. W. C. sends an object for identification. A. The object is the seed pod of Lumarla diensis, a plant very common in old fashioned gardens, and known vulgarly as "honesty," from the transparency of the two valves of the pod.

(10) G. R. F. asks how canvas is prepared for artists' use, with a smooth surface. A. Grind equal quantities of white lead and whiting, well dried, with five parts of raw oil, add one part boiled oil; prime the cloth over on the face with a brush, palette knife or trowel. The latter is preferable, to those who can use it. After the canvas has had sufficient time to dry, scrape off from the back any superabundant color which may have passed through the canvas, then repeat a second coat on the face, leaving it as smooth as possible. When hard and dry, rub it smooth with a piece of light pumice stone and water, so as to cut off or lay all the knots in the canvas; then grind two parts white lead, two parts whiting, and one part burnt ochre, with a small quantity of pumice stone, all well ground and separately, rather stiff in raw oil; afterward mix the whole, adding a little gold size; dilute with half raw oil and half turpentine, and apply a third, fourth, or fifth coat; repeat rubbing down with pumice stone and water until smooth enough for painting upon.

(11) W. L. Mo.—The right of private companies, not organized as State militia, to meet and drill with firearms is, in many States and most municipalities, restricted by statute, and permission there-

for must be obtained of the authorities.—By act of Congress approved January 19, 1886, in case of the death of both President and Vice President of the United States, one of the Cabinet officers is to act as President, to succeed in the following order: Secretary of State, Secretary of the Treasury, Secretary of War, Attorney-General, Postmaster-General, Secretary of the Navy, Secretary of the Interior.

(12) C. S. writes: I make an imitation of Russia leather, but do not succeed in imparting to the same the exact odor of the genuine, which I have seen in other imitations. What essential oils are to be used? A. Use birch bark extract, imported from Russia, to be had of dealers in tanners' supplies. A slow process, using not too much of the extract, gives the more delicate and lasting smell of genuine Russia leather.

(13) R. M. R. asks: What will remove red wine stains from linen? A. See the table given in SCIENTIFIC AMERICAN SUPPLEMENT, No. 158, for the "Removal of Stains and Grease Spots."

(14) W. W. M.—Latitude of North American magnetic pole 70°, line of no variation, now passes through Eastern Ohio, West Virginia, and central North Carolina. The line of no variation is now moving westward. The annual advance being for Pennsylvania about 3 1/2 minutes. The time of complete variation from extreme easterly to extreme westerly inclination of the magnetic needle is supposed to be about 300 years.

(15) Wm. S.—Graphite or black lead is much used for piston rod and valve rod packing. Mix it with cylinder oil or tallow, and smear the packing with the mixture. If fragile asbestos packing is used, the oil mixture is preferred. Graphite is not used in cylinders. It is liable to accumulate and clog. Use the best cylinder oil, which may be a mixture of petroleum with paraffine, or cold pressed refined lard oil, or with sweet refined tallow.

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