RECENTLY PATENTED INVENTIONS.

Bicycle-Appliances.

BRAKE. — MARTIN FESLER, Salt Lake City, Utah. The brake is of the back-pedaling type, and comprises a flanged axle and a sleeve having a housing at one end, one wall of which is provided with curved slots. On the sleeve a hub is mounted having limited movement. In the housing are pivoted spring-pressed levers adapted to engage the flanges of the axle. Projections carried by the hub extend into the housing of the sleeve and engage the brake levers.

Electrical Apparatus.

MEDICAL GALVANIC BATTERY.—HARRY BENTZ, Manhattan, New York city. This battery, designed for medicinal purposes, comprises a number of sets of cells, all mounted on a single support. The cells of each set are connected in series. A circuit-closer controls a circuit through one or all of the sets of cells. Another circuit-controller closes the circuit through one or two of the sets of cells, independently of the other cells. The current strength can be easily changed or regulated. The electrodes can be placed upon any portion of the body or head.

ARC-LAMP.—EDWARD L. BOWEN, McComb City, Miss. The inventor has provided a simple, ingenious device for automatically regulating and controlling the carbons to produce a constant light. The device is particularly adapted for search-lights, magic lanterns, and the like. The mechanism consists of spring-actuated gearing which is operated automatically as the current is cut out by the burning away of the carbons.

Mechanical Devices.

DRIVING-GEAR FOR MOTOR-CARRIAGES. — ROBERT E. TWYFORD, Pittsburg, Penn. The objects of the invention are to produce a motor-carriage in which all the wheels can be used for traction purposes, in which a large variation in speed can be quickly obtained, and to provide a simple and effective brake and a power steering device controlled by a hand-lever and furnished with a safety mechanism which is designed to prevent too great a throw of the steering-axle. A single lever controls all the speeds, and reverses the carriage. More power can be profitably applied to driving the carriage, by making all the wheels driving wheels. The power-steering gear insures rapid and certain steering.

ADVERTISING DEVICE. — ALBAN HEIRON and LANCE J. TOFFELMIER, San Leandro, Cal. The device is actuated from a moving door in a store, railway-car, public building, or other place, and is arranged to display different advertisements in succession. The machine consists of an intermittently-revoluble cylinder on which advertising cards are carried. A star-wheel is mounted on the cylinder. With a slide moving transversely to the cylinder, a three-armed lever is connected. Shoes are engaged by opening or closing a door or window to impart a swinging motion to the three-armed lever and move the slide transversely in its bearings to impart an intermittently rotary motion to the star-wheel and cylinder.

EGG-BEATER.—THOMAS HOLT, Tarrytown, N. Y. Two ring-like beaters are so spaced that, when rotating, one side of a beater will pass into the circle of the other beater. Each of the beaters is transversely corrugated, with the opposite sides arranged at an inclination to the radial line. Guard-plates attached to the frame have their inner surfaces curved axially of the beaters.

VENDING-MACHINE. — WILLIAM MCC. MACK, Bridgton, Me. The invention is a coin-controlled vending-machine for cigars. The machine is so arranged that a single cigar or a number of cigars can be discharged upon the deposit of a coin of certain value. The device for containing and vending the cigars comprises a number of boxes of different prices and grades. The coin-chutes are so constructed that any coin deposited, smaller than the coin for which the chute is inteuded will be discharged without placing the machine in operative condition.

HAT-SEWING MACHINE. — EDMOND G. O'DONNELL, Fall River, Mass. The sweat-band has heretofore been sewn into hats having a roll-brim, by hand, owing to the difficulty of reaching under the brim to the base of the crown, at which point the sweat-band is sewed. The inventor has overcome these objections in a machine having a frame comprising an upper arm and a lower arm, the former carrying the needle and presser-foot and being projected out beyond the latter arm, which serves to carry the work and also the stitch-forming devices. The needle and presser-foot bars are provided with arms projected inwardly to the end of the lower arm and carry the needle and presser-foot, so as to hold them under the brim of the hat and cause them to work at the very base of the crown.

ENVELOP-FEEDER. — WILLIAM J. BULMAN, Winnipeg, Manitoba, Canada. The invention is an improved device for automatically feeding envelops to a printing-machine. The feeder is adjustable to different sizes of envelops. The envelop-feeder comprises a base and a front board. Partitions are adjustably mounted on the front board, and envelop-supporting plates are carried on certain of the partitions; and adjustable stops on the other partitions. On a feeder-bar, longitudinally and transversely movable, feeder-blades are adjustably mounted and extended underneath the supporting-plates. Adjustable spring-fingers, movable upwardly, are carried by the blades.

Railway-Appliances.

MAIL-BAG CATCHER AND DELIVERER.—THOMAS F. MAGUIRE and ROBERT E. GLOVER, Portsmouth, Va. A swinging-arm is so mounted that when lowered it will be received by a seat-plate, and is provided with a cushion for the arm, arranged to sustain the back-jar of the arm in receiving a bag. The bag is caught by a receiver consisting of a fork having tines converging toward their inner ends, and provided at these ends with a recess to receive the bag-supporting ring and in advance of the recess, with a latch by which to secure the ring when in the recess. The arrangement of latch-devices operates to avoid any error in setting the bag to be caught by the train or the receiving devices in order properly to take the bag from the train.

AUTOMATIC SAFETY APPLIANCE FOR RAILWAYS.—GIDEON S. JEFFRIES, Reading, Penn. This invention is an improvement in a mechanism previously devised by Mr. Jeffries, in which the application of the air-brakes of a train can be controlled independently of the engineer or other person upon the train through the medium of an obstruction upon the track, whereby the air in the train-pipe is released to set the brakes. The improvements are to be found in the relation of the valve to the lever engaged by the track obstruction, the valve having a limited movement independently of the lever.

LOCOMOTIVE STEAM-BOILER.—EMMANUEL FOURÉ and HENRI THUILE, Alexandria, Egypt. The inventors have combined an electrical and a steam locomotive for the purpose of producing an engine of great power. The largest portion of the energy is furnished by steam directly led to the main driving-axles. Unquestionably the most important adjunct of an engine is the boiler. By means of their boiler, the inventors state that 2,000 horse power can be attained continuously and in working practice. The boiler in question is characterized by three superposed cylinders, the lower two of which are wholly tubular. The arrangement enables the inventors to employ driving-wheels of larger diameter than those at present in use, without alteration of the slide-valve mechanism.

AUTOMATIC AIR-PIPE COUPLING FOR CARS. —JOHN W. SPURLOCK, Ty Ty, Ga. The coupling-heads are rectangular in shape and are each provided with two prongs projecting from the lower corners of the head and having their inner and top faces beveled. A beveled prong projects from one upper corner of the head. The mating members of the coupling first engage their prongs with each other, these prongs serving as guides. The simple act of disconnecting two coupled cars will separate the coupling-heads and thus disconnect the air pipes. Pipes can be coupled even on curves.

Miscellaneous Inventions.

BINDER-FRAME.—HARVEY P. JONES, Cbicago, Ill. By means of this binder-frame any number of loose leaves can be properly bound together, although any of the leaves can be removed when desired. The binder-frame comprises superimposed clamping-bars for clamping leaves between them. Posts are carried by one of the bars. Fixed guideways are located near one side of the other or movable bar. The posts extend through the movable bar and engage the fixed guideways. A right and left hand screw-rod is journaled in the movable bar. Clamping-nuts secure the posts opposite the fixed guideways. The clamping-bars are readily opened or closed for removing or inserting leaves and for securely binding the leaves together, one of the bars being locked to the other by means of the nuts and posts.

SOUND-REPRODUCER. — FREDERICK W. NOLTE, Victoria, British Columbia, Canada. The invention provides for phonographs, graphophones, and like instruments in which a gravity-reproducer is used, a reproducer by means of which the sound-waves can be taken from each side of the diaphragm in contradistinction to taking the sound-waves from only one side of the diaphragm.

PROCESS OF TREATING GOLD ORES.—CHARLES WETHERWAX, Best, N. Y. The ore is digested under steam-pressure in a solution of soluble glass with the addition of a caustic alkali. The gold is more completely liberated from its combination with other elements which render the ore difficult of treatment by the usual reagents, and is so prepared for recovery by the usual means.

BRAKE-SHOE.—JAMES F. MORRISON and ANDREW J. ALLEN, Chicago, Ill. The object of the invention is to provide a composition brake-shoe arranged to prevent the shoe from unduly wearing the tire of the wheel and from disintegration. The composition consists of comminuted iron, asphaltum, and sulfur to render the asphaltum impervious to oil or acid and to allow the shoe to be subjected to an increased temperature when in use.

DOOR-SPRING. — FRANCIS and HENRY F. KEIL, Bronx, New York city. In spiral door-springs, the block secured to one end of the spring is extended through a bracket in which it may rotate. The portion extended above the bracket is made angular or is provided with a channel to receive the head of a pin inserted in a hole in the bracket in order to hold the spring under its adjusted tension. These pins, being wholly detachable, are often lost. The present invention avoids these difficulties by so constructing the device that the holding-pin cannot be wholly detached by accident.

HORSESHOE AND PAD. — MICHAEL HALLANAN, Manhattan, New York city. The improvements devised by the inventor in horseshoe pads are designed to meet the views of horsemen who prefer ventilation. Automatic ventilation is effected by a yielding diaphragm, flexed at each step alternately to eject the air from an interior chamber and to draw in fresh air to the natural foot. The diaphragm is protected from undue strain by a guard flange, which receives the major portion of the wear.

A second pad has been patented by the inventor, which is constructed on new lines. The distinguishing feature is a leather shoe, built up in layers and combined with a rubber pad. The whole arrangement serves to minimize the jar on the horse's foot and to deaden the noise.

FLASH-LAMP.—CHARLES KLARY, Rue Taitbout 13, Paris, France. The apparatus which forms the subject of this invention is essentially characterized by combined devices for producing the instantaneous deflagration of the lighting or flash-powder and the subsequent operation of a smoke-retention device. A vivid light is obtained at exactly the proper moment without interference by the very strong emission of gas and smoke produced by the combustion of the lighting-powder. The apparatus is therefore suitable for photographic work.

BOX-CORNICE.—CHRISTIAN M. PRUSTMAN, Lexington, Neb. The cornice comprises a rake-molding and an eave-molding of different width. The rake-molding is arranged for attachment to the side of the rafter and at an angle thereto. The eave-molding is arranged for attachment to the square end of the rafter, the moldings being joined at the corner in miter-fashion. The construction is cheap; for it requires only two moldings of different width, joined together at the corner.

SHEARS.—JOHN T. SCHNORR, Sandusky, Ohio. The purpose of the invention is to provide shears in which the blades will cut true with a pronounced shear or draw cut and also prevent the edges from crossing each other and wearing away. The blade and handle of each section are in alinement. An arm or projection is extended laterally from each section and is situated at the bases of the blades. The arms are extended in the same direction and the sections are connected by a pivot-pin at the ends of the arms. A nipper-blade is attached to the end of each arm, the blades working with each other as the sections are moved on the pivot.

COMBINATION-TOOL.—PATRICK H. WALSH, Scranton, Penn. The tool is arranged to enable a carpenter readily to obtain various angles of timber, the length of rafters, and other desirable measurements when framing a house. The tool comprises blades standing at right angles and slidable one relatively to the other. A triangle has its sides pivotally connected, the hypotenuse being made in sections pivotally connected with each other and with the blades.

HUB-ATTACHING DEVICE.—JOHN A. WEITZEL and ULYSSES G. SMITH, Danville, Penn. The purpose of the invention is to provide a device for mounting hubs on spindles, and particularly for attaching vehicle-hubs to the spindles of the axles. To this end the inventors employ a collar with a locking device to hold it on the spindle, and a peculiarly-constructed pawl-and-ratchet device arranged to control the locking-device.

WOOD-PLANE.—HERBERT M. COE, Phœnix, Arizona Territory. The invention is an improvement in planes or spoke-shaves adapted for planing or shaving on circular or flat bodies. The plane-bit is secured upon a cross-block held in a frame. A flexible bed-plate extends rearwardly from the cross-block. The bed-plate can be readjusted to conform with the shape or size of the surface to be planed.

SHIRT.—WILLIAM R. CHAPLAIN, JR., Easton, Md. The invention provides a detachable bosom for shirts. By means of this arrangement one can use a number of bosoms of different fabrics or designs with a single shirt body or a smaller number of bodies without increasing the thickness of material at the bosom, at the same time avoiding a bulky appearance at the neck-band.

WOVEN FABRIC.—MAUD R. HARTZ, Ilchester, Md. The inventor has devised a fabric comprising bristles arranged in such manner as to provide a varying degree of flexibility transversely of the fabric, so that the garment lined with the fabric will have varying degrees of flexibility. This fabric is particularly adapted for shirt-collars, but is also useful for lining cloak and coat collars, or articles in which different degrees of stiffness are desired to retain the shape.

LUBRICATOR.—JAMES W. MCDONALD and ROBERT C. HAWLEY, Pueblo, Colo. The lubricator is of that class in which the lubricant is forced to the point to be lubricated by fluid-pressure, the lubricant being pumped into a tank in which the fluid pressure is established and from which the oil is fed. The lubricator comprises an oil-tank having a concave bottom. A steam-pipe leads into and extends nearly to the bottom of the tank. A sight-tube has connection with the tank and also with a steam-pipe. A pump supplies oil to the tank. A spring-pressed valve in the bottom of the tank is adapted to open and close with each stroke of the pump, whereby a uniform pressure and continuous feed of oil are obtained.

GARMENT-SUPPORTER. — JACOB A. THOMAS, Reading, Penn. The garment-supporter, for ladies' waists and skirts, consists of a belt and a base-plate having upper and lower flanges by which it is held on the belt. The flanges are formed with apertures; and one of the flanges is separated between its ends, a clip being formed between these separated sections. A pin is adapted for attachment to an upper garment and is secured to the clip. Inverted U-shaped clasps are adapted for attachment to the garment, having side members journaled in the apertures. Keepers are formed in the ends of one of the flanges and are adapted to engage with the other side members of the clasps.

DOOR-STOP.—FRANKLIN E. BEATTY, Philadelphia (Mount Airy), Penn. The invention comprises a catch of peculiar construction which is mounted upon the door-stop to hold the door open and which is released by shutting the door. The catch is held by a spring which will yield, when sufficient force is applied thereto, and thus act upon the catch to move it sidewise a sufficient distance to release it from the keeper.

BATH-CABINET.—ARCHIBALD C. FLOYD, Columbia, Tenn. The cabinet has a flexible cover and devices for holding the cover distended. The cover can be readily removed to be washed or stored in compact form. An automatic opening makes ingress and egress easy, so that the cabinet can be used without assistance and without danger of overheating.

HEN'S NEST.—WILLIAM R. PETTY, Carlisle, Neb. The nest comprises a box having one end partly closed. A gravity-door in the end is formed with a keeper on its inner face. A swinging partition depends from the top of the box; and a latch-rod on the partition is inserted through the end of the box to engage the keeper of the door, to hold the door in raised position. Stops limit the movement of the partition and prevent the withdrawal of the rod from the end of the box.

END-GATE FASTENING. — JAMES O. LEFEVRE, New Paltz, N. Y. The invention is a fastening which serves to secure the end-gate by drawing the side-boards of the wagon together, thus binding them against the edges of the end-gate. The invention involves novel features of construction by which a most effective appliance is produced.

FOLDING BRACKET-SHELF. — WILLIAM A. PETRIE, Petoskey, Mich. This shelf has a back frame with bearings and guideways. A shelf has a pintle mounted to turn in the bearings, the pintle terminating in crank-offsets. A brace is pivotally connected with the shelf at one end and is mounted to slide at its other end in the guideways. Springs on the back frame press the crank-offsets to hold the shelf in either an uppermost closed position or in a lowermost extended position.

ARTIFICIAL TOOTH.—THOMAS STEELE, Red Bank, N. J. The tooth is provided with a chamber and a slot in its under face communicating with the chamber. The inlay or fastening for the tooth consists of a body arranged to extend beyond the inner face of the tooth. A number of anchoring-arms project from the body and extend within the chamber of the tooth. The construction is such that the tooth, when forming a portion of bridgework, will be positively held against movement.

CARBURETER.—WILLIAM HENRY WOOD, Manhattan, New York city. This apparatus for generating illuminating and fuel gas comprises a tank containing a bell lifted by separate power and designed to descend by gravity. The bell is provided with an inlet-valve to admit air upon lifting the bell. A hydrocarbon is actuated by the bell, and a vaporizer has a valved connection with the interior of the bell to charge the vaporizer with air from the bell. The pump also discharges into the vaporizer to vaporize the hydrocarbon and to mix the vapors with the air to form the desired gas.

LOCK-GATE.—THOMAS T. STODDART, Ottawa, Ontario, Canada. The inventor has sought to provide an automatic lock-gate for canals, which will facilitate the opening and closing of the lock, and which will dispense with the use of chains, swinging arms, crab-wrenches, or moving machinery. The gate is hollow, and is mounted to swing in a vertical plane. The hollow shaft of the gate is arranged for connection with a fluid-supply. An air-pipe opens into the outer air and extends through the shaft. The pipe has branches opening into the gate. The gate, when filled with water, falls by gravity, whereupon the water is allowed to run off. By pumping out the air the gate rises.

TABLE-ADJUSTER.—WILLIAM H. WYATT, Manhattan, New York city. The purpose of the invention is to provide a device by means of which billiard tables can be quickly adjusted, without being subsequently disturbed by vibration either of the table or building. The inventor employs a screw with a sperical head set in a concave step. On these latter parts are interchanging ribs and grooves, disposed radially with respect to the axis of the screw and designed to hold the screw securely to prevent the effect of vibration.

MAGAZINE-CAMERA.—RELLA W. BALCH and JOHN J. MERRILL, Neillsville, Wis. The plates in this camera, after having been exposed, drop upon a bed or support which, unlike the supports of cameras hitherto constructed, form part of the magazine. Hence, when all the plates have been exposed, and have dropped, the support can be swung upwardly so as to restore the plates to the magazine. The construction has the advantage of enabling the photographer to remove the magazine with the exposed plates in broad daylight and to insert a new magazine.

WHIFFLETREE ATTACHMENT. — ERNST F. BAUERLE, Strong City, Kans. The purpose of the invention is to provide a means for preventing the falling of the reins beneath the singletrees, the invention being adapted particularly for use in connection with pairs or teams of horses. The device provided is a rein-guard, comprising a pivoted bar having its ends in slidable connection with the adjacent ends of the singletree.

CLAMP.—THEODORE DICKMAN, Wapakoneta, Ohio. The purpose of the invention is to provide a means for clamping together the parts of troughs and like structures which are built of staves held together by tie-rods. The invention is composed of a clamp-iron which engages the top staves and receives the strain of the cross and bolting tie rods.

FISHING-REEL AND REEL-REST.—JASPER HOWE, Tacoma, Wash. The reel, instead of being hung on the side of the rod as usual, is mounted in the center, so that the rod is balanced. Hence, in reeling, the crank is also at the center, and the customary wabbling is avoided. A simple form of click is provided which can be set hard and soft, whereby a running reel can be instantly obtained. A brake is substituted for the ordinary drag, which brake is operated by the little finger of the hand operating the rod, enabling the angler to bring a fish under control at all times. The gearing is mounted with the least possible friction, together with means for oiling.

Designs.

SPOON-HOLDER. — WILLIAM H. LOONIE, Wappinger's Falls, N. Y. The design provides a device for attachment to a vessel, which device is essentially a rest which prevents the spoon from falling into the vessel.

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 this paper.

NEW BOOKS ETC.

THE SHIPPING WORLD YEAR BOOK. A Desk Manual in Trade, Commerce and Navigation. Edited by Evan Rowland Jones. London: Shipping World Office. 1900. 12mo. Pp. 1184. Price $2.

This valuable book which is now published for the fourteenth time contains complete new tariffs of several countries, rules giving the loading of the several types of vessels, lists of vessels built or in the course of construction for the navies of the world, the world's shipping during 1899, a port directory of the world, various tables rules, etc., shipping laws and other information which cannot but prove of the greatest value to all who are engaged in, or in any way interested in navigation or shipping industries.

THE PRINCIPLES AND PRACTICE OF ARTIFICIAL ICE MAKING AND REFRIGERATION. By Lewis M. Schmidt, Ph.B. Philadelphia: Philadelphia Book Company. 1900. 8vo. Pp. 232. 87 illustrations. Price $2.50.

In the preparation of this volume the central idea has been to produce a representation of the status of the art of mechanical refrigeration and ice making as it is today. The book comprises the principles and general considerations of practice as shown by particular systems of apparatus; and insulation of cold storage and ice houses, refrigerators, etc., other useful information and tables. The book is a most excellent one, and is sure to be of the greatest possible value to all who manufacture, own or run ice-making plants. There is also a section

devoted to liquid air. There seems to be no immediate prospect of this becoming a serious competitor of ice.

Indicator Diagrams. A Treatise on the Use of the Indicator and its Application to the Steam Engine. By W. W. F. Pullen. Manchester, England: Scientific Publishing Company. 1890. Price $2.40.

There are already a large number of books upon the indicator, but there always seems to be a genuine opportunity for a new and helpful contribution to the literature of this subject. The author gives the result of his experience and the large number of illustrations and reproductions of the diagrams will assist those who may be unfamiliar with the use of the indicator, to obtain a very competent knowledge of the subject.

Kant and Spencer. By Dr. Paul Carus. Chicago: Open Court Publishing Company. 1899. 16mo. Pp. 105. Price 20 cents.

Kant will ever have an important place in the history of modern philosophy, and the keynote of his success is thoroughness, holding that all philosophy must be based upon facts. Mr. Spencer on the contrary has been, according to Dr. Carus, deficient in thoroughness and earnestness.

Volumetric Analysis. By John B. Coppock, T. C. S. London: Whittaker & Company. New York: The Macmillan Company. 16mo. Pp. 92. Price 50 cents.

This is specially adapted to the requirements of students entering the science and art courses in England, but the book will prove useful to American readers notwithstanding this drawback. It is one of the best and simplest treatises we have ever seen on the subject.

Ferric and Heliographic Processes. A Handbook for Photographers, Draftsmen and Sun Printers. By George E. Brown, T. I. C. London: Dawborn & Ward, Limited. 1900. 16mo. Pp. 130. Price 80 cents.

This is a most valuable book in which are given examples of the work which can be turned out by various processes, including full directions for doing the same. A thoroughly practical book on this subject has been needed for some time.

Geological Survey of Canada. Annual Report. New Series. Vol. IX. 1897. Large 8vo. Pp. 1046, accompanied by 8 maps and 12 plates. Price 80 cents.

The portly volume before us gives an excellent idea of the work which is being done by the Geological Survey of Canada under the direction of G. M. Dawson, LL.D., F.R.S. The reports are fully illustrated and will prove of value to all who are interested in the wonderful mineral resources of Canada.

The Soul of Man. An Investigation of the Facts of Physiological and Experimental Psychology. By Dr. Paul Carus. Chicago: Open Court Publishing Company. 1900. 12mo. Pp. 482, 182 illustrations. Price 75 cents.

This is the second edition of an important book which is published in inexpensive form. The writings of Dr. Carus is well known.

The Sixth Annual Report of the Commissioner of Public Roads of the State of New Jersey. By Henry I. Budd, State Commissioner, Trenton, N. J. 1899. 8vo. Pp. 237.

The public roads of the State of New Jersey, together with those of Maryland, are in many ways the model roads of the United States, and the improvements which are constantly being made are most remarkable. The book is filled with valuable matter, many of the illustrations showing the roads before and after improvements were made. The figures, etc., which are given will prove of value to all those who are interested in good roads.

Man and the Cosmic Principle. By C. A. Bowsher. Champaign, Ill. 1899. 16mo. Pp. 155. Illustrated.

Meteorological Observations Made at the Adelaide Observatory and Other Places in South Australia and the Northern Territory During the Year 1896 Under the Direction of Charles Todd. Adelaide. 1899. Quarto. Pp. 176, maps.

Electric Wiring. By Cecil P. Poole. New York: Power Publishing Company. 1900. 18mo. Pp. 101. Flexible leather. Price $1.

This book represents an honest effort upon the part of the author to explain the computations of wiring to the unitiated, and to present in shape for convenient reference tables and formulas for the use of engineers, including wiring tables for alternating current motors and tables showing the corrected drop in conductive circuits. The author has succeeded admirably in his efforts and the book will certainly be at the right hand of all those who have to work out the difficult problems of electrical wiring problems, which are increasing every year.

Official Proceedings of the International Commercial Congress. A Conference of all Nations for the Extension of Commercial Intercourse, held under the Auspices of the Philadelphia Commercial Museum in the City of Philadelphia. Philadelphia: Commercial Museum. 1899. Quarto. Pp. 442. Price $2.

As is well known, the International Commercial Congress was held in connection with the National Export Exposition, which was held in Philadelphia from October 12 to November 1, 1899. The volume before us is probably the most valuable reference book relative to our export trade which has ever been issued, giving as it does views of a vast number of delegates from thirty-eight foreign governments.

Practical Staircase Joinery. Edited by Paul N. Hasluck. New York: Cassell & Company. 1900. 16mo. Pp. 160. 180 illustrations. Price $1.

The editor has performed his task in a creditable manner, and it is one of the best and most easily understood books which we have seen on the subject. Stair building is not such a very intricate subject if the principles which underlie it are properly understood.

The Filtration of Public Water Supplies. By Allen Hazen. New York: John Wiley & Sons. 8vo. Pp. 321. Price $3.

There is no subject at present confronting the water-supply engineer more important than filtration, and the author has performed a signal service for engineers in the production of so admirable a book. That it is in its third edition is a sufficient guarantee of its excellence. The subject is making such rapid strides, and there is such a widespread interest in it, that it is to be hoped that a fourth edition outlining still further progress may be called for. It is profusely illustrated.

Electric Wiring, Fitting, Switches and Lamps. By W. Perren Maycock, M.I.E.E. London: Whittaker & Company. New York: The Macmillan Company. 1899. 16mo. Pp. 466. Price $1.75.

This is a practical work for electric-light engineers, wiring and fitting contractors, consulting engineers, etc. It is profusely illustrated by 360 illustrations, and gives the wiring rules of the Institution of Electrical Engineers. Of course English practice is dealt with, but American engineers can gain many helpful facts from it.

An Introduction to the Study of Central Station Electricity Supply. By Albert Gay, M.I.E.E., and C. H. Yeaman, A.I.E.E. London: Whittaker & Company. New York: The Macmillan Company. 1899. 12mo. Pp. 467. Price $3.

A very timely work, dealing of course with English practice, but none the less valuable on this account. It is illustrated by 200 engravings. The book is written by two very practical electrical engineers, and the result of their labors is an eminently useful book dealing with the problems which are constantly occurring in all central station work. It is a book which can be recommended.

Man and His Ancestor. A Study in Evolution. By Charles Morris. New York: The Macmillan Company. 1900. 16mo. Pp. 238. Price $1.25.

An effort has been made in the present volume to present the subject of man's origin in a popular manner, to dwell on the various significant facts that have been discovered since Darwin's time, and to offer certain lines of evidence never before presented in this connection, and which seem to add much strength to the general argument. The subject is of widespread interest, so that the present brief and plain presentation of it will be acceptable.

The Criminal: His Personnel and Environment. A Scientific Study. By August Drähms. With an introduction by Cesare Lombroso. New York: The Macmillan Company. 1900. 12mo. Pp. 402. Price $2.

There is no more serious problem confronting society than that of the criminal, and the classic works of Lombroso have revolutionized our ideas regarding the way they should be treated. Lombroso has set his seal upon the book and this is sufficient to emphasize its importance. The author, who is resident chaplain in the San Quentin Prison, Cal., has had ample opportunity for making exhaustive studies, and he has improved his opportunities so as to gather an almost unrivaled collection of data, which he has collated and arranged in readable form. The philosophy of crime, criminal classification and categories are all admirably treated, as well as demography of crime, hypnotism, punishment, reformation and prevention.

Outlines of Industrial Chemistry. A Text-Book for Students. By Frank Hall Thorp, Ph.D. New York: The Macmillan Company. 8vo. Pp. 541. Price $3.50.

It was only a few months ago that we had occasion to review this admirable book, and now we have a new and revised edition. It should be at the right hand of every chemist and teacher. It contains some of the clearest expositions of intricate chemical processes we have ever seen. The good old-fashioned spelling is retained, and so furnishes a valuable example. We have nothing but praise for this book.

A Manual of Zoology. By T. Jeffrey Parker, D.Sc., F.R.S., and William A. Haswell, M.A., D.Sc., F.R.S. New York: The Macmillan Company. 12mo. Pp. 563. Price $1.60.

It is a novelty to have a scientific book by New Zealand and Australian professors, but an examination of the book reflects great credit upon the authors. It has has been adapted for use in American schools and colleges. It is an excellent text book. The information is clearly and well set forth, and the illustrations admirably elucidate the text.

On the Building and Monumental Stones of Wisconsin. By Ernest Robertson Buckley, Ph.D. Wisconsin Geological and Natural History Survey. Madison, Wis. 1898. 8vo. Pp. 544.

An important report with splendidly executed plates. Although reports of this kind are of great local value, they are also of value to those who are in any way interesting in petrography or in building stones, even though they may live in another section of the country.

Business and Personal.

Marine Iron Works. Chicago. Catalogue free.

For mining engines. J. S. Mundy, Newark, N. J

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

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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.

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Minerals sent for examination should be distinctly marked or labeled.

(7861) A. J. L. asks (1) asks how to get rid of an annoyance on telephone line caused by induction from 500 volt generator which has line running parallel to phone line for several hundred feet. A. You can remedy your trouble with your telephone caused by the induction of the 500 volt generator by using a metallic return wire and either cross them at the poles, or if insulated twisting them together for the entire distance over which they are liable to be disturbed. See Hopkins' "Telephone Lines," price $1.50 by mail. 2. What causes the colors blue, green, orange, etc., in coal? A. The colors in coal are explained by the diffraction and interference of light. See any larger text book of "Physics." Such as Ganot, price $6 by mail.

(7862) T. R. asks: I want to run five fans and 26 lights, 16 candle power each, from a dynamo. What horse power engine would it require and what size dynamo? A. You will need a 5 horse power engine to do your work with ease, and a dynamo for about forty or fifty lamps. 2. What engine would be the best to use, gas or steam? A. Gas engines have in some cases been used for such small plants, by putting a heavy balance wheel upon the engine to make its motion uniform, but a good steam engine is more commonly used. The engine you name is considered a good one.

(7863) C. A. P. asks: How many feet of wire will it take to wind the armature of the alternator described in Scientific American, issued September 11, 1897. A. About 800 feet or two pounds.

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