

RECENTLY PATENTED INVENTIONS.

Electrical Devices.

TELEGRAPH KEY.—J. E. PEARSON, Motor, N. C. In the present patent the invention has reference to telegraphic keys. Mr. Pearson's more particular object being to produce a key which is self-closing—that is to say, a key in which the main-line circuit is normally closed the instant the operator removes his hand from the key-button.

Of Interest to Farmers.

FEED-CONTROLLER.—J. P. WYMER, Oury, Col. This invention relates to devices for controlling the feed of material to such apparatus as elevators, being more especially applicable to those operating upon fluid or mobile substances, such as liquid or somewhat finely pulverized material. In such elevators, particularly those of the bucket type, a cessation of movement is liable to occur, through accidents to the driving mechanism. When this happens, the boot of the elevator fills up and resists movements of buckets, and must be cleaned before apparatus can be started. To prevent this is the inventor's main object.

TRACTION-TRAIN.—D. BRENNAN, Jr., Haverstraw, N. Y. This improvement relates to an organism of elements in an engine and one or more wagons or vehicles, enabling the engine to propel the vehicles in either direction and the entire train to be guided as desired. The control of the train is perfect, the steering being possible either from the end wagon or the engine itself and the train being movable either forward or backward, respectively, by the pushing and pulling actions of the engine.

FEEDER.—C. W. THOMAS, Kent, N. Y. This invention relates more particularly to feeders for threshing-machines adapted for operating upon beans and the like. The feeder will secure a very even rapid feed of the beans to the threshing-cylinder and insure freedom from stones, which would endanger the latter. It will also remove considerable waste material as a preliminary to threshing and will save any of the previously-separated beans without rendering them liable to be broken by the action of the cylinder.

ALARM.—D. B. COATES, Payette, Idaho. This invention relates to alarms and is especially applicable to that class known as "shepherds' alarms." The inventor's object is to provide an alarm for the use of shepherds which shall periodically detonate a charge of powder for the purpose of scaring away coyotes and other predatory animals and for keeping them at a distance for a time after the explosion.

HAY RAKE AND STACKER.—O. B. MANN, Meeteetse, Wyo. The purpose of the invention is to provide a contrivance so constructed that the rake will gather hay as the machine advances, and when a load is obtained the rake may be raised, so that its load will not trail upon the ground while the machine is being drawn to the stack, and further, when the stack is reached, the rake can be elevated, held in elevated position, and load discharged.

Of General Interest.

GARMENT-HANGER.—AMELIA H. SINSHEIMER, New York, N. Y. The present invention has for its object the provision of an improved hanger more especially designed for supporting ladies' waists and like garments in such a manner that the collar of the garment is properly retained in a position to prevent it from losing its shape. It can be cheaply manufactured.

BAIT-HOLDER AND FISH-DECOY.—V. LE BEAU, New Orleans, La. In this case the object is to provide a transparent holder for live bait, such as small fish, which will serve to expose the bait when suspended in a body of water and allure large fish, so that they may be taken on lines and hooks that are baited and lowered in the water near the decoy or holder.

CORK-PULLER.—T. W. KENNEDY, Hackensack, N. J. The invention has reference to cork-pullers, the inventor's more particular object being to produce a device of this character provided with a box or casing which may be used as a handle for the cork-puller. Cork-pullers are hardly appropriate to be carried in the pocket. The substantially T-shaped form of most cork-pullers renders them difficult and unsatisfactory for carrying on the person. These defects are overcome by this apparatus.

MUSICAL INSTRUMENT.—H. E. HIBSHMAN, Newark, N. J. The invention relates to reed instruments of the mouth-harmonica type, and more particularly to musical instruments such as shown and described in the Letters Patent of the United States formerly granted to Mr. Hibshman. The object is to provide an instrument arranged to require but comparatively little wind and exertion on the part of the operator to properly execute a piece of music with the aid of a perforated note-sheet.

BAG-FASTENER.—S. BJARNASON, Winnipeg, Canada. In this patent the inventor has for his object the provision of a bag-fastener of novel construction which is adapted for the quick and reliable closure of the mouth of a bag or sack, dispensing with the use of cords or the like for such a purpose.

TELLURIAN.—A. HOSKING, Auckland, New Zealand. In this invention the purpose of the

inventor is the provision of a new and improved tellurian which is very simple and durable in construction, easily manipulated, and arranged for demonstrating or illustrating the relative motions of the earth and moon around the sun.

CONVEYER-BAND.—F. ABELS, Viersen, Germany. The improvement relates to that kind of conveyer-bands which are formed of metal rods arranged one behind the other. Hitherto the ends of these rods have been connected by chain-links or the like. This way of connecting the rods has always given reason for objection, because squeezing of the conveyers, particularly when running over driving-rolls, has taken place. This band removes the evil.

TOY.—M. L. WICKS, JR., Los Angeles, Cal. The prominent feature of this article is a combined return-ball and cap-snapper or exploder. The inventor employs a hollow ball of rubber or other light durable material, from one side of which a cord projects and at the other side of which is arranged a peculiarly-constructed cap receptacle and striker, so that when the ball is thrown or dropped against the ground or other firm surface the cap will be exploded.

STIRRUP-STRAP.—L. P. WELLMANN, West New York, N. J. One purpose of this invention is to so improve upon the construction shown and described in former Letters Patent for stirrup-straps granted to Mr. Wellmann, that said construction is materially simplified, and means are provided for the ready attachment of a stirrup-iron to a stirrup-strap, and a quick disengagement of the same parts is rendered possible, together with means whereby when the stirrup is not in use it may be disconnected from the lower portion of the strap and connected with and suspended from the upper section of said strap close to the saddle-skirts.

LEVELING-ROD.—W. B. SHROPSHIRE, Pittsburg, Ga. In the present patent the invention has reference to leveling-rods, and more particularly to those which are extensible. The inventor's objects are to provide such a device which may be read directly by the observer at all extensions. In situations where there is limited head room—such as in mines, sewers, and buildings—the improved rod has a great advantage.

DUST-ARRESTER.—G. A. SAGER, Albany, N. Y. The purpose here is to provide a device adapted to extract dust and foreign particles from the air to be fed to pneumatically-operated tools and devices, so that the air upon reaching the operative parts of such tools or devices will be pure, and consequently will not become clogged by foreign matter, as now frequently happens to such an extent as to render the tools or devices inoperative, necessitating time and expense in cleaning.

DISPLAY-CARD HOLDER.—C. C. GOETZ, Natchez, Miss. The holder is especially adapted for use in connection with the selling of textile fabrics from bolts or rolls. While the device is intended primarily as a holder for a display-card, it affords means also for supporting a small bolt of the material which is to be sold, from which bolt or roll small samples of the material may be detached.

SAP-SPOUT AND COVER.—G. H. GRIMM, Rutland, Vt. Mr. Grimm's object is to provide a sap-spout and cover arranged to insure a free flow of the sap from the tree to the bucket; to allow swinging the cover into a rest position and locking it against downward swinging while examining the contents of the bucket or emptying the latter; to protect the contents of the bucket against snow, rain, sleet, leaves, etc., and to allow proper ventilation of the bucket and to hold the cover against swaying in the wind.

EYEGLASS-FASTENING.—F. MICHEL, New York, N. Y. This inventor improves the usual arrangement by providing the stud with a socket and with oppositely-located walls, between which walls the shank of the nose-piece and the spring are placed. A fastening-pin with a square head is passed through the spring and nose-piece shank into the socket in the stud, the square head of the pin lying between the two oppositely-located walls on the stud and the pin being held in place by a key screwed transversely into the stud and engaged in a peculiarly-formed groove in the side of the pin.

LOCKING DEVICE FOR PERMUTATION-LOCKS.—F. DUESTERWALD, New York, N. Y. The invention refers to locks such as are used on safes and like devices in which the combination can be changed at will by the owner of the safe. The object is to provide a device for preventing unauthorized persons from gaining access to the mechanism of the lock with a view of obtaining the combination thereof while the safe is in use and open.

WATER-COOLER.—C. F. CONOVER, New York, N. Y. The intention in this improvement is to provide a cooler arranged to permit automatic charging of the water-cooling receptacle from the water-supply vessel, to insure a proper cooling of the water in the receptacle by the minimum use of ice, and to prevent it from coming in contact with the water in the cooling receptacle.

ANIMAL-TRAP.—L. M. STEELSMITH, Troy, Idaho. The invention has reference to improvements in traps for catching small animals, such as gophers, squirrels, and the like, the object being to provide a trap of simple and inexpensive construction and so arranged

as to catch and hold the animal when passing from or into a hole in the ground.

AMUSEMENT DEVICE.—C. B. MCKAY, New York, N. Y. In this case the invention relates to improvements in amusement devices, the object being to produce a device of the character in which passenger-carrying cars are caused to travel a circuitous and undulating track extending through tunnel-like formations, certain parts of which are dark and in which various scenic effects are produced.

Hardware and Tools.

SHEARS.—C. O. BERGMARK, Chisholm, Minn. Mr. Bergmark's invention has reference more especially to shears for cutting sheet-metal. In the form of his improvements the inventor employs a relatively stationary handle provided with a jaw and a frame of special construction, the jaw being formed with a cutting-blade, co-operating with which is a relatively movable cutting-blade mounted in the frame, special devices being also employed for actuating the movable blade through the instrumentality of another and relatively movable handle, also mounted in the frame.

PNEUMATIC HAMMER.—L. J. CLOSSEY, Montpelier, Vt. In this patent the invention has reference to improvements in pneumatic hammers, the object being to provide a hammer of this character that will be simple in construction, positive in its action, and having no parts liable to get out of order. The novelty of Mr. Clossey's invention resides in the peculiar arrangement of valves for controlling the inlet and exhaust of the motive agent.

TOOL-HOLDER.—L. C. WILCOX, Trenton, N. J. The object in this case is to provide details of construction for a holder that will reliably hold a straight cutting-tool disposed at a proper angle to the material when the holder is placed in the tool-post of a lathe and held therein by the set-bolt carried by the post or when the holder is placed in the yoke-clamp of a planer, shaper or slotting-machine and is therein clamped by adjustment of nuts on the bolts of the clamp, whereby the cutting-tool is held from displacement without requiring special set-screws for the holder that take up room and are ineffective in use.

NUT-LOCK.—M. GRAFFIUS, Alexandria, Pa. For the purpose of preventing the unlocking from any cause of nuts on their bolts, the inventor locks the nut on the bolt by means of a soft-metal spiral spring consisting of a plurality of convolutions, whose pitch corresponds to that of the thread of the bolt, the end of the convolutions being twisted together and around each other to form a finger-piece, the outer edges of which projecting beyond the outer convolutions of the coil.

MILLSTONE-DRESS.—L. B. WOOLEVER, Austinburg, Ohio. In this instance the invention has reference to millstone-dresses; consists of a special or peculiar dressing for millstones, and has for its object certain dressing thereof, whereby increased, improved, and more effective grinding may be made. With this dress the leaders and furrows or grooves are self-sharpening. It has the advantage of being adapted for use on burs constructed of iron and other suitable metal.

COMBINED PIPE-REAMER AND THREAD-CUTTER.—E. H. LINK and C. S. BRENHOLTS, Olean, N. Y. Where a pipe is severed by means of a pipe-cutter, there is usually left upon the inner edge of each severed portion a jagged flange of metal, which should be removed. Again, it is often desirable to render the interior of the pipe bell-shaped and at the same time to thread the pipe exteriorly. These two operations are closely related to each other and are generally performed separately. The more particular object is to produce a neat, compact device which will enable the two operations to be performed simultaneously.

Heating and Lighting.

HEATER.—P. DORAN, Bayonne, N. J. The inventor particularly designs the heating of portions of the frame members of such structures as steel vessels and the like. By use of the invention metal members may be speedily heated to the exact point while they are still assembled, and the lightness of the apparatus enables it to be readily removed from one place to another and supported in its operative position without difficulty.

GRATE.—H. F. LANGENHOP, New York, N. Y. In this case the object is to provide a grate which is simple and durable in construction, very effective in operation, and arranged to enable the attendant to readily and thoroughly rake the burning fuel and free the same from ashes, cinders, and the like, and to insure a ready access of air to the burning fuel to insure complete combustion.

Household Utilities.

BASIN-HOLDER.—O. R. APPLGATE, Trenton, N. J. The invention refers to devices for holding washbasins and similar receptacles, and is adapted for general use in holding articles of all kinds. Particular objects of the inventor are to provide a device which when not in use may be folded back against the wall or support in any direction, and which will be capable of holding an article at different angles.

FOLDING DEVICE FOR SAD-IRONS.—W. STRAUSS, New York, N. Y. By means of this invention a strip of fabric can be expeditiously folded and flattened so as to place it in condition for immediate service in the manufacture of garments. One part of the invention resides in the employment of a support adapted to be easily and quickly fastened to a sad-iron, the support being constructed to hold a folding device in an inclined position directly in front of the iron, so that a length of folded fabric may be fed from the folder to and below the nose of the iron.

Machines and Mechanical Devices.

MACHINE FOR CUTTING DIAMONDS.—J. DE MINISZEWSKI, Kwasow, Stopnica, Kielce, Russia. In this instance the invention relates to an improved machine for cutting diamonds and other hard substances by means of a steel wire turning about itself and coated with a hard material diluted in a suitable fluid, a very slow translating motion being at same time imparted to this wire.

AUTOMATIC PACKAGING-MACHINE.—A. McLEOD and J. H. McLEOD, Marietta, Kan. The object in this improvement is to provide a construction whereby filled packages will be taken from one point in the machine to another point, being shaken or agitated in the meantime to settle their contents, the packages being delivered prior to such shaking operation upon a platform of a tripper, which will release the step-by-step mechanism for feeding the packages, and the filled and shaken packages will be delivered by their own gravity on an offtake-belt, dropping onto the belt and clear of funnels or hoppers through which the material is supplied to the packages.

DRAG-SAW.—F. J. SHELDON, Longwood, Wis. In connection with a carriage mounted to move on a frame and carrying the saw and its actuating mechanism, Mr. Sheldon provides a drum and a flexible connection between the drum and framing whereby as the drum is operated the carriage is alternately raised and lowered.

Prime Movers and Their Accessories.

VALVE MECHANISM.—T. G. VAN SANT, Paragould, Ark. The present invention has reference to a valve mechanism for steam-engines; and the principal object of the invention is the provision of an improved cut-off enabling the period of cut-off to be automatically regulated without changing the lead, compression and exhaust.

EXPANSION-PLUG FOR BOILER-TUBES.—G. PETERSON, Birmingham, Ala. The invention relates to devices for closing the ends of leaky boiler-tubes, pipes, and the like; and its object is to provide an expansion-plug which is easily applied at any time without requiring shutting down of the furnace, and arranged to effectively close the end of the leaky tube or pipe, and to allow of convenient removal and reuse of the device.

PACKING.—J. BAEBER, Omaha, Neb. In this patent the inventor has reference to a metallic rod-packing, particularly for the piston and valve rods of locomotives; and the object of the improvement is the provision of efficient means for preventing independent movement of the segments constituting the packing-cone. The packing may be applied with facility to the rods of modern compound locomotives.

Railways and Their Accessories.

FLUID-PRESSURE BRAKE.—A. A. KENT, Denver, Col. The primary object in view is to distribute the fluid-pressure to the series of cars of a train proportionately to the varying weights of the loads in the cars. Thus in the case of a car bearing a heavy load an increase in the pressure of the braking fluid in the brake mechanism is obtainable, while a car with a lighter load does not require for the operation of its brake mechanism such high pressure of the braking fluid.

RAIL-JOINT SHOE AND CLAMP.—J. B. ANDERSON, Portland, Ore. In this patent the object of the invention is to provide details of construction for a rail-joint shoe that adapt it to serve as a clamp for holding two track-rails at their joint secured together in alignment and afford effective means for retaining the shoe and clamped rails at a desired point on the cross-ties of a railroad.

Pertaining to Vehicles.

HANDLE-BAR.—R. F. MONAHAN, Buffalo, N. Y. The clutch members in this device are so engaged that the projections upon one are held against one side of the recesses of the other with some force by the torsion of the spring, the direction being such that the pressure of the arms of the rider causes it to yield, absorbing vibration and relieving him from the jar. To adjust tension or force which opposes this yield, the members are separated by outward movement of a sleeve and spring tension increased or diminished by twisting the bar upon the supporting sleeve to an angle at which projections may secure new engagement with the recesses.

ROBE-HOLDER.—N. LIVINGSTON, Cass City, Mich. In this case the improvement refers to devices for retaining robes or similar coverings in place about the occupants of vehicles, its principal object being to provide a readily-ap-

plied holder for this purpose. An arrangement of the looped ends secures a comparatively rigid and strong pivotal support for the rod, while adding little to its weight.

SLEIGH.—A. P. LINN, Escanaba, Mich. Mr. Linn's invention refers to the running part of sleighs, sleds, and all devices adapted to run upon the snow and ice, and it is capable of general use upon articles of the class mentioned. The objects of the improvement are to secure greater rigidity, and cheapness in this class of articles of manufacture. The invention is equally applicable to a sleigh having a running portion consisting of two sleds or to a sleigh having only one set of runners.

DRAFT-TREE.—H. T. REEDER, Missoula, Mont. The purpose here is to provide a tree in which a double whiffletree or a swingletree will not break at the center or pivotal point by reason of a cross pull, as when the draft is on the tree instead of the tension being crosswise of the bar of the tree it will be endwise, thus adding to the lifetime of the device and preventing the tree from breaking under severe tension, under which conditions in the ordinary tree the tension is forward or crosswise directed to the weakest point of the tree—its pivotal point—which under the improved form of draft-tree is reinforced and the tension not directed thereto.

VEHICLE-BRAKE.—W. M. FLEWELLING, Santa Rosa, Cal. The invention is an improvement in brakes for logging-trucks, and is especially designed for use in logging-trucks in which the logs are suspended from the trucks, and the weight of the log operates to hold the beam-carrying bars down in position for the proper operation of the brake when set by means of the devices.

NOTE.—Copies of any of these patents will be furnished by Munn & Co. for ten cents each. Please state the name of the patentee, title of the invention, and date of the paper.

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READ THIS COLUMN CAREFULLY.—You will find inquiries for certain classes of articles numbered in consecutive order. If you manufacture these goods write us at once and we will send you the name and address of the party desiring the information. In every case it is necessary to give the number of the inquiry.

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"U. S." Metal Polish. Indianapolis. Samples free.

Inquiry No. 6387.—For the manufacturers of the electrical machine for making puffed rice.

Perforated Metals, Harrington & King Perforating Co., Chicago.

Inquiry No. 6388.—For manufacturers of leaden hair combs.

Adding, multiplying and dividing machine, all in one. Felt & Tarrant Mfg. Co., Chicago.

Inquiry No. 6389.—For an apparatus to destroy roll tickets in large quantities.

Sawmill machinery and outfits manufactured by the Lane Mfg. Co., Box 13, Montpelier, Vt.

Inquiry No. 6390.—For manufacturers of table knives, forks and spoons sold under different names, as Australian silver, Mexican silver, etc.

Layden Chemical Works. Sole manufacturers of all luminous preparations. 636 East 132d Street, New York.

Inquiry No. 6391.—For makers of lead pencils in large quantities stamped with name and address, for advertising; samples wanted.

Robert W. Hunt & Co. bureau of consultation, chemical and physical tests and inspection. The Rookery, Chicago.

Inquiry No. 6392.—For the address of the manufacturer of glass which can be heated red hot and plunged in water without breaking.

The celebrated "Hornsbey-Akroyd" Patent Safety Oil Engine is built by the De La Vergne Machine Company, Foot of East 138th Street, New York.

Inquiry No. 6393.—For manufacturers of or dealers in German silver tubing 1/4 inch in diameter.

I have every facility for manufacturing and marketing hardware and house-furnishing specialties. Wm. McDonald, 180 Main St., East Rochester, N. Y.

Inquiry No. 6394.—For sectional posts 3/8 inch diameter, for use in making sectional post binders for loose leaf books.

We manufacture anything in metal. Patented articles, metal stamping, dies, screw mach. work, etc. Metal Novelty Works, 43 Canal Street, Chicago.

Inquiry No. 6395.—For wholesale dealers or manufacturers of the Hand Wagon Jack.

The SCIENTIFIC AMERICAN SUPPLEMENT is publishing a practical series of illustrated articles on experimental electro-chemistry by N. Monroe Hopkins.

Inquiry No. 6396.—For the manufacturers of the Plaza Lawn Mowers.

Manufacturers of patent articles, dies, metal stamping, screw machine work, hardware specialties, machinery and tools. Quadriga Manufacturing Company, 15 South Canal Street, Chicago.

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If you wish to buy patents on inventions or sell them, write Chas. A. Scott, 719 Mutual Life Building, Buffalo, N. Y.

Inquiry No. 6398.—For makers of telephone parts, also manufacturers of galvanized and telephone wire.

Inquiry No. 6399.—For manufacturers of brick-making plants.

Inquiry No. 6400.—For makers of small brass gears, either cut or stamped.

Inquiry No. 6401.—For apparatus operated by air pressure, such as engines or pumps; a small hand air pump to generate sufficient air pressure in a small tank to give motive power of from 5 to 10 pounds for temporarily raising weight.

Inquiry No. 6402.—For parties manufacturing Bull's Eye lenses, for concrete sidewalk lights.

Inquiry No. 6403.—For makers of hydraulic pumps, sand suckers and siphons.



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.

(9516) V. E. M. asks: 1. What is the method of making a small battery such as is used in a small vest-pocket electric light? The battery can be bought for about 25 cents. A. The battery for lighting miniature lamps usually contains two or three dry cells. We published in our SUPPLEMENT, Nos. 1383 and 1387, price 10 cents each, a full description with illustrations of the manner of making such cells, with all the materials used and all necessary instructions. 2. What is the method of making a Fuller battery? A. The Fuller cell (see SUPPLEMENT, No. 159, price 10 cents mailed) is a bichromate cell in which there is a continuous amalgamation of the zinc. The zinc is in the bottom of the porous cup, and has a quantity of mercury, an ounce to a cell will answer, poured around it, which maintains the amalgamation of the zinc through the life of the cell. A brass or copper rod covered with gutta percha is fastened to the zinc, and extends above the cell as a terminal to which the circuit is connected. The carbon plate is placed in the glass jar and surrounded with a bichromate solution. Water is poured into the porous cup upon the zinc. The acid diffuses through the porous cup fast enough to act upon the zinc and produce the current. The cell evidently will not furnish a strong current. A good formula for the bichromate solution may be given: Take 21 ounces of sodium bichromate and 3 quarts of water. When the solution of the salt is complete, add slowly and with constant stirring, 1 pint of strong sulphuric acid. The solution is ready for use when it has cooled.

(9517) W. R. C. writes: State in the column of Notes and Queries if there is any liquid that will dissolve amber that has no oil in it? Something like alcohol, that will soon evaporate. A. We do not think that there is any liquid that will dissolve amber that has no oil in it. We know of none.

(9518) W. D. O. says: I would like to know the composition of the preparation with which the particles of carbon, in the carbon pencils for electric arc lamps, are held together; that is, the cementing substance. A. Are light carbons, carbon plates for battery cells, and similar articles are made from coke. The higher grades are made from coke derived from the residue of petroleum stills. The crude material is dried, ground fine, and sorted into different sizes. The binding material may be a coal tar product, or some other substance containing carbon, and which will be reduced to carbon by the heat of the furnace. These are thoroughly mixed, pressed into forms by hydraulic pressure, and afterward baked in a furnace. For a full description see SUPPLEMENT, No. 1287, price ten cents.

(9519) R. S. C. asks: Why, if known, does the skin of a chameleon change in color, in moving from an object of one color to one of another color; that is, why does its skin always assume the same color as the object it may be resting upon? A. One answer to the question, "Why does the chameleon change the color of its skin?" is that the chameleon has a better chance of life by reason of this protective resemblance to its surroundings. Those chameleons which had the largest range of change of color in the past have survived, and the capacity of change has been evolved in their descendants to a higher degree, so that all chameleons now living readily change the color of their skins to that of the bark of the tree upon which they at the time may be. They are thus protected from their enemies. There are many such adaptations of creatures to their habitat or environment. The polar bear, living among Arctic snows, is white. The tiger in the jungles is striped, as if painted to resemble rushes, reeds, or other stiff and straight plants. Many fish have backs of the hue of the sand or sea bottom upon which they lie. Nature has thus attended to the needs of her weaker children. Another answer might be that the effect of the color of the surroundings is to produce a change in the pigment in the cells of the skin, so that the color becomes like that of the surface upon which the animal is resting. In the chameleon this is comparatively rapid.

NEW BOOKS, ETC.

THE TREATMENT OF SEPTIC SEWAGE. By George W. Rafter, M.Am.Soc.C.E. New York: D. Van Nostrand Company, 1904. 32mo.; pp. 137. Price, 50 cents.

The author has endeavored to give, in a limited space, the more important developments in the bacterial treatment of sewage. All the leading works on the subject have been consulted, and the present small volume is a compendium of the information contained in these. The book is non-technical in character, and is intended to give to the everyday person a knowledge of the proper and scientific treatment of sewage.

AUTOMATIC SURVEYING INSTRUMENTS AND THEIR PRACTICAL USES ON LAND AND WATER. By Thomas Ferguson. With an Introduction by E. Hammer, Ph.D., Professor of Geodesy at the Royal Technical High School of Stuttgart. London: John Bale, Sons & Danielsson, Ltd., 1904. 12mo.; pp. 87. Price, \$1.60.

This book forms a practical handbook on the use of automatic surveying instruments, such as the pedograph and cyclograph, which are used for the purpose of recording the topography of the country. The instruments and their mode of operation are described in detail, and clearly illustrated by drawings and photographs.

OBSERVATIONS SUR LES FOURMIS. Par Charles Janet. Limoges: Imprimerie-Librairie Ducourtioux et Gout, 1904. 8vo.; pp. 70.

This book contains much information upon ants, their anatomical construction, their length of life, means of subsistence, habits, etc. It is illustrated with about ten full-page plates containing drawings showing the anatomical structure of ants. The book contains considerable scientific information regarding these little insects.

UNTECHNICAL ADDRESSES ON TECHNICAL SUBJECTS. By James Douglass, LL.D. New York: John Wiley & Sons, 1904. 12mo.; pp. 84. Price, \$1.

This small volume is made up of three interesting addresses on the following subjects: The Characteristics and Conditions of the Technical Progress of the Nineteenth Century; the Development of American Mining and Metallurgy, and the Equipments of the Training School; and Wastes in Mining and Metallurgy. The first-named paper treats largely of the management of large works and of the methods of treating employes both here and abroad; the second tells of the requirements which will be made of a student after he has left a mining school, and of the methods obtaining in large American mining and metallurgical works; while the third tells of the approved processes and methods now in vogue for utilizing products in ores which heretofore have gone largely to waste. The papers will be found most interesting by all students of mining and metallurgy.

THE LOCOMOTIVE. Hartford, Conn.: The Hartford Steam Boiler Inspection and Steam Boiler Company, 1903. 8vo.; pp. 195.

This book contains the numbers of that excellent monthly, well known to many of our readers—The Locomotive. Much useful information regarding locomotives, boilers, burners, and boiler explosions is contained within its pages. The annual report of the Chief of the Bureau of Steam Engineering for 1902 on oil burners is given in condensed form in the first number of the volume, and is illustrated by large diagrams of the various burners used so successfully in the tests with freight steamers made by this bureau. The paper is too well known to our readers to need further comment, save that all the articles published in it are of an altogether practical character.

DIE MECHANISCHEN VORRICHTUNGEN DER CHEMISCH-TECHNISCHEN BETRIEBE. Von Friedrich Weigand. Illustrated. Octavo. Pp. 416. Price, \$2.

Many books have appeared on industrial chemistry, but so far as we know, the appliances of the industrial chemist have not been described in any work. The modern industrial chemist must be something of a mechanical engineer. It is the purpose of this work to describe the mechanical appliances which he employs. This purpose has been accomplished with praiseworthy thoroughness in this newly-issued book of Hartleben's.

ORNAMENTAL TURNING. A Work of Practical Instruction in the Above Art. By J. H. Evans. Three Volumes. London: Guilbert Pitman, 1903. 12mo.; pp., each volume, 165; with numerous engravings and plates. Price, \$1.50 each volume.

Followers of this fascinating occupation, and those who simply make of it a hobby, will alike be delighted with these three little volumes. Mr. Evans, well known as a maker of high-class lathes and a professional turner of marked ability, has issued this popular-priced edition of his "Ornamental Turning." The volumes are progressive, Vol. 1 dealing with the simpler processes requiring inexpensive apparatus, while Vols. 2 and 3 initiate the worker into the manipulation of the more costly and efficient chucks and appliances.

MODERN PRACTICAL ELECTRICITY. By R. Mullineux Walmsley, D.Sc., F.R.S.C. Chicago: W. T. Keener & Co., 1904. Quarto; pp. 325. Numerous illustrations; 4 vols. Price, \$12.

This book forms Volume IV. of one of the most popular yet practical treatises on the application of electricity in modern life, which we have yet seen. It is written in a simple, concise style, and abundantly illustrated with fine half-tones and numerous diagrams. Volume IV. opens with a continuation of the chapter on the Magnetic Circuit, and also contains chapters on batteries of generators of both the continuous and alternating current types; continuous current motors, of the open, closed, and tramcar types; alternate current motors of the monophase and polyphase induction types; and electrical measurements and dynamo and motor testing. The chapter on electrical measurements contains descriptions of standard meters of all kinds, and discusses in a thorough manner the measurement of electrical energy. The work contains some 325 illustrations, which greatly aid in interpreting the text.

INDEX OF INVENTIONS

For which Letters Patent of the United States were Issued for the Week Ending January 3, 1905

AND EACH BEARING THAT DATE

[See note at end of list about copies of these patents.]

Table listing various inventions and their corresponding patent numbers, including items like 'Acids, producing fatty', 'Adjustable brace', 'Advertising apparatus', etc.