RECENTLY PATENTED INVENTIONS.

Electrical Devices.

ELECTRICAL TROLLEY.—S. R. STODDARD, Glens Falls, N. Y. A shoe or traveling member is provided with contact mechanism movable relatively to it so that the weight of the shoe acting upon the contact mechanism, forces a conducting member into engagement with a contact surface of the rail. This contact surface preferably faces downward, being thereby protected from the weather and is also preferably insulated from the main body of the rail. The invention relates to electrical trolleys for general use, and more particularly to trolleys used in connection with so-called third-rail systems.

Of Interest to Farmers.

COTTON-PICKER.—J. M. SEARLES, Vicksburg, Miss. This machine is adapted to move through a cotton-field and to remove cotton from the plant, depositing the same in bags or receptacles carried by the apparatus. The invention comprises a wheeled frame adapted to straddle the cotton-rows and provided with traveling aprons, which pass at each side of the row, and peculiar picking-fingers by which the cotton is grasped and lifted to the upper part of the machine, where the cotton is disengaged from the pickers and falls into suitable receptacles provided for the cotton.

GATE.—J. W. ELLIOTT, South McAlester, Indian Ter. To open the gate either pendant may be pulled, this acting, through the flexible operating member, to first raise the latch-bracket above the end upon the supporting member. The gate released, the pull of the operating member swings it upon its trunnions, when the weight continues this movement until gate assumes vertical position. To close the gate, pendants are drawn in like manner, the impulse swinging the gate inwardly and downwardly against the weight, the angular end of bracket riding over the support until it falls by gravity and is there locked against opening stress of the weight and accidental raising by stock.

Of General Interest.

SKIN-STRETCHER.—A. W. ANDREWS, Winnebago City, Minn. In this case the invention appertains to improvements in devices for holding and stretching the skins of muskrats and similar small animals for the purpose of dressing and drying, the object being to provide a stretcher of simple construction that will be light, yet strong and serviceable, and having no parts liable to get out of order.

CALENDAR.—J. M. BIGGS, Glasgow, Ky. On an outer disk names of the days of the week appear, and at its inner rabbeted position it receives a second central disk divided at its edge into segments corresponding to the week days, each segment bearing members representing certain of the days of the month, arranged in sequence corresponding to each recurring week day, as 1, 8, 15, etc. The disks rotate to bring a week day into the corresponding days of the month. The invention is intended especially for pocket use and more particularly as an advertising novelty.

MEMORANDA ATTACHMENT FOR WATCHES.—W. W. WIKOFF, Maysville, Ky. This invention provides a simple memoranda attachment so fashioned as to be easily applied to any watch and which by the frequent references to the watch in determining the time of day directs the notice of the writer to his memoranda. The writer does not have to remember the fact that he has a memoranda as a condition precedent to reference thereto, but has it obtrusively thrust upon his attention every time the watch is consulted.

EXPANSIBLE REMINDER-RING.—C. T. WHITSETT, Indianapolis, Ind. In this case the invention refers to a ring having attached thereto a plate of suitable ornamental design upon which a legend adapted to serve as a reminder is so placed that it may be easily read by the wearer of the ring when the hand bearing the ring is held in natural position, thus adapting the ring to prevent forgetfulness of appointments, errands, etc., which the wearer desires to keep in mind.

AUTOMATIC AWNING ATTACHMENT.—A. I. SCHWINGER, New York, N. Y. The invention relates to an attachment for awnings and similar devices by means of which they can be spread out automatically upon certain changes in the weather. Although especially applicable to ordinary awnings, it can be applied to tent-covers, shades, and similar devices. The principal object is to provide automatic means for permitting devices of this character to be operated by a rise in temperature above a certain degree and also by a fall of rain or snow.

MOLD.—C. MILLER, Binghamton, N. Y. In this patent the invention has reference to a mold for forming rubber articles, particularly elastic rubber cores for cushion-tires. The invention resides in a peculiarly-formed mold-core which combined with the mold proper, enables the inventor to shape a cellular elastic tire-core.

MUFF.—W. GRUSHOFF, New York, N. Y. The aim of this inventor is to provide a muff in which the lining forms an integral part of the down-bed to permit the furrier to readily secure the fur or other cover in position and to hold the lining at all times properly stretched without danger of wrinkling up when placing hands into the muff, as is so frequently the case with the muff ordinarily constructed.

EXPANSION-BOLT.—F. H. EVANS, New York, N. Y. The object of this improvement is the provision of an expansion-bolt composed of comparatively few parts held together when not in use without separate fastening devices and arranged to insure a firm engagement and imbedding or gripping of the expanding devices in the wood, stone, or other material on which the bolt is used. Patents in this case have been applied for in England and other principal foreign countries.

DEVICE FOR FILLING FOUNTAIN-PENS.—G. N. BYL, Jersey City, N. J. The purpose in this improvement is to provide a device whereby fountain-pens may be directly filled from a vessel in which ink is contained, the rapidity of the feed being under absolute control of the operator. The vessel has a flexible suction top or cap carrying a conducting-tube, the cap being readily removed and applied. The cap is provided with a reinforcing-spring which tends to extend the life of the cap and prevents the latter from being accidentally forced suddenly downward and the pen-barrel consequently overflowed while being filled. Means are provided for holding a support for the tube in position in the cap.

Heating and Lighting.

WATER-HEATER.—W. E. KAY, Lorain, Ohio. The invention relates to a heater adapted for use in barber-shops, bath-rooms, and other places where it is required to heat water quickly and in considerable quantity. The apparatus is so constructed that the volume of the heating medium consumed and the consequent amount of heat developed and utilized is varied proportionate to the quantity of hot water drawn off for use, this being effected automatically by a new regulating valve mechanism and new form of burner.

Machines and Mechanical Devices.

HANDHOLD-SAWING MACHINE.—B. J. PYE, Astoria, Ore. This inventor's improvement has reference to wood-working machinery; and his object is the provision of a new handhold-sawing machine designed for quickly and accurately forming handholds or grooves in end boards for boxes or the like to permit of conveniently handling the box.

GOVERNOR.—H. KRONER, Baltimore, Md. The invention relates to a centrifugal governor adapted particularly for use in connection with turbines, but useful with various other machines. The prime object is to so arrange the centrifugally-actuated part or parts that the movement thereof will be attended by the least possible friction, thus increasing the sensibility of the governor, permitting it to respond effectually to any slight variations in the speed of the driving apparatus.

MACHINE FOR PRINTING CLOTHING-TICKETS.—A. ANTOINE, New York, N. Y. The purpose of the invention is to provide a form of machine capable of being manually operated and which will print on each ticket of a set or series the lot and the shade number, it being simply necessary to enter a series or strip of blank tickets in the machine, whereupon in operating the machine the tickets will be automatically printed in the desired sequence and fed out from the machine, the type on the printing-wheel of the machine being removable.

CYANID-AGITATOR.—E. STEVENS, Leadville, Col. The invention relates to ore-working machines and admits of general use, but is peculiarly applicable to working ores containing precious metals in connection with so-called cyanid-process. One of the more particular objects is to bring the pulp after thorough admixture into contact with the air in order to facilitate the chemical combination necessary for separating the gold or silver. Another is to thoroughly agglomerate materials and to give the same a gentle working, such as will place them in suitable condition for the cyanid to extract a comparatively large amount of the precious metals.

APPARATUS FOR HEATING TOOLS.—J. PIRIE, Montpelier, Vt. This improvement pertains to apparatus for heating stone-cutters' tools—such as points, chisels, hammers, drills, and the like—prior to sharpening the same. The object is to provide an apparatus arranged to enable a single operator to heat a large number of tools in a comparatively short time.

Railways and Their Accessories.

CABLE-TRAMWAY.—C. MESSICK, JR., Hackensack, N. J. One purpose of the invention is to provide a support for a tramway which is in the shape of an arch carried on a fulcrum located as near as possible to the top of the arch, which is placed beneath the track-cable and normally supports the cable at the central portion of the arch, whereby when a car approaches the arch one end is depressed, thus providing a gradual rise from the car as it approaches the supported arch and a gradual declivity as the car moves away from the arch.

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.

Business and Personal Wants.

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.**

MUNN & CO.

Marine Iron Works. Chicago. Catalogue free.

Inquiry No. 6658.—Wanted, information concerning cost of equipping a plant for electric lighting and power purposes, providing current enough for town of 25,000 or 30,000 inhabitants.

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

Inquiry No. 6659.—For manufacturers of machines run by electricity or otherwise, for sand-papering floors laid in place in a building.

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

Inquiry No. 6660.—For manufacturers of accordion plaiting machines.

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

Inquiry No. 6661.—For manufacturer of article called "Squeeze it," marked patented November 23, 1903.

Handle & Spoke Mchy. Ober Mfg. Co., 10 Bell St., Chagrin Falls, O.

Inquiry No. 6662.—Wanted, formula for making railroad torpedoes for placing on rail as a danger signal for approaching trains.

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

Inquiry No. 6663.—For Eastern and Western manufacturers of barber's chairs, supplies and plate glass mirrors.

One-eighth horse power battery motors, $5 each. Walsh's Sons & Co., Newark, N. J.

Inquiry No. 6664.—Wanted, information of how to cane chairs.

Commercially pure nickel tube, manufactured by The Standard Welding Co., Cleveland, O.

Inquiry No. 6665.—For makers of small air pumps for use with an ordinary windmill for pumping air into a tank.

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

Inquiry No. 6666.—For manufacturers of spoke-turning machines.

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

Inquiry No. 6667.—For the best mixing vats, air compressors, washers, etc., for a dynamite plant.

WANTED.—Ideas of a mechanical or electrical nature to manufacture on royalty. Bartlett & Co., 138 Liberty Street, New York.

Inquiry No. 6668.—For the name and address of parties handling the McFarland D. Moore's system of lighting.

Gut strings for Lawn Tennis, Musical Instruments, and other purposes made by P. F. Turner, 46th Street and Packers Avenue, Chicago, Ill.

Inquiry No. 6669.—For makers of pasteboard mailing tubes; also leatherette articles, such as scissors and knife cases, for advertising purposes.

In buying or selling patents money may be saved and time gained by writing Chas. A. Scott, 719 Mutual Life Building, Buffalo, New York.

Inquiry No. 6670.—For manufacturers of knife-cut veneering, also of chair bottoms.

We Manufacture on Contract anything in light Hardware. Write us for estimates. Edmonds-Metzel Mfg. Co., 143-153 South Jefferson Street, Chicago.

Inquiry No. 6671.—For manufacturers of the best machinery for a cannery.

We manufacture iron and steel forgings, from twenty pounds to twenty-five tons. Crank shafts of all varieties. Erie Forge Company, Erie, Pa.

Inquiry No. 6672.—For manufacturers of machinery for making wood pulp.

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

Inquiry No. 6673.—For makers of a machine for cracking cocoanuts and removing the kernel.

FOR SALE.—Patent for quick R. R. car loader and unloader, for bar iron and lumber, used every day. Price, $1,000. Address Gains Paddock, Sr., 1000 Spruce St., St. Louis.

Inquiry No. 6674.—Wanted, the name and address of the power and reducing company of Niagara Falls, or any other maker of stick phosphorus by modern methods.

Sheet metal, any kind, cut, formed any shape. Die making, wire forming, embossing, lettering, stamping, punching. Metal Stamping Co., Niagara Falls, N. Y.

Inquiry No. 6675.—For makers of power house combined clipping and grooming machines.

WANTED.—Colonial silverware. Any one wishing to sell any authentic silver made in this country during the eighteenth century, please communicate with C. A. M., Box 773, New York.

Inquiry No. 6676.—For manufacturers of a machine printing names for one cent.

VALUABLE PATENT FOR SALE.—An indispensable article for women. Has large demand in all department stores. Patent No. 774,191. Address Acme Hygienic Co., 132 West 90th Street, New York.

Inquiry No. 6677.—For makers of coin-operated, automatic banjos.

Manufacturers of patent articles, dies, metal stamping, screw machine work, hardware specialties, machinery and tools. Quadriga Manufacturing Company, 18 South Canal Street, Chicago.

Inquiry No. 6678.—For makers of a crude olive oil filter; also for a machine to clean and improve the quality of raisins.

Space with power, heat, light and machinery, if desired, in a large New England manufacturing concern, having more room than is necessary for their business. Address Box No. 407, Providence, R. I.

Inquiry No. 6679.—Wanted, a pump for cleaning out a cess-pool, also a tank for carrying away the refuse.

You can rent a well equipped private laboratory by day, week or month from Electrical Testing Laboratories, 548 East 80th Street, New York. Absolute privacy. Ask for terms and facilities.

Inquiry No. 6680.—For an electrical apparatus for thawing out water pipes.

WANTED.—Articles to manufacture requiring heavy iron casting, where little or no machine work is involved. Will purchase or manufacture under royalty. Eureka Foundry Company, Rochester, N. Y.

Inquiry No. 6681.—For a pneumatic motor to operate a milking device; the motor to have a stroke of only about ¾ inch and speed of about 20 strokes per minute.

A Reliable Manufacturing Institution solicits the correspondence of parties desiring to sell patents of any *useful mechanical* article which could be manufactured and sold in conjunction with the Mill Supply and Belting business. F. Raniville Co., Pearl St., Grand Rapids, Mich.

Inquiry No. 6682.—For an electrical device to be used in ringing chime of bells in church tower.

Inquiry No. 6683.—For firms who make and construct roller coasters, merry-go-rounds, scenic railways, shoot-the-chutes, etc.

Inquiry No. 6684.—For information as to cost, size and cost of installation of ice plants, also probable cost of running same.

Inquiry No. 6685.—For a machine for making hooks and eyes.

Inquiry No. 6686.—Wanted, a design for a motor launch 16 to 17 feet long, 4 to 5 feet beam and about 20 inches deep midship; also set of drawings or set of castings for a 2 or 4-cycle gasoline engine 2 to 3 h. p., at 6 to 7 revolutions per minute; water cooled, and not weigh over 90 pounds.

Inquiry No. 6687.—Wanted, cheap bicycle bell, in 10,000 lots—plain bell without clamps or fastenings.

Inquiry No. 6688.—For spring wire made in Germany, known as Aiken or Eaken; also names of dealers in imported spring wire.

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.

(9589) W. F. asks: Would you please tell me what the liquid is, that is used in the instrument described in your issue of December 31, 1904, SCIENTIFIC AMERICAN, for detecting positive or negative poles in any source? Would the receipt in Query No. 7,484 be all right to use in the tube? A. The solution given in Query 7,484 would work in a tube for a polarity indicator; but the following is better, and is used in all the indicators on the market now: Dissolve 15 grains of phenolphthalein in 1 ounce alcohol. Dissolve 20 grains of sodium sulphate in a pint of water, and add the alcohol solution to this. You will have enough to fill hundreds of tubes. The negative pole turns red with this indicator, and upon shaking up the liquid the color disappears, and the tube may be used indefinitely.

(9590) J. A. R. asks: We hear lately much about the center of the universe. The discussion suggests the following query: Both space and duration are positive conceptions of the human mind, and they necessitate the conception of the infinite, as it is impossible to conceive of either as terminable in any direction. Therefore, if space has no boundary or circumference, has it any center? Place a world at any point in space, it is evidently equidistant from the circumference. Now move it in any direction as great a distance as you please, and if our first postulate is true, it is still in the center of space, for it is no nearer or further from the circumference than when it started. We have, then, the curious paradox of a moving body unable to get away from the center, or if it moves at all, carrying the center with it. Now in regard to duration of time, it is impossible to conceive of any beginning or any end. Therefore, place a man at any point in time, he will never be any further from the beginning or any nearer the end. Is there anything in time, then, but one everlasting and eternal center which we denominate "now," and so far as the human mind can conceive will be everlasting; and if our conceptions are true, neither was ever created, and both duration and space would continue were the visible universe blotted out. Omnipotence itself could not make it otherwise. Now, again, some astronomers tell us the number of worlds are infinite. Philosophers tell us the worlds are made up of "atoms," and that these alone are unchangeable, eternal, indestructible, and infinite in number. Let us assume a world to be made up of 1,000,000 atoms. If both these speculations are true, we evidently have a greater and a lesser infinity. Will some mathematician explain the paradox? A. As we understand the matter, mathematicians recognize that one infinity may not be of the same order as another, and astronomers are doubting if the universe is boundless in extent. It is certain that the old idea of universes upon universes in celestial spaces with nebulæ surrounding all is no longer held.

(9591) F. A. McC. asks: Is there a method by which any angle can be trisected? If not, is there any prize for the person who successfully trisects one by geometrical constructions, and proves the operation to be correct? What is meant by "squaring the circle"? A. There is no method by which every possible angle may be trisected, but there are plenty of methods by which some angles may be trisected. Indeed, the number of angles which may

be trisected is quite large. There is no prize to be won for trisecting angles. The matter is well understood by mathematicians, and no longer excites interest even. To "square the circle" one must find the side of a square which has the same area as a given circle. This it is impossible to find. The area of a circle is 3.141592 times the square of the radius. As this number can never be found with exactness, the area of a circle and the side of the equivalent square can never be found with exactness. Any desired degree of approximation can be had by carrying the number given above to a greater or lesser number of decimal places. It has been computed to several hundred figures.

(9592) O. C. S. asks: 1. How nearly can astronomers tell the exact time? A. Time may be determined with ease to the hundredth of a second, and very closely to the thousandth of a second. The position of stars and the bodies of the solar system may be known to the same exactness. 2. How nearly can they tell the time of a coming eclipse? A week ahead? A month ahead? A year ahead? Ten years ahead? A. Eclipses are calculated to any desired time ahead. They occur with regularity in a cycle of 18 years 11 1-3 days. Hence it is a simple matter to determine the return of any particular eclipse. The tables are given in the nautical almanacs for each year. These books appear several years in advance. 3. Why is it that jewelers' clocks vary so much, even when regulated hourly by electricity transmitted over the telegraph wires? Are all the W. U. T. clocks of any given city set from the same source, and if so why do they vary two or three minutes? A. Clocks which are intended to be kept together will keep together if properly cared for. If any clocks which you know do not do so, it is because somebody does not do his work properly.

(9593) K. A. says: Is there any process by which a piece of ordinary glassware can be heated until malleable without breaking or chipping the body of the article? Is the process expensive, or does it require a special quality of glass, more expensive than ordinary glass? A. Probably any piece of glass can be heated to its melting point without cracking if the heat is applied slowly enough, and broadly enough to heat all portions equally. It is an unequal temperature at different points of the glass which causes cracking by heat. If this is avoided, there is no reason why any kind of glass may not be heated to any degree without breaking. The kind of glass has nothing to do with the matter. The glass must also be cooled very slowly, or it will be very brittle after cooling.

(9594) G. A. H. asks: Would you kindly inform me through your Notes and Queries the following things with regard to the earth: 1. Assuming that the earth's polar radius is thirteen miles shorter than its equatorial radius, the depression for each mile that you go north is approximately ten feet. Why is it not necessary to make allowance for this in running levels? 2. It is stated that the Mississippi flows up hill on account of the centrifugal force of the earth. There are probably places where it does not descend ten feet a mile, but are there any places where it is below sea-level? 3. Is not sea level at the poles about thirteen miles nearer the center of the earth than it is at the equator? A. Sea level is the level of still water on the earth. It takes into consideration all the conditions of the case as to centrifugal force, and any other disturbing cause whatever. This being the definition of a level, it follows that there are no rivers of the earth which run "up hill," as is so often stated in popular periodicals. In surveying for any extensive work, it is necessary to take account of the departure of the surface of the earth from an optical level or plane surface. It is always done in surveying for water works and the like, else the water would not follow the ways laid out for it. It is not true that the earth curves from a level ten feet in any one mile, as you calculate it to do. The curvature is 8 inches for one mile and 32 inches for two miles. It is true, however, that the surface of the earth is 13 miles nearer the center of the earth at the poles than it is at the equator.

(9595) H. B. asks: Can you tell me through your queries and answers column in the Scientific American where I can find directions for the construction of a small voltmeter and also a small ammeter? A. You will find in the Scientific American Supplement No. 1215, price 10 cents, full plans and working description for making a voltmeter and amperemeter.

(9596) A. G. L. asks: Where will I find description and diagrams of an ordinary stock ticker? Where will I find full description and diagrams of a modern telephone switchboard? A. You will find good descriptions of several of the best stock tickers in Maver's "American Telegraphy," which we can send you for $5 by mail. Also the diagrams of telephone switchboards in Miller's "American Telephone Practice," which we can furnish you for $3 by mail.

(9597) J. G. D. asks: 1. How much and what size wire will be required for a generator to ring through 50,000 ohms? How much for the bell? A. The generator for ringing through 50,000 ohms will require 1,200 to 1,500 ohms of No. 36 B. & S. silk-covered magnet wire, and the bell will require about 1,000 ohms of No. 30 wire. 2. Could you refer me to an electrical book on dynamo design with formula for designing machines? The formula to be easy to work out by a person of average intelligence. Also a book with resistance of all sizes of wire. A. The fullest and plainest book on dynamo design is Wiener's, which we can send you for $3. Swoope's "Elementary Lessons in Electricity," price $2, contains a wire table giving all the usual data for all sizes of wire.

NEW BOOKS, ETC.

Decennial Publications of the University of Chicago. Studies in General Physiology. By Jacques Loeb. 2 Vols. Chicago: The University of Chicago Press, 1905. Octavo, pp. 782.

In these two splendidly printed volumes, Prof. Loeb has collected his numerous papers on General Physiology—a subject with which his name has been intimately associated for many years. Particularly noteworthy in this collection is the proof of Prof. Loeb's theory that the heliotropism of animals is identical with that of plants, that, in other words, a moth flies to a flame for the same reason that a plant turns its leaves to the rays of the sun. Other subjects that find a place in the volumes are "Instinct and Will in Animals," "Physiological Effects of Lack of Oxygen," "Experiments on Cleavage," "The Development of Fish Embryos with Suppressed Circulation," "The Influence of Light on the Development of Organs in Animals," "Experiments on Artificial Parthenogenesis."

Modern Electricity. A Practical Working Encyclopedia. A Manual of Theories, Principles, and Applications. By James Henry, M.E., and Karel J. Hora, M.Sc. Chicago: Laird & Lee, 1904. 16mo.; pp. 355; 150 illustrations. Price, cloth, $1; leather, $1.50.

There is always room for a practical, simple, and comprehensive treatise upon the applications of electricity to its manifold forms of modern usage. One of the essentials of such a book should be clarity of statement and practicality of text and illustrations. The book before us combines these essentials in marked degree. The student is taken by easy progressive steps through the various chapters, from the standpoint of the beginner to that of the accomplished and advanced electrician. The entire field of electrical engineering is covered, and the whole has been most carefully edited and arranged, with a view to furnishing electricians and mechanics with a thoroughly reliable book of convenient size at a moderate price.

Elements of Plane Surveying. (Including Leveling.) By Samuel Marx Barton, Ph.D. Boston: D. C. Heath & Co., 1904. 8vo.; pp. 255. Price, $1.50.

This work is so arranged that it will be useful as well to a teacher of but little practical experience and to a student who is studying the subject of surveying privately. Many questions that are apt to confuse a student are carefully dealt with, and clearly explained. The author has had experience both in the classroom and in the field, and is, therefore, able to recognize and explain those parts which are troublesome to beginners. The following points are especially dealt with: Careful description of the instruments; explicit directions for making a resurvey in accordance with different data to be had; discussion on the declination of the needle; simple methods of obtaining a true meridian line; suggestive forms for field notes; and many illustrative examples, together with a clear and complete set of tables.

Electricity in Everyday Life. By Edwin J. Houston, Ph.D. New York: P. F. Collier & Son, 1905. Three volumes; 12mo.; pp. 1,750.

The title is well chosen. Electricity has come to be such a common part of everyday life that no one can afford to be without some knowledge of the subject. Electro-technical phraseology is used in the daily newspapers. We come across electricity in a hundred-and-one different ways. Newspapers are printed by electricity; telephone, telegraph, automobiles, cars, lights, etc., are electrically operated; in fact, wherever we turn, we find electricity largely used. It is to supply the non-technical man with information upon electricity that this work is written. Very practical explanations are given of all electrical apparatus in daily use, and no man can consider himself well informed without such a knowledge of electricity in this "the electrical age."

The Organization of Corporations. By Thomas Conyngton, of the New York Bar. New York: The Ronald Press Company, 1904. 8vo.; pp. 352. Buckram binding, net, $2.50; prepaid, $2.70; sheep binding, net, $3; prepaid, $3.20.

This book, which discusses some of the many questions which are considered at the time of the organization and incorporation of every company, is by the author of "Corporation Management," and it is published as a companion volume.

The author states that in writing the book it was his intention to place in convenient form before the reader a manual of reference, which would assist him in refreshing his memory or be of service in obtaining an elementary