RECENTLY PATENTED INVENTIONS.

Electrical Devices.

ELECTRIC GAS-LIGHTER.—G. GIORGI, Florence, Italy. This invention has for its object the opening and closing of gas-taps and the lighting and extinguishing of the gas by the means of an electric current; and it comprises an electromagnetic gas-tap, an automatic electrochemical lighter, and an arrangement of cut-out in the electric current.

Of Interest to Farmers.

POTATO-PLOW.—J. M. DRAKE, Shawano, Wis. In this case the invention has reference to improvements in potato-plows, the object being the provision of a device of this character that will be simple in construction, inexpensive, and having a novel means for shaking the dirt from the potatoes.

SUBSOIL-PLOW.—E. BIPPART, Arnstadt, Thuringia, Germany. This invention relates to improvements in subsoil-plows whereby they are enabled to better and more easily cut through or to push aside roots in the soil. The improved subsoil-plows will also be able to work properly in a bouldery soil or in a soil full of stones.

MACHINE FOR WORKING THE SOIL.—L. F. BASSETT, Redding, Cal. One purpose of the present invention is to provide a machine adapted to be drawn over a field and operated automatically to break lumps upon lumpy, cloddy lands or where more than the usual fineness of soil is desired after it has been plowed and perhaps partially harrowed down.

SEEDING DEVICE.—J. M. OPPER, Gresham, Neb. In many devices used for selecting and dropping corn into a hill the seed-plate is operated by means of a clutch, which is thrown into and out of engagement with its adjacent members to start and stop the plate between hills. This constant action of the clutch is a source of great inconvenience and trouble at times and one of the objects of Mr. Opper is to dispense entirely with the use of the clutch.

COTTON-PICKER.—R. W. IVY, New London, N. C. In the present invention toothed belts are caused to reciprocate instead of constantly traveling in one direction, they being suitably connected with a toothed frame which is reciprocated by mechanism actuated from a power-driven shaft located upon the wagon-frame. It is more particularly an improvement upon that forming the subject of Mr. Ivy's former patent.

Of General Interest.

UMBRELLA.—G. A. MANGELSDORF, Houston, Texas. The top of the umbrella may be tilted at any inclination to the body portion of the stick. The supporting stick may also be lengthened by sliding the inner section in or out of the outer. When the upper end of the umbrella is set at an incline to the main portion of the stick, the handle may be rotated to bring it into grasping position without changing the position of the inclined portion. An extensible handle enables the umbrella to be packed for traveling. The same construction may be made use of in a parasol with equal facility.

COPY-HOLDER.—E. DE F. HOLT, Morristown, N. J. The holder consists of rollers journaled in standards between which the copy is passed and carries at one end a cover-plate to obscure the writing on the pad or copy-book. One of these rollers is adapted to be interchanged and an attachment brought into operation which will hold the copy stationary and permit the work to move between the rollers in the opposite direction from which the copy did in the first instance.

BURNER FOR COAL-TAR.—T. COUGHLAN, New York, N. Y. The burner is especially adapted to be constructed of piping, and will operate efficiently. It may be readily cleaned and the mouth is so formed as to produce a flame of desirable form. The invention pertains to burners for liquid or sensitized fuels, such as hydrocarbon, and is intended especially for burning coal-tar.

CONTROLLING DEVICE FOR DOUBLE DOORS.—W. B. REIS, New York, N. Y. In this instance the device is adapted for use particularly in connection with doors of music-cabinets or the like, the object being to provide a simple means whereby companion doors may be swung simultaneously to open position or closed position by the manual manipulation of one door.

BAROMETER.—W. C. PLANK, Las Flores, Mexico. The range of an ordinary mercurial barometer at a fixed level is very small, usually not over two inches. By the use of the inventor's principles his instrument can be made in various forms and conveniently constructed in such a manner as to be readily carried in the pocket, and given a range twice as great as that of ordinary barometers.

DOUBLE CIGAR-CUTTER.—J. L. OBERMAYER, New York, N. Y. The cutter is carried in the pocket, the more particular object of the improvement being to provide the cutter with a large number of cutting edges so disposed as to enable different pairs of them to be used independently of other pairs, the arrangement being such that when the cutter is folded and ready to be carried in the pocket the cutting edges are harmless.

FOLDING HORSE.—L. NOLAN, New York, N. Y. The object of the invention is to produce a structure which may be folded into compact form when not in use or for transportation and which may be readily opened and set up when desired. It relates to horses or trestles such as are used by artisans and workmen for supporting scaffolds.

LADDER-ROUND.—S. J. LAMORA, Danville, Vt. The round is capable of being quickly attached and detached to or from wire or hemp ropes, bars, chains, or the like whereby a ladder may be built up in a short time and disassembled to pack it in small compass. This construction is especially desirable as a life-saving means for the upper floors of buildings in constructing at short notice a ladder for reaching the ground as in case of fire.

NON-REFILLABLE BOTTLE.—A. C. WAY, Perry Center, N. Y. The bottle is in that class which are provided with one or more internal stoppers having a movable valve for closing an exit-passage. In operation a ball is in a position that closes the lower passage of the stopper against ingress of liquid; but upon tilting the bottle so that the ball rolls forward to the upper end of the pocket, the above named passage is opened, and liquid may then flow around the ball through the angular groove of the stopper and out through the top groove.

Hardware.

CROSSCUT-SAW.—F. W. MCINTOSH, Montesano, Wash. The saw provides clearance in the kerf for the saw-blade to pass easily through, to allow the cutting edges of the cutting-teeth to strike the wood at a more scientific angle for cutting without danger of becoming "timber bound" or likelihood of the tooth-points being broken off in resinous or knotty timber. There is neither necessity for undue physical exertion in the operation of sawing nor need of frequent filings to keep the saw in working order.

Heating and Lighting.

HEATING APPARATUS.—J. H. KOONS, Anderson, Ind. The object of this inventor is to provide a heater in which air under high and low pressure with crude oil or gas are used as fuels that will be simple in construction and by means of which an intense heat may be maintained under a hot blast, a system particularly adapting the device for use in connection with melting-furnaces, tempering or annealing furnaces, blacksmiths' forges, etc.

WATER-HEATING APPARATUS. — J. A. HOSP, Jacksonville, Ill. The apparatus is more especially designed for heating a small quantity of water at a time, such as is required for bathing or other purposes. It is arranged to effectively heat the water in a very short time with an economical expenditure of fuel, such as gas, oil, or the like.

AGITATING SULFUR-BURNER. — J. C. WISE, Watertown, N. Y. Among the general objects of the invention are: a comparatively large capacity for a given area occupied by the burner; the production of a richer and more uniform gas; perfect combustion of the sulfur known as "Louisiana" sulfur, a saving of labor, due to the movement of the sulfur into the pot being to some extent automatic; ease of regulation of the admission of air, and, lastly, uniformity of admission of air into different parts of the burner.

HOT-AIR GENERATOR. — C. L. BOWNE, Keyport, N. J. The apparatus is designed primarily for use in drying brick, but may be used especially for heating drying-rooms. It will economically heat the air to any desired temperature and force it through a duct or tunnel to the place where it is to be used; and it will be impossible for smoke and gas coming from the furnaces to intermingle with the air so heated.

Machines and Mechanical Devices.

FUEL FEEDER OR STOKER FOR FURNACES.—J. T. JENKINS and E. THACKWELL, Massillon, Ohio. This invention relates to improvements in puddling, scrap, and heating furnaces used in iron and steel mills and particularly to a stoker employed in connection therewith, the object being to provide a novel stoker by means of which the coal will be evenly distributed.

GRAIN SHELLING AND HULLING DEVICE.—O. DE A. CAMARGO, Rio Claro, Brazil. In the present patent, the invention has reference more especially to devices for shelling and hulling coffee, although equally applicable to the shelling and hulling of other grains or materials. The device is intended to be economic from a manufacturing standpoint, and is exceedingly simple in construction.

KEYBOARD FOR MONOTYPE PERFORATING-MACHINES.—A. J. WADSWORTH, Washington, D. C. This machine is designed to produce perforated record-strips or controllers which are subsequently used to govern other mechanism, such as type-making machinery in the production of printing-type. The invention is in the nature of a keyboard for monotype perforating-machines of the general character set forth in the patent formerly issued to T. Lanston.

PUNCHING, STAMPING, AND LIKE MACHINE.—A. WILZIN, 4 Rue Huntziger, Clichy, Seine, France. A press for punching, stamping, and the like is provided with means whereby in the event of the tool meeting with resistance which it is unable to overcome such damage to the machine and its appurtenances as would otherwise result may be avoided. The devices used for the above purpose permit of their introduction into presses already in use or permit of their application to the usual styles of machines without calling for radical modification in their general appearance and proportions.

ROTARY TUMBLER-WASHER. — F. W. WILL, Aurora, Ore. The object of the invention is to provide a device which is adapted to rapidly and thoroughly cleanse both the inside and outside simultaneously of tumblers, glasses, mugs, bottles, etc. The mechanism will automatically adapt itself to the various sizes and shapes of the articles to be washed without any adjustment whatever.

PAPER-GAGE.—W. SMITH, New York, N. Y. The machine designed for use with sheets of paper of one size formed the subject-matter of a patent formerly granted to Mr. Smith. The present invention provides means whereby machines can be operated in connection with sheets of different sizes. For this purpose he provides movable or adjustable paper-guides on the plunger of the machine and locates registering marks on the plunger, stencil-holder, and stencil.

MOLDING-MACHINE. — E. L. MARTIN, Woodburn, Iowa. The principal objects of the invention are to so construct a machine, including the mold, as to permit the production of blocks at exceedingly low labor cost and at the same time to make a block that will mature in a shorter time than with ordinary machines on account of permitting the use of a wetter moisture than ordinarily employed. The machine is more especially designed for molding hollow building-blocks.

DIE FOR CUTTING AND PUNCHING LEATHER, ETC.—F. MERTINZ, Schottenfeldgasse 63, Vienna, Austria. The object here is a punching device for right and left hand goods consisting of two-edged blades secured to the circumference of a suitable core in such manner that the cutting edges protrude over the faces of the core. By exerting a pressure or blow upon any point of the core an equal action is borne upon the whole length of the cutting edges, and by merely turning the die right and left hand work-pieces may be cut out in immediate succession.

WASHING-MACHINE.—M. G. ELWELL and W. M. MARTIN, Standish, Maine. Pieces to be washed are secured at one end upon a rough or corrugated cylinder and during its revolutions are engaged by series of independent tension-controlled rubbers carried by a segmental frame, the frame having elastic fastening devices whereby to hold the rubbers in close engagement with cylinder or articles thereon, so that the clothes are subjected to successive rubbing action throughout their length and width and the rubbers automatically accommodate themselves to irregularities in the articles.

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.

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. 8494.—Wanted, machinery for making excelsior.

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

Inquiry No. 8495.—Wanted, manufacturers of or dealers in lignum vitae or composition spheres, for billiard balls; or complete billiard sets.

Pattern Letters. Knight & Son, Seneca Falls, N. Y.

Inquiry No. 8496.—Wanted, an "automatic cigar seller."

See our Ad. on back page. Star Expansion Bolt Co.

Inquiry No. 8497.—Wanted, manufacturers of sailing ice boats.

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

Inquiry No. 8498.—Wanted, makers of a self-register gage, which will register the flow of sewage.

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

Inquiry No. 8499.—Wanted, a machine for winding spools for small electro-mognets.

Make Alcohol from Farm Products.—New book, $1.00. Spon & Chamberlain, 123 S. A. Liberty Street, N. Y.

Inquiry No. 8500.—Wanted, makers of zinc wire.

The celebrated "Hornsby-Akroyd" safety oil engine. Koerting gas engine and producer. Ice machines. Built by De La Vergne Mch. Co., Ft. E. 138th St. N. Y. C.

Inquiry No. 8501.—Wanted, manufacturers of mail order novelties.

Manufacturers of patent articles, dies, metal stamping, screw machine work, hardware specialties, machine work and special size washers. Quadriga Manufacturing Company, 18 South Canal St., Chicago.

Inquiry No. 8502.—Wanted, names and addresses of dealers in carved India teak wood brackets, mantels, etc.

Inquiry No. 8503.—Wanted, electric motors and cars of the gage of steam railroads, to serve as freight and passenger cars; motors to be of high gage and good pullers.

Inquiry No. 8504.—Wanted, iron sheets for covering trunks.

Inquiry No. 8505.—Wanted, candle-making machinery.

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.

(10233) E. J. G. asks: Will you please answer through the columns of your valuable paper if you know of any machine, meter, or any other apparatus that will give an account of an electric current that has been interfered with? For example, if a wire is charged with (battery or dynamo) current and a person or any other object should touch it, is there any machine that will register or give an account of the interfered current? A. If an electric circuit is tapped and current is stolen it may be known by the increase of current registered by the ammeters at the central station. If a person comes in contact with the wires of a high voltage circuit, the fact may be known by the killing of the person. An accidental falling of a wire across such a circuit is often the cause of a burn out, and blowing of the fuses. All these would "*give an account*" of the current which would flow when a connection was made by accident or by design with the wire of a circuit. We are not sure that any of these methods is what you refer to in your indefinite inquiry.

(10234) B. E. asks: 1. In your issue November 3, page 323, it is stated on the subject of the creation of the star that millions of years at least certainly were consumed in the creation of our sun, our earth, the moon and stars. Why, then, do you dispute God's Word? In the first book of Moses and first chapter it says: "In the beginning God created heaven and earth." In the sixteenth verse it says: "And God made two great lights; the greater light to rule the day, and the lesser light to rule the night: he made the stars also." In the second chapter, in the first and second verses, it says the work was finished in six days. A. The "day" in creation has been a subject of much discussion in the past, but we believe that scientific men are in agreement now upon some points regarding the matter, one of which is that they were not our days of twenty-four hours. Our correspondent should note that in the sixteenth verse of the first chapter of Genesis, to which he refers, the sun and the moon are set to rule the day and the night, and that this was done on the fourth of these creative days. In this interpretation of the subject, how could there have been days of twenty-four hours before there was any sun or moon or stars? He should also observe that it is stated in the fourth verse of the second chapter of Genesis that the Lord God created the heavens and the earth in one day. The use of the word "day" in the Scriptures is so varied, as a reference to the concordance will show, that it is not possible to base an argument as to the length of time occupied by the work of creation upon the use of the word in Genesis. We think it harmonizes just as well with the account in the Bible to believe that the earth and the heavens came to their present forms under the slow processes of growth and development according to the action of the known laws of matter which were laid down by Divine wisdom and held fast to their operation by Divine power. The fossils in the rocks and the coal in the bowels of the earth were not made by a word in a moment in the places where we find them, but were once living animals and plants, and they died and were buried deep under the accumulating strata, till in ages of time nature's work on them by heat and pressure brought them to their present mineral form in which they serve us as the Creator intended they should. We think this view honors the Creator more than to believe that He made fossils in the rocks as they now are found, as some have thought. 2. What is the power of a one-horse steam engine? What is the power of a horse? I have asked different engineers, but have not yet been able to find out. A. A horse-power is 550 foot-pounds of work performed in a second. A foot-pound is the work done in lifting a pound one foot. If 550 pounds are raised one foot in one second, one horse-power has been used. This is given in every text-book of physics, and we wonder that any engineer should be ignorant of it.

(10235) F. W. L. asks: In order to generate a current in a closed coil of wire, is it necessary to alter the number of lines of force passing through the coil, or can a current be generated by simply cutting equal numbers of lines with one part of the coil, with constant speed? A. To generate a current of elec-

tricity in a coil of wire it is necessary to vary the number of lines of force passing through the coil. If the same number of lines are cut each second, there will be no current produced in the wire.

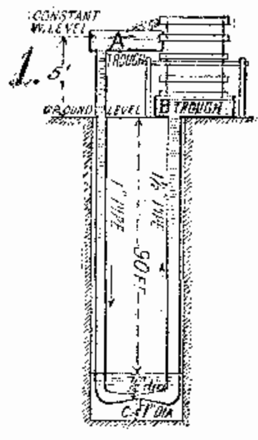
(10236) R. S. D. asks: I have a four-magnet telephone generator which rings through 50,000 ohms, which has been through a fire. Is there any way by which I can charge the magnets over again, and how much wire will I need to wind the armature? A. The Carty bridging bell, which is used for long-distance telephoning, is said to be wound to 1,000 ohms with No. 38 B. & S. wire. This would require nearly three-fourths of a pound of wire. If your magnets are not burned so as to injure the steel, they may be tempered and remagnetized. They will then be as good as they were before.

(10237) R. H. asks: I desire to make a rheostat for use with an arc lamp in my stereopticon. Have you a description in any of your Supplements of such an appliance, with instructions how to make it? A. A very good form of rheostat is shown in Supplement 865, price ten cents. This may be adapted for use on a lamp. The slate sides are not needed, but the frame should be of iron insulated by asbestos. A plate of slate should be used for the blocks and swinging arm to vary the resistance. The size of wire depends on the amperes the lamp carries. No. 12 German silver will probably be heavy enough. Subtract forty-five from the voltage of your current and divide the remainder by the amperes the lamp takes. This gives the ohms of resistance required in the rheostat, although it will be well to use about one-fifth more wire. You can allow fifty feet of the wire named above the ohm.

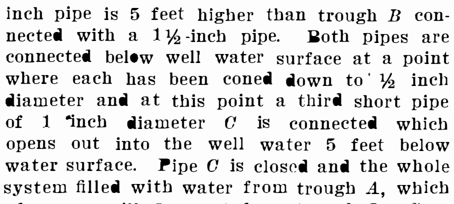
(10238) E. K. E. asks: Would you be kind enough to tell me the exact length of German silver wire of a suitable size for a resistance box which would be required to give a resistance of one ohm, the wire being such as is commonly sold by electric supply houses? A. The length of wire for one ohm depends upon its size. Supply houses keep all or nearly all sizes of German silver wire to correspond to those of copper wire. To find the number of feet in an ohm, divide the number of feet of copper wire in an ohm by 13. The quotient will be the number of feet of German silver wire in an ohm.

(10239) D. A. H. asks: Have scientists generally accepted the theory that the electric current does not flow through a wire, but follows the space around it? A. An electric current flowing with unvarying intensity flows through the material of the wire, flows in the wire, and also sets up a magnetic field around the wire. In this field a magnet is attracted by the lines of magnetic force. When an electric current flows with a varying intensity, either increasing or diminishing in intensity, as, for instance, starting with a sudden rush and as suddenly dying out, then electric waves are thrown off into the space around the wire, it may be with great force, so that they are sent many miles. It is these waves which are used in wireless telegraphy. They are not in the wire. The wire is but a core or center around which the waves whirl with tremendous energy. We are but beginning to learn their power and value, and have not yet harnessed them and broken them into our use and service. 2. Referring to the article entitled "Humidity and Heating Systems" in your Scientific American, why is it that the humidity of the air in the house heated by artificial means is so much less than that outside? Does the air lose any of its moisture by being drawn into the house and heated? A. The humidity spoken of is not the amount of moisture in the air, but the percentage of moisture as compared with the total amount of moisture which the air could hold at that temperature. Air saturated with moisture is said to have 100 per cent of humidity. The whole name is relative humidity, which expresses the meaning better. It is the moisture relatively to complete saturation. Now, the capacity of the air to hold moisture varies greatly with the temperature. In a summer morning fog may lie thick over the earth, because the air was saturated with moisture, and the excess of water appeared as fog. The sun rises, warms the air and the fog disappears. Why? Not because there is any less moisture in the air than earlier, for the dew and fog will come again at nightfall and last till morning probably; but because at the higher temperature of midday, the air can carry more water in the condition of invisible vapor than it could at the lower temperature of the early morning. Now apply this principle to the heated room. The air inside the room is warmer than the air out of doors; and though it may contain the same number of grains of water vapor to the cubic foot, that amount of water vapor will not bring the relative humidity of the room as high as it will the out-of-door air, because it will take more water to produce the same per cent of humidity in warm than in cold air. The warm air has a greater capacity for water vapor than cold air has. It is for this reason that we should have a water pan in the hot-air box of the furnace and add water vapor to the heated air before it enters the room.

(10240) I. N. A. says: May I ask the following questions of your world-renowned paper? What is a jet pump? Can you refer me to any publication describing such a pump, and recommending the circumstances in which it is most helpful? Is the following idea feasible? Given a deep well, say 90 feet to water surface, and required to pump a small quantity of water for use in building masonry trough *A* (see sketch 1) connected with a 1-



inch pipe is 5 feet higher than trough *B* connected with a 1½-inch pipe. Both pipes are connected below well water surface at a point where each has been coned down to ½ inch diameter and at this point a third short pipe of 1 inch diameter *C* is connected which opens out into the well water 5 feet below water surface. Pipe *C* is closed and the whole system filled with water from trough *A*, which of course will flow out from trough *B*. Suppose then the level in trough *A* is kept constant by lifting the water from *B* to *A* and pipe *C* is opened. Will a bigger discharge arrive at trough *B* than that which is poured into trough *A* owing to well water entering at *C*, where, due to the coning, the pressure head has been converted into velocity? Rough dimensions have been assumed only for facility of expression. A. A jet pump works on the principle that a stream or jet of liquid at a high velocity will drive or carry along with it the particles of fluid which surround it. We doubt if it would be possible to make the plan which you show in your sketch work because the difference in level between the reservoir *A* and the reservoir *B* is not sufficient to overcome the friction in the pipes. If you made the difference in level 50 feet instead of 5 and properly proportion the nozzles and openings at the point *C* such a device could be used to raise the water from the well. The inclosed sketch (2) shows the general way in



which these nozzles should be proportioned. The end of the supply pipe from the higher reservoir should terminate in a small nozzle *A* from which the water will flow with great velocity. The openings *B B* and the contracted diameter of the chamber at *B'* should be small, so as not too greatly reduce the velocity of the water which issues from the nozzle at *A*. A large valve should be supplied at *D* which is used to start the pump. This is opened wide. After the water is flowing through the nozzle with its maximum velocity the valve *D* is suddenly closed. This will cause sufficient pressure in the chamber above, due to the momentum of the water, to cause it to force the check valve *E* open. If everything is properly proportioned and if there is sufficient head more water can be forced into the reservoir *B* than flows from the reservoir *A*.

(10241) H. L. P. asks: Will you kindly publish in your query column a list of all the different kinds of ether waves, their rate of vibration per second, and their wave lengths, and do they all travel at the rate of 186,000 miles per second? A. The ether waves concerning which you inquire are the vehicle by which the radiations pass from the sun to the earth. These radiations become heat, light, or electro-magnetism, and other forces perhaps, when they strike upon organs which can appropriate them as such. That which strikes the eye becomes light, that which affects other nerves of sensation gives us the sensation of heat. You will find much about these matters in Thompson's "Light, Visible and Invisible." So far as we know, all these waves pass through space with the same velocity, about 186,000 miles per second. We can send you the book named for $2.

(10242) A. S. asks: Would you kindly explain to me, in your query column, why the upper part of a wheel moves much faster and farther than the lower part? A. The upper part of a wheel of a vehicle does not move along the road any faster than the bottom of the wheel. The whole wheel moves together as fast as the vehicle moves. This must be so, or that part of the wheel which moves slower would be left behind on the road. With reference to a point on the earth, that point with which the wheel is in contact with the earth, the part of the wheel which rests on the ground at the moment is at rest. The top of a wheel moves with a lever-like motion with reference to the point in contact with the earth. Probably this is what you have in mind in your question. It is fully discussed in Notes and Queries of Vol. 93, Nos. 16, 20, and 25, to which we would refer you. We send them for ten cents each.

(10243) G. W. B. asks: Why is it that if there is a particle of grease or some other substance on the inside of the glass of a cylinder lubricator, the drop of oil tends to slide away from it, and if there is some substance all the way around the inside of the glass the drop of oil lengthens out and becomes oblong until it passes that substance? A. We presume the phenomenon you have noticed is due to capillarity. The fact that the drop does not wet or come into contact with the side of the tube causes its peculiar motion.

(10244) B. C. J. W. asks: Will you please explain the following questions in Notes and Queries? In Todd's "New Astronomy," page 253, it is stated that even the faintest stars are visible by day and night from the moon. Why is this the case? A. The absence of air from the moon would enable dwellers there to see the stars at all times. The sun would be a blazing star, and its light would not be diffused through space so that it would render other heavenly bodies invisible, as is the case on the earth. Stars may be seen on the earth in the daytime through a telescope, which cuts off the scattered rays of sunlight and allows the rays of the star to come directly to the eye.

(10245) R. W. M. asks: I would like to know through your paper as to how to make the best kind of a storage battery with the following materials: Three lead plates (square) 6 x 6½ x 1/16 inch; nine (round) plates 4 inches diameter x ⅛ inch. A. As good a way as any to make a storage cell from sheet lead is to be found in our Supplement 845, price ten cents. A much better cell can be made by following the methods given in Supplement 1434, price ten cents.

(10246) J. H. N. asks: What theory or theories are held to explain cyclones? A. Cyclones are large whirlwinds which travel over the earth from west to east. The wind blows into the storm from all sides, so that the whirl of the storm is in a direction opposite to the motion of the hands of a watch in the northern hemisphere, as the storm moves forward. The subject is treated fully in Waldo's "Elementary Meteorology," which we send for $1.75.

NEW BOOKS, ETC.

Concrete Country Residences. New York: Published by The Atlas Portland Cement Company, 1906. Illustrated; pp. 92.

Rarely does a manufacturing company issue as excellent a book as this one, placed before the public by the Atlas Portland Cement Company. The importance of the subject to the householder doubtless warrants the trouble and expense of publishing as ambitious a work as this. Concrete for residential building purposes is constantly coming into greater utilization, and the many advantages which it possesses are steadily bringing it to the fore for this purpose. A recapitulation of these advantages would be unnecessary in this review. The possibilities of concrete can in no way be better demonstrated than by the numerous examples of residences and country houses illustrated in the book. The diversity of architectural style and construction which is made possible by the employment of concrete is strikingly shown in the various types of buildings. The illustrations—and these really constitute the entire text—are of representative rural concrete residences from all parts of the country. The photographs are supplemented by floor plans showing in detail the construction of the buildings. Every house owner interested in this question should procure a copy of "Concrete Country Residences"; a more striking recommendation for this type of building can hardly be found in the literature of architecture. The book is handsomely printed and bound in heavy paper.

Country Cottages and Week-end Homes. By J. H. Elder-Duncan. New York: Cassell & Co., Ltd., 1906. 4to., pp. 224. Price, $2.50.

The layman of moderate means will find excellent information regarding country cottages suited alike to his class and to his purse in this handsome book. The illustrations include half-tones from photographs of actual cottages, as well as floor plans showing in detail the internal arrangements of the buildings. The text is written in non-technical form, and it gives much practical data as regards the possible and actual costs of the buildings illustrated, various points which come into consideration, a short chapter on gardens, and general information, among which the schedule of architect's fees will doubtless be of service. However, as the cottages in question are English, and were built under the conditions obtaining in England, the circumstances will probably differ somewhat in this country as regards the actual construction. Nevertheless,