Correspondence.

The Proposed United States Cruisers.

To the Editor of the SCIENTIFIC AMERICAN:

In your issue of August 19, I notice an article referring to the projected second class cruisers for the United States navy, and as I take the keenest interest in your navy as well as that of my own country, permit me to make a few suggestions.

I must say in looking over the particulars regarding these projected vessels, that I fully agree with the comments on the same; for to build the vessels as projected would be to build a vessel of as obsolete a type as H. M. S. "Mercury" in the British navy, built in 1878, twenty-one years ago, with the exception that the battery would be modern. The "Mercury" is a vessel of 3,730 tons displacement, 16·8 knots speed, coal capacity of 780 tons, no protective deck, and a battery of thirteen 5-inch slow-firers and fifteen smaller quick-firers and four torpedo tubes. Now I must say I have always admired the skill of United States designers in designing the vessels of the navy, for they have always turned out vessels in a good many points second to none in any navy; but in these proposed designs, it looks like a going back in naval architecture for twenty years. In your article you have prepared tables of comparison of several ships. Now, of course there are a great many points to be looked at, apart from the requirements, viz.: Speed, coal endurance, gun power, and defensive powers. There is the point to be considered, for what particular service they are intended. Now, as they are to be sheathed and coppered, I presume they are mostly for foreign service. Other points to be considered are structural strength and freeboard (features of the utmost importance in relation to seaworthiness); also the quantities of ammunition and stores to be carried. The latter are points to be taken into consideration in making comparisons; and as these do not appear in tables of comparison, it is difficult if not impossible to fairly compare one ship with another. Of course, another point mentioned by you is the accommodation for officers and crew.

Before going any further, I want to say I am pleased to see the cudgels taken up in behalf of the United States steamship "New Orleans." I have had the pleasure of seeing her when on her way in company with the "San Francisco" from Elswick to New York, as they touched at this port, and I must say she was a fine ship in every particular; the only objection I had to her was that her freeboard was a little low and she was in all probability a wet ship in a seaway.

To return to the subject of new cruisers. I notice by the dimensions given that they will have a fairly wide beam for their length; of course, more length and less beam would mean, generally speaking, finer lines, and that would be more favorable for higher speed. On the other hand, the shorter and fuller hull would probably be more favorable in contending with severe weather and a heavy sea.

W. R. SHUTE.

Halifax, Nova Scotia.

Automobile News.

Prizes were offered last November in Paris for a feeding pillar to supply energy to electric automobiles. A number of devices were submitted, and in some cases arrangements were made for prepayment for the energy supplied. The pillars were found to be too expensive, so the prize was divided among two competitors, and the judges are of the opinion that there is still room for further improvements.

The automobile industry appears to be on a good financial basis. When the bicycle first became so popular, men went into the business with insufficient capital, and the result is that the failures were legion. The automobile business, on the contrary, appears to be approached with better provision of capital and business organization. Many other industries, such as tire makers, makers of bearings and furnishings of steel, will be greatly benefited by the new industry.

The Horseless Age recently published a little wrinkle which will be valuable for owners of motor carriages. It consists of a meter to determine the grades and can be made by almost anyone. It consists of a pointer or pendulum which follows a graduated arc divided off into degree marks. This is fastened to the carriage at any convenient place, preferably where it can be seen. As the carriage ascends the grade, the pointer, actuated by gravity, will indicate the steepness of the grade which is being ascended.

There are now over 7,000 owners of automobiles in Europe, and the number of vehicles is, perhaps, 10,000, and of this number, says the Annuaire Générale de l'Automobile, there are no fewer than 5,606 in France. Out of this number no less than 4,541 are scattered through the departments. There are 619 manufacturers in France, not including the makers of parts, 998 dealers in them, 1,095 repair shops, 3,939 stores for oil, gas, etc., and 265 electrical charging plants and charging "posts." The figures seem very high. We doubt very much if there are 619 regular manufacturers of automobiles, although there may be 619 firms that have made one or more automobiles. Making one carriage, however, does not constitute a factory in the ordinary sense of the word. For the remainder of Europe the figures are not very complete. There are 268 owners of automobiles in Germany, 90 in Austro-Hungary, 90 in Belgium, 44 in Spain, 304 in Great Britain, 111 in Italy, 68 in Holland, 114 in Switzerland. It is impossible to state at the present time how many automobiles are in this country. It is estimated that the number of them is 500. The Electrical World, however, considers these figures too high, and we think that 300 or 350 would be nearer the figure. A large number of concerns are preparing to turn out carriages of all kinds in large quantities, and within two years we can number our carriages by the thousand.

Curious Graving Dock.

The new graving dock opened recently at the Union Docks, Limehouse, London, is peculiarly interesting from the fact that in order to construct it the buried hulk of an old East Indiaman, called the "Canton," had to be excavated and cleared away. In 1818, when Mr. Henry Fletcher was making arrangements for the building of the docks on their present site, he purchased the old East Indiaman, sunk her, erected gates at her stern, and made a unique dry dock which, until 1898, formed the third or lower dry dock.

The Building Edition for September.

The September Building Edition is, as usual, filled with handsome illustrations of the most modern types of houses. Among its attractive features are Joaquin Miller's cabin at Meridan, Washington, D. C., the Schloss-Neuschwanstein in Bavaria, and Old Colonial Doorways in Bond Street. The last belongs to a series of important measured drawings of old houses which are steadily vanishing. The modern houses illustrated in this number are numerous and their range in price is considerable.

The Current Supplement.

The current SUPPLEMENT, No. 1236, is an unusually attractive number. "The Growth of the Mind" is by Dr. James Weir, Jr., and is an interesting article giving the observations of a naturalist on the development of a bird's mind. "The Destruction of the Exhibition Buildings at Como" illustrates the fierce fire which destroyed famous scientific relics of Voita and Galvani. "The Relations of Physics and Astronomy to the Development of the Mechanic Arts" is by Prof. Cleveland Abbe. "In Kaiser Wilhelmland" is an article describing the manners and customs in the German colony of New Guinea; it is accompanied by sixteen illustrations. "The Discovery of the Agora at Corinth" is by Prof. Rufus B. Richardson. "South American Trade" admirably supplements the Consular Notes. "Artificial Foods; Why These Exist and What They Are" is by Prof. Remington.

Contents.

(Illustrated articles are marked with an asterisk.)

RECENTLY PATENTED INVENTIONS.

Agricultural Implements.

GRAIN-DAMPENER.—WILLIAM J. EN EARL, Denver, Colo. This invention seeks to provide a mechanism for dampening grain or similar material, which mechanism shall automatically control the supply of water, so that the grain will be uniformly dampened. This result is obtained by the use of a valve with controlling means operative by variations in the flow of material. These means comprise a hopper having a vertical, longitudinally-extending discharge-slot operative as an outlet to an extent proportioned to the volume of the material flowing through the hopper.

CORN-PLANTER ATTACHMENT.—PETER A. PETERSON, Lake Mills, Iowa. The attachment is adapted to be used on check-row planters for regulating the discharge of the seed. In the main, the attachment consists of a tappet-wheel secured to one of the running-wheels of the planter; a fixed bar, which is horizontally arranged, and which rigidly connects the axle of the running-wheels with the planter frame; a slidable bar arranged over and parallel with the fixed bar and serving to operate the seed-discharge valve in the seed-box; a tappet-lever pivotally connected with the two bars; and a hand-lever provided with a bent lateral prong for engaging the tappet-lever and temporarily supporting it so that the attachment is held out of gear, and hence out of action.

SUGAR-CANE SCRAPER.—JOSEPH M. JUNCA and DENIS P. J. BURGUIERES, Louisa, La. According to the method of cane cultivation practiced in Louisiana, the ridge in which the cane is planted is first barred off on each side by a plow and then scraped by a hoe. The machine forming the subject of this invention avoids much of the labor incurred by this process. When drawn along the ridge, the machine, in its first operation, removes one side or edge, and when drawn back over the ridge removes the opposite edge. Thus the ridge is used to present an obtuse angle in cross-section. The scraper removes the compact, surplus soil, so that the cane becomes more readily affected by the heat of the sun and is caused to sprout quickly.

Mechanical Devices.

MECHANICAL MOVEMENT.—GUSTAV HALLBERG, Manhattan, New York city. The invention is an improvement in devices for changing reciprocating into rotary motion, and is composed of two segmentally-toothed wheels, mounted on a shaft and provided with stop-pins. The teeth of one wheel are arranged oppositely to the teeth of the other wheel. Reciprocating racks, provided with stop-lugs, are adapted to engage the wheels. When a rack has reached the end of its movement in one direction, its lug will engage the stop-pin on the corresponding wheel, thus preventing the wheels from being thrown too far forward and serving to move the rack into engagement by the impetus of the wheels.

MECHANICAL TOY.—SHERWOOD E. EDWARDS, Danville, Va. This toy is intended to represent a prize-fight, in which the pugilists are mechanically operated upon a stage, and made to imitate the movements of living men. The figures are held and operated upon a platform, without being actually attached thereto. The figures may be simultaneously or independently operated, or either figure or all the figures may be caused to fall.

BRICK-MACHINE.—JAMES GARRETT and JAMES H. WELCH, Monaca, Pa. On the under side of the framework of the machine, molds are arranged into which the material is pressed by a plunger. A receiving-table is mounted to yield upward when the filled molds are pushed from the machine, and is provided with a cut-off device for striking off the surface material from the filled molds and delivering the material upon the table. A reciprocating sweep operates over the table and is actuated in unison with the plunger.

GLASS BLOWING MACHINE.—LAWRENCE H. DOLAN, Pendleton, Ind. The machine is provided with a number of two-part molds which are spring-actuated to hold them open normally. The molds are radially supported on a shaft which can be turned so as successively to dispose one mold uppermost. A mold-closing device is provided, which is controlled by a lever directly connected with and locked by a rack and pawl when the uppermost mold is closed. An air-supply pipe is provided, one end of which is engaged by a blow-pipe, while the lowermost end is connected with the closed section of the mold. It is found that four machines may be easily operated by two persons.

LOOM.—JOHN H. SMALLWOOD, Paterson, N. J. This loom is especially designed for weaving plaits integrally with the body-fabric. The loom is provided with a cloth-beam mounted to rotate loose on a shaft. A take-up mechanism is connected with the shaft to rotate the latter intermittently. On the cloth-beam is a head provided with oppositely-arranged ratchet-wheels. A wheel is mounted to turn with and to slide on the driven shaft, and has ratchet-wheels meshing with the head ratchet-wheels to turn the cloth-beam in both directions. For the slidable wheel a shifting-lever is provided connected with a three-armed lever operated by a pair of treadles. A revoluble disk carries tappets for actuating the treadles.

Railway Appliances.

BALL-BEARING CAR-AXLE BOX.—JOHN W. BREEDING, Bisbee, Arizona Territory. This invention provides an improvement in car-axle ball-bearing boxes which can be cheaply made, readily adapted to any style of outside box, and will greatly reduce friction. The end guard-plates form bearings for the shoulders on the axle and operate to retain the balls in the undercut grooves in which the balls are fitted.

CAR-WHEEL.—JOHN W. BREEDING, Bisbee, Arizona Territory. The object of the present invention is to provide an improved construction by which to prevent the wheel from climbing the track-rail. The car-wheel has a tread and a flange and is provided with balls supported in the flange. The balls protrude from the inner face of the flange and are adapted to turn in a direction radial to the wheel in order to avoid any lifting movement of the wheel-flange alongside the track-rail.

LOCOMOTIVE-CAB PLATFORM.—JAMES F. DUNN, Salt Lake City, Utah. This invention seeks to provide a platform which will serve to protect the engineer and fireman from the danger resulting from the breaking of the side-rods of the locomotive. This end is attained by constructing the cab-platform of metal, either rolled or cast, which has certain peculiarities of structure and arrangement that enable it to resist the blow of the fractured rods, thus saving from injury the fireman and engineer.

Electrical Apparatus.

ELECTRIC PUSH-BUTTON CUT-OUT.—JAMES I. GUNTHER, Borough of Manhattan, New York, N. Y. This push-button cut-out consists of a rotatable hard wood cylinder, near one end of which are mounted, on opposite sides, contact strips connected together around the end of the cylinder. Contact spring fingers fastened one to each half of the upper base piece of the button (which is bisected), are connected to the wires of the circuit and make it in one position of the cylinder, breaking it when the latter is moved a quarter turn. The cylinder has four wings attached to it at its other end, and the uppermost wing is engaged by a pusher-point in the bottom of the button, so that when the button is pressed, the wing is pushed downward. A suitable spring raises the button again. By this arrangement the circuit is alternately made and broken when the button is pressed.

ELECTRIC ALARM CLOCK.—JACOB GOLDENBERG, LION GUTTERMAN, Borough of Manhattan, and NICHOLAS KOUROW, Borough of Brooklyn, New York, N. Y. This alarm clock has a battery arranged in the back of the casing. One pole of the battery is connected with the bell circuit by pressing a button, while the other pole, which is the containing case, is always against a contact spring. A contact point on the hour-hand shaft behind the dial, touches another contact point, which is set by turning a pointer on the dial face, and thus the circuit is made and the alarm bell rung.

Miscellaneous Inventions.

ACETYLENE GAS-GENERATING LAMP.—CHARLES KELLEY, Passaic, N. J. This lamp consists of a circular generator casing surrounded by a water jacket and having a hollow tube passing upward through its center almost its entire height. An outlet pipe for the gas passes from near the top of the casing down one of its sides and out through the water jacket. The carbid is placed in a holder which fits into the casing, and a wick passing through the central tube carries water to the carbid. A screw rod passes through the cover of the generator casing and terminates in a rubber plug. By turning the rod, the plug presses the wick firmly against the edge of the central pipe, thus stopping the flow of water and regulating the generation of gas. A parabolic reflector, with removable glass, is fastened to the outside wall of the water jacket and contains a suitable burner.

ACETYLENE GAS GENERATOR.—JOHN H. D. NORDEMAN, Washington, D. C. Attached to opposite sides of the tank in which the gasometer bell rises and falls, are slotted metal guides through the slots of which project the ends of a small rod that passes the bell near its top. Pivoted to one of these guides, near its top, is a similar guide, which bends out at an obtuse angle. When the bell descends and the pin strikes this angle, the bar is swung sideways, and a pawl on its end revolves a turn-table containing carbid cartridges a certain distance by engaging a ratchet tooth of a circular ring mounted on the turn-table. Each cartridge has a trap door in its bottom, which opens and precipitates the carbid into a funnel. Directly under the mouth of the funnel is a cone which spreads the carbid to the sides of the generator. A layer of oil on the water rises above the mouth of the funnel and extends downward to a point on the cone where it is the width of the funnel mouth, thus forming a seal which keeps the gas from rising into the funnel.

GASOLENE BURNER OR TORCH.—ERNEST C. DICKERSON, San Antonio, Texas. This burner consists of a vaporizing chamber, one end of which is conical and the other fitted with a plug having a small hole to correspond with a hole in the end when turned in the proper position. This hole is opened when an exceedingly intense flame is desired. The chamber is filled with

gravel, tacks, or the like, to break up the liquid. It is covered by a frusto-conical tube at the smaller end of which, and in line with the pointed end of the chamber, is a needle valve connected by a pipe with the top of the chamber. Another pipe connects the bottom of the chamber with the bottom of a cylindrical gasoline holder, and there is a valve near the latter. A short tube projects from the top of the tank and terminates in a bulb for forcing air into it. The gasoline is first forced through the needle valve and fills a small cup below the latter. The cupful is ignited, and, in burning, heats the vaporizer, which then produces vapor. The burning vapor passing between the vaporizer and sheath, draws in air to aid the combustion.

SHOOTING GALLERY.—CHARLES B. JEFFERS, Logansport, Ind. The target consists of a framework on which are mounted a number of endless chains carrying figures of animals, so constructed that when hit by a bullet, the smaller ones will fall over and the larger ones will signify the fact by dropping the head or in some similar way. A round target on each side has a hole in the center through which a bullet can pass and ring a bell. The bullet causes a lever to put in gear a mechanical piano, and cause it to play. The target and piano are connected with a shaft driven by a gas engine or other motive power.

HEAD-GATE LOCKING DEVICE.—BENJAMIN F. POWELL. Manzanola, Col. This locking device has for its object the limitation of the distance the gate can be raised. A threaded rod having a keyway running along it passes through the cross-bar of the framework and is raised by screwing down a nut above the cross-bar. A collar split at one side and having a pin across the split is locked in place by a padlock, the bar of which passes around the pin and in the keyway; and this collar limits the upward movement of the rod and gate.

GAME APPARATUS. — CHARLES E. PATTERSON, Hornellsville, N. Y. This game is a number game played with small square checkers, each one of which has a number stamped near each of its four corners. The board is divided into four squares by double lines the width apart of the checkers and divided by transverse lines into squares the size of the checkers. The game consists in choosing some number and placing a checker on one of the squares. The player scores as many points as he can make multiples of the number chosen by adding together the numbers on one side of his checker and his opponent's checkers. The game is completed when all the squares are filled.

TRUSS.—ZEBULON OLIVER, Tesla, Texas. This truss pad is made of beeswax fastened to a wood backing. It is a round button with an annular channel around the center, from which, upon passing the pad to the body, a sufficient amount of air will be exhausted to hold the pad sufficiently tight to prevent its slipping. The pad is adjustably mounted on a U-shaped spring which passes around one side of the body and carries two adjustable pads on its other end.

WINDLASS.—GEORGE W. MORGAN, Dawson, Canada. The crank is so connected with the drum that if the windlass suddenly revolve backward, the crank is released from the drum. This is accomplished by attaching a boss with sloping teeth to the shaft and providing the hub of the crank arm with similar teeth to turn the windlass. Outside the crank and like it loose on the shaft is a wheel with two set-screws. The outer end of the crank-hub has several long sloping teeth and when the set-screws are tightened against the outermost end of these, the crank hub is clutched to the shaft. If the windlass suddenly start backward, the inertia of the wheel causes it to lag behind, and the set-screws will slide to the inner end of the teeth, whereupon the spring will separate the crank-hub from the boss. The windlass is also furnished with a band-brake and a pawl and ratchet to keep it from unwinding.

HOLDER FOR PENCILS.—ADOLF KLEIN, Manhattan. New York city. This holder consists of a nut with screw thread to be fitted in the back of a note or memoranda-book at the top end. The pencil is provided with a cap having a screw thread to fit the nut and a shoulder to prevent the pencil from screwing in too far.

SUSPENDERS AND WAIST-HOLDER. — MINNA JANSEN, Astoria, Queens, New York city. The invention consists of a belt of fabric the ends of which are buckled together in front. The belt is provided with ordinary suspenders, the back ends of which are sewed to the upper edge of the belt and project a short distance below it, forming tabs adapted to project through holes in the waistband of a shirt-waist and thus keep it in place. On the back of each tab is a hook which engages an eye on the skirt band after the tab has been inserted in the shirt-waist band. The latter is therefore securely held in place. Suitable straps depend from the belt for supporting hose and holding up the dress-skirt in wet weather.

AWNING-FIXTURE.—JAMES SULLIVAN, Manhattan, New York city. This fixture is a pear-shaped plate with a narrow slot near the neck end and a hole containing a round metal ring in the body part. The neck part is bent at an obtuse angle and the swivel eye in the top of the awning pulley block is passed through the slot. The rope passes through the hole in the shield thus formed and thence over the pulley; while the metal plate furnishes a smooth surface for the awning to fold upon and effectually protects it from catching in the pulley.

SUSPENSION-CABLEWAY AND ROPE CARRIER. —GUSTAF P. WERN, Manhattan, New York city. The invention provides a series of support brackets traveling on the main cable and constructed to carry on small wheels a carriage or traversing rope and a hoisting rope between the carriage and the towers. The brackets are properly distributed by means of a two-stranded rope attached to the carriage and carrying clamps of several sizes at the proper distances apart. These clamps pass between two small wheels on each bracket but the one they are intended to move, and each moves one bracket to its position on the line.

HAMMOCK SUPPORT. — HOMER R. WOOD and GEORGE R. TAITT, Prescott, Arizona. The support consists of two tripods, the legs of which are fastened together at their top ends by a pin which passes through clevises, one pointing downward and the other upward, adapted to support a hammock and awning. The tripods are connected by a rod in two telescoping sections, so that it occupies but little space when not in use.

EGG-BEATER.—THOMAS HOLT, Tarrytown, N. Y. This beater is an improvement of the usual form in which two rotating beater-bows are arranged side by side on different axes eccentric to each other, so that they rotate one within the other. The improvement consists in so twisting the circular parts of the beater arms that they will in describing a circle be always at an angle to the circumference and thus tend to throw the material inward so as to beat it thoroughly. The upper shank part of the arms is curved to conform with the circle it describes so that it passes edgewise through the material with the least possible friction.

HAME-FASTENER.—FRANK N. RANKIN, Gainesville, Texas. The fastener consists of a flat plate with two ears extending upward from the sides at one end and containing three transverse slots at the other. This latter end is bent downward and under, so that one slot is just under the actual end of the plate. A cam locking-lever is pivotally supported in small holes in the tops of the ears. The fastener will securely hold the hame-strap to the loop or eye on the hame-frame when the hames are unfastened and not in use, and yet will allow it to be readily detached from the eye when desired.

Designs.

WHEEL-SPOKE.—CLARENCE E. SPICER, Titusville, Pa. The body of the spoke is threaded at its inner end, the thread terminating in an hexagonal nut a short distance from the end of the spoke. From here the spoke tapers to its outer end, where it is provided with flattened prongs or tines forming a U.

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.

VON LOEBELL'S JAHRESBERICHTE UEBER DIE VERÄNDERUNGEN UND FORTSCHRITTE IN MILITÄRWESEN. XXV. Jahrgang. Zweiter Theil. Berichte über die einzelnen Zweige der Kriegswissenschaften und des Heerwesens. Berlin: Ernst S. Mittler und Sohn. 1899. Large octavo. Price, paper $3.30.

The second volume of the jubilee number of von Loebell's Jahresberichte is devoted entirely to the progress made by the various countries in the past twenty-five years in the various branches of military science. Our own recent war has not been neglected; and the way in which it was fought, the lessons which it taught, and the results obtained, have in various articles been discussed with a most gratifying impartiality. The two volumes of the Jahresberichte will be made the basis of all future v. Loebell reports.

THE INTERNAL WIRING OF BUILDINGS. By H. M. Leaf, Westminster, England. Philadelphia: J. B. Lippincott Company. 1899. 16mo. Pp. 198. Price $1.50.

Electric energy is now so universally adopted for lighting, heating, and transmission of power and other purposes, that insulated wires or cables for conveying the current are now fixed in most buildings of any importance. The conditions under which these conductors have to perform their work in carrying the current vary greatly. It is the object of the treatise before us to describe the various means of fixing the wires to suit the different conditions under which the current is likely to be employed. English practice is, of course, described, but the book is certainly likely to prove useful to American electricians.

LEXIKON DER METALL-TECHNIK. Redigirt von Dr. Josef Bersch. Vienna: A. Hartleben. 1899. 2d, 3d, 4th and 5th parts. Price 30 cents each.

DIE MODERNE CHEMIE. Eine Schilderung der Chemischen Grossindustrie. Von Dr. Wilhelm Bersch. Vienna: A. Hartleben. 1899. 2d, 3d, 4th and 5th parts. Price 30 cents each.

When the first parts of these two works were published, we gave a brief description of them in these columns. The later installments, it must be confessed, have not deviated from the general excellence of the first parts, and the promises made have been fully kept.

PRACTICAL COURSE IN MECHANICAL DRAWING. By William Fox, M.E., and Charles W. Thomas, M.E. New York: D. Van Nostrand Company. 1899. 16mo. Pp. 98. 87 illustrations. Price $1.25.

Manuals and text books of mechanical drawing are legion, but the little book before us is a substantial addition to the literature on the subject. We particularly commend the half-tone illustrations, taken from life, showing the actual position which a draughtsman should use in drawing lines, etc. This is a feature which we have never seen in any other book, and it cannot but prove of great assistance to the beginner. The examples for practice are numerous and well executed, although some of them are reproduced on too small a scale; doubtless this cannot be avoided in a book that is sold at such a remarkably low price.

FIGHTING IN THE PHILIPPINES. Authentic Original Photographs. Chicago and New York: F. Tennyson Neely. 1899. Price 25 cents.

This is the most complete picture book of the Philippine Islands that we have seen. The photographs are well selected and are well executed. Their size is 4×7, which is plenty large enough to show detail. Actual scenes of the war including the fighting are given. The photographs show more conclusively than any that we have ever seen that war at best is a great horror. Some of the illustrations of the dead men are fairly sickening. This is practically the first war where the camera has played a really important part. The collection of pictures is unique and we do not know of any one who would not care to have this pretty little book.

MODERN PHOTOGRAPHY IN THEORY AND PRACTICE. By Henry G. Abbott. Chicago: George K. Hazlitt & Company. 1898. Pp. 234. 12mo. Photographs. Price $1.

This volume has been printed for the benefit of amateur photographers. The preface aptly remarks that there are two kinds of amateurs, one who presses the button and leaves the professional to do the rest, and the other, the earnest student, who has ambition to become in every sense of the word a photographer. The volume before us was certainly compiled for the latter individual. It is filled with practical information regarding cameras, plates, fitting up a dark room, exposure, etc., and the number of formulas published is large. A number of photographs are inserted which add considerable to the interest of the book. Excellent engravings of lighting and electric light decorations taken at night are given.

DIE AETHERISCHEN OELE. Von E. Gildmeister und Fr. Hoffmann. Berlin: Julius Springer. 1899. Pp. 919. Large octavo.

The need of a work which would discuss exhaustively and critically the entire field of etherial oils induced the well-known Leipzic firm of Schimmel & Company to commission Drs. Gildmeister and Hoffmann to prepare a book which would meet all requirements. To assist them in their labors, the firm placed at their disposal the data collected during the long period of its business career. The result has been a work which for scholarly and exhaustive treatment leaves nothing to be desired. Particularly valuable are the descriptions of commercially important oils, and the methods by which imitations and adulterated oils can be distinguished from the pure product. The work although inspired by Schimmel & Company is not to be considered as a trade publication, but as a scientific treatise which fills a long-felt want.

LIVING PICTURES. THEIR HISTORY, PHOTO PRODUCTION AND PRACTICAL WORKING. By Henry V. Hopwood. London: The Optician and Photographic Press Review. 1899. Pp. 275. 12mo.

A really satisfactory and adequate book upon moving pictures and moving picture photography has been needed for a long time, and Mr. Hopwood has succeeded admirably in his task. The devices are well illustrated and are marvels of ingenuity. Many of the diagrams are clear and helpful. We think that the author might have been more free in giving credit to the papers from which illustrations were obtained. We notice five illustrations from the SCIENTIFIC AMERICAN that, so far as we can see, no acknowledgment is given for their use. There is a bibliography of 145 titles.

DAS PERPETUUM MOBILE. Von A. Daul. Vienna: A. Hartleben. Pp. 133. With 33 illustrations. Price, paper, 60 cents.

Although like the alchemist of old the inventor of perpetual motion machines has labored to no purpose, his efforts are not without a certain interest to the modern mechanic. For this reason the author of the present work has collected from the principal scientific periodicals published in France, England, and the United States, accounts of the most notable perpetual motion machines. We observe that the SCIENTIFIC AMERICAN has provided Herr Daul with no small amount of material.

GEOLOGICAL SURVEY OF NEW JERSEY. Annual Report of the State Geologist for the Year 1898. Trenton, N. J. 1899. Pp. 344, plates and maps.

The geological survey of the State of New Jersey has been noted for many years as being a model State geological survey and its reports and maps are most creditable. The present volume does not fall below its predecessors in interest. Special attention is given to the pine belt and forest fires. The book is freely illustrated with half-tone engravings and diagrams.

DESCRIPCION Y MOVIMIENTO COMERCIAL DEL PUERTO DE BUENOS AIRES EN EL ANO 1897. Por Enrique Carmona. Buenos Aires: Imprenta de Juan a Alsina. Calle Mexico, 1422. 1898. Pp. 98.

INDEX TO THE LITERATURE OF THALLIUM. 1861–1896. By Martha Doan. Forms part of Smithsonian Miscellaneous Collections. Vol. XLI. Washington: Smithsonian Institution. 1899. Pp. 26. 8vo.

We have received the last edition of the catalogue of stereopticon apparatus and lantern slides of T. H. McAllister, the optician, of 40 Nassau Street, New York city. As might be expected, the new catalogue deals with the latest forms of lanterns, including the Welsbach electric and acetylene burners. The collection of slides is unrivaled, and a large majority of them are unique. The negatives have been taken specially for lantern slide work. In purchasing slides, it must be remembered that the ordinary photograph does not always blend itself to the adequate lantern slide, but where points of view are selected with special reference for use as slides, the results are highly satisfactory. Mr. McAllister's views of Rome, for instance, occupy many pages in the catalogue, and were made especially by a staff artist. The possession of a lantern and a few hundred slides is a most enjoyable and economical method of entertaining friends.

We have received a number of the Acetylene Gas Journal. It is published at Buffalo, New York, and the cost is 50 cents per year. We like the appearance of the new paper very much. It is filled with information relative to the new industry and it is the official organ of the International Association. An acetylene gas installation may be put into houses by many who are unfamiliar with the proper way of doing this work, and even the average gas fitter is at fault when it comes to acetylene. For this reason the back numbers of the Journal are particularly valuable.

Notes & Queries

HINTS TO CORRESPONDENTS.

Names and Address must accompany all letters or no attention will be paid thereto. This is for our information and not for publication.
References to former articles or answers should give date of paper and page or number of question.
Inquiries not answered in reasonable time should be repeated: correspondents will bear in mind that some answers require not a little research, and, though we endeavor to reply to all either by letter or in this department, each must take his turn
Buyers wishing to purchase any article not advertised in our columns will be furnished with addresses of houses manufacturing or carrying the same.
Special Written Information on matters of personal rather than general interest cannot be expected without remuneration.
Scientific American Supplements referred to may be had at the office. Price 10 cents each.
Books referred to promptly supplied on receipt of price.
Minerals sent for examination should be distinctly marked or labeled.

(7718) C. W. asks: Will you be so good as to name the best conductor for the electric current? A. The best conductor for the electric current, meaning by best that which offers the least resistance to the current, is silver. After silver come in order copper, gold, aluminum, zinc, platinum, iron, nickel, tin.

(7719) D. A. S. asks: Can you furnish me directions to recharge dry batteries? A. Dry cells may be recharged by sending a current through them in the opposite direction. They are not worth recharging, but are thrown away when they are run down.

INDEX OF INVENTIONS

For which Letters Patent of the United States were Issued for the Week Ending

AUGUST 29, 1899.

AND EACH BEARING THAT DATE.

(See note at end of list about copies of these patents)

Accumulator plate separator, H. G. Osburn	631,810
Advertising cabinet and bookcase, combined, W. F. Patton	632,143
Agricultural implements, draught device for, W. T. M. Brunnemer	631,983
Air and water tight covering for vessels, A. Schmalenbach	631,907
Air compressing, sterilizing, and purifying apparatus, Fowler & Harpole	631,868
Air compressor, P. H. Montague	631,994
Amalgamator, concentrating, J. L. Wees	632,032
Animal trap, W. R. Griffin	631,790
Animal trap, W. H. Harden	632,112
Armatures, space block for laminated, H. Geisenboner	631,786
Ash ejector, H. See	631,825
Axle and journals, means for reduction of friction of, W. J. Brewer	632,092
Baby walker, A. Friedersdorff	631,889
Bag or sack holder, D. S. Cook	632,175
Bait swivel, E. F. Pflueger	632,200
Bailing press, C. W. White	631,915
Band fastener, D. B. Stevens	632,030
Bandage cutter, S. A. Darrach	632,177
Barrel follower, packing, N. M. Root	631,861
Barrel heater and feed cooker, C. H. Van Alstyne	632,160
Beam clamp and pipe hanger, combined, R. W. Clark	631,887
Bed bottom, J. P. Lein	631,799
Bed, folding, P. H. Mellon	632,191
Bed, sofa, S. Karpen	632,053
Bed, transport, J. P. Lein	631,962
Bicycle, H. Tuttle	631,973, 631,974
Bicycle pump, automatically operated, J. S. Bubb	631,773
Bicycle pump, coin controlled, C. A. Macy	631,802
Bicycle stand, H. Bush	631,948
Bicycle stand and lock, Ames & Powlison	632,165
Bicycle support, C. H. Ridsdale	631,988
Binder, temporary, W. M. Batt	631,771
Binders, ledger sheet for detachable, G. C. Shepherd	631,863
Blast furnace, C. S. Robinson	632,147
Bobbin, H. A. Mack	632,132
Boiler, G. S. Strong	631,830
Boiler cleaner, W. J. Plecher	631,967
Book holder, adjustable, J. Bauer	632,035
Boot or shoe, J. F. Riemer	631,821
Boot or shoe cleaner, C. F. Nelson	631,807
Bottle stopper, L. H. Broome	632,006
Bottle unstopping implement, S. Johnston	631,872
Bottle wiring machine, R. M. & C. E. Chambers	632,174
Bottles, machine for rebending crown caps or seals for, W. Gebhardt	631,785
Box, package, or carton, V. M. Malatesta	632,222
Boxes, machine for attaching strings to, J. Reigart	631,819
Brace or bit stock attachment, W. L. Baumgardner	631,922
Brazing machine, B. A. Blenner	632,169
Brush handle, detachable, F. H. Lumbard	632,131
Bucket ear, Butter & Marr	631,845
Burner, G. Ragsdale	631,878
Button, collar, J. E. Lecour	631,853
Cabinet, G. Welsh	631,836
Cable, wire, J. Morlock	631,859
Cage or platform for use in decorating or other purposes, F. Knoeferl	632,188
Calendering machine attachment, F. M. Foster	631,783
Camera, magazine, J. A. Mosher	631,963
Can opener, J. H. Dawson	631,955

(Continued on page 174)