

RECENTLY PATENTED INVENTIONS.
Electrical Devices.

SANITARY ATTACHMENT FOR TELEPHONE-TRANSMITTERS.—J. W. DOLSON, New York, N. Y. This attachment is arranged to enable the user of a telephone to speak against a clean piece of webbing extending across the mouth of the receiver, to insure the proper transmission of the sound to the diaphragm of the transmitter, and at the same time prevent the speaker from inhaling any unhealthy exhalations of a previous user of the telephone.

LOCK FOR ELECTRIC SWITCHES.—F. W. BRANDOW, Pittsfield, Mass. The invention relates to means for locking an automobile or vehicle of similar character in an inoperative condition, so as to prevent the vehicle from being removed or operated by any one not authorized to do so. It remains in such position until the switch is released by one familiar with the combination of the lock.

PARTY-LINE TELEPHONE SYSTEM.—G. E. TERHUNE, W. M. EDSON, and W. B. HUSTON, Willow Hill, Ill. The invention provides an efficient lockout for preventing eavesdropping and interruption in conversation. Conceals the identity of such stations as may be busy, thereby preventing operators at other stations from ascertaining what persons are talking. Brings all business of the line under direct surveillance of operator at central station, thereby facilitating the ascertainment of tolls. Provides a selective call which disturbs no station except those desired; and provides certain details toward simplicity, positiveness of action, and general efficiency of party line.

Of Interest to Farmers.

MILK-SAMPLER.—W. F. BUCHER, Washington, D. C. In sampling milk from a can, it is important to secure equal portions throughout the vertical area being sampled, and also important to secure the sample without disturbing the cream or agitating the same so as to secure more than the proper proportion, and in doing this the inventor finds it important to arrange the tube so that it will cut down through the cream and thence down through the milk to the bottom thereof, and leave the lower end of the tube practically unobstructed until the bottom of the can is reached. The invention secures this result.

Of General Interest.

ATTACHMENT FOR SEWING MACHINES.—ANDREW G. ROSENTHAL, 872 Clinton Street, Milwaukee, Wis. The device comprises a pin cushion and thimble holder, formed on a plate which may be attached to a machine, by fitting it over the spool holder. A piece of emery paper on the plate provides means for sharpening the points of needles. In the complete illustrated description of this device, which appeared on page 396 of the SCIENTIFIC AMERICAN, Mr. Rosenthal's initials were incorrectly stated. The correct address is given above.

SUPPORTING STRUCTURE FOR BUILDING CULVERTS AND THE LIKE.—E. F. PARCAUT, Sutherland, Iowa. The object of this improvement is to provide a supporting structure for building culverts and the like of cement, concrete or other material, the structure being arranged to permit of quickly and conveniently building the culvert and to allow ready removal of the structure after the concrete or cement has set and hardened.

TELLURIAN.—C. B. MARTIN, Portland, Ore. The invention relates to educational appliances, and its object is to provide a new and improved tellurian arranged to demonstrate the various relations of the globe relative to the sun and moon, with a view to explain the different times, seasons, moon's phases, tides, etc.

FOREHEAD-BAND.—C. W. MABEY, Indianapolis, Ind. The invention has for its object to provide means adapted to relieve a person of headache and insomnia. The covering material may be saturated with chemicals of a character suitable to relieve headache or insomnia, and such chemicals are by means of such device adapted to be drawn from the covering material by the heat of the forehead of the wearer. It may be worn with a hat.

PENCIL-HOLDER AND POINT-PROTECTOR.—R. KLIPFEL, Larimore, N. D. In this instance the invention refers to certain improvements in devices for holding pencils and protecting the points thereof when not in use, and provided with a fastener by which the same may be instantly secured to the inside or outside of a pocket or to any other portion of the clothing.

MANIFOLDING-PAD.—S. W. GASS, Evart, Mich. This pad is to be used by store clerks in the recording of sales, where it is necessary to make duplicate slips of the name and price of each article sold, or other memoranda. For this purpose the inventor has constructed a book box adapted to contain a ribbon folded in a manner to pass freely from the box as it is withdrawn. The ribbon is made in two or more layers, passes over the top of the box to inclose carbon sheets therebetween in order that when the top layer is written upon, two copies more will result. Means provide for imprinting the succeeding layers.

ORNAMENTAL FENCE.—J. FORSTER, Los

Angeles, Cal. The invention involves the use of a small amount of lumber, therefore making it economical of construction, and the parts may be all cut out by machinery and sold in a detached form to the person desiring to use the same, for the parts may be so easily assembled that a skilled workman is not necessary.

COMPOSITION FOR TREATING PAPER.—J. CERNY, New York, N. Y. The invention is an improved composition for treating paper, especially in the form of card-board, rendering it hard, durable and resistant, particularly desirable in the manufacture of hair bottoms and many other articles. They will withstand wear and rough usage like wood.

MANUFACTURE OF ALLOYS.—G. E. BUTTENSCHAW, Beechwood, Choriton-cum-Hardy, Manchester, England. The object of this invention is to produce articles in an alloy suitable for use in the construction of marine engines, pumps, sea valves, torpedo tubes, and the like, which are brought into contact with salt water and which shall not be liable to oxidize or set up galvanic action in the presence of iron and steel.

Household Utilities.

CLOTHES-LINE HANGER.—F. W. STEUER, Plainfield, N. J. The design in this invention is to provide a hanger to support a clothes line, and so constructed and arranged as to enable clothes to be placed on the line by a person within a room, and thereby avoid the dangers incident to leaning out of a window for that purpose.

COMB.—J. G. HIGGINS, Chattanooga, Tenn. The invention relates to combs, such, for instance, as are used for dressing the hair, the more particular object of the inventor being to provide certain constructional details whereby the comb is rendered composite in character, its several parts being thus rendered interchangeable.

FIRE-KINDLER.—W. H. HAGGERTY and W. J. DARDIS, New York, N. Y. The invention is an improved means for kindling fires, consisting of a suitable gas burner adapted to be suspended from the grate of a stove, open fire-place or the like, and heat the fuel therein in a few minutes to the point of ignition.

Machines and Mechanical Devices.

CASTING AND CONVEYING MACHINE.—W. McVAY, Bellaire, Ohio. This casting and conveying machine is arranged to receive the molten metal from a blast-furnace in the casting-house, cast it into a convenient size and thereafter convey the casted iron or pigs, as they are usually termed, to the required point of discharge.

SAW-HANDLE.—W. B. MCCAIN, Clearlake, Wash. In the present patent the improvement has reference to saws manipulated by hand, and its object is the provision of a saw-handle which is simple and durable in construction, easily removed from the saw-blade, and without the aid of a wrench, screw-driver or other tool.

TYPE-WRITER.—C. GIBBS, New York, N. Y. In this case the invention relates to typewriters, and especially to that type of these machines which employs type bars. The object of the invention is the production of an improved arrangement which will facilitate the renewal of the type bars when they become worn.

COPY-HOLDER ATTACHMENT.—T. E. FORD, Philadelphia, Pa. The invention relates to typewriters, and concerns itself especially with a device adapted to hold copy and which is intended to be attached to the frame of typewriters of the form used especially for writing upon open books, or tabulating sheets. These typewriters are known commercially as book typewriters.

WAVE-POWER MOTOR.—T. DANFORD, Granby, Col. Among other objects of this invention is to provide a machine in which suitable provision is made for the unequal levels of the water caused by the rising and falling of the tide, combined with a power transforming mechanism to reduce the quick, impulsive and variable movement of the parts initially driven by the motor, to a constant, rotary motion.

COMBINED MEASURING, WINDING, AND WEIGHING MACHINE.—C. W. COTTELL, Washougal, Wash. In this patent the invention is an improved combined machine for measuring, winding, and weighing rope, wire cable, and like material, to be used by storekeepers in the sale of such goods, thereby lessening the labor entailed when these operations are performed in the usual manner.

Prime Movers and Their Accessories.

ROTARY ENGINE.—T. S. PARVIS, Vancouver, British Columbia, Canada. The object in this invention is to provide for the quick reversal of the engine or turbine when desired. The improvement consists of a cylindrical casing in which is journaled a revoluble drum, carrying blades subject to pressure of the working fluid and having a shiftable member or part, automatically operated to change the direction of rotation.

REVERSING-GEAR FOR GASOLENE-ENGINES.—H. E. ZASTROW and J. H. KOPP, Portage, Wis. The invention consists in means for reversing without having to gain access to the interior of the engine, and it

comprehends as its most distinctive feature a construction of slip clutch between the timing wheel and its shaft so that the wheel may turn a given distance on the shaft independently of the shaft and then take up against and turn rigidly with it, in connection with an adjustable circuit controller.

CLUTCH.—B. F. REICHENBERGER, Township 4, Brown Co., Kan. In this patent the invention has reference to a clutch for connecting rotary elements. It is useful in connection with various branches of mechanical arts, but is especially intended for application to the crank shaft and fly wheel of traction engines.

APPARATUS FOR GENERATING AND STORING PRODUCTS OF COMBUSTION UNDER PRESSURE.—T. H. COLE, 54 Margate road, Southsea, Hants, England. Mr. Cole's invention relates to the generation of power by the combustion of a gas or vapor within a confined space, and it has for its object to provide means whereby the greatest practicable elasticity, or flexibility may be obtained in the application of the power generated in an internal combustion motor. This primary motor is adapted to work on a four-phase cycle.

STEAM-TURBINE.—E. HARVEY, New York, N. Y. The invention is an improvement in steam turbines especially directed to compound condensing marine engines capable of being reversed. The turbine engine is capable of having a high, an intermediate, and a low pressure chamber, each of which is provided with a novel form of piston.

REVERSING STEAM-TURBINE.—W. C. GARDINER, 17 St. Clement Street, Aberdeen, Scotland. In the present patent the invention has reference to multiple expansion reversible steam turbines wherein the rotary distribution valves are employed for the purpose of varying the expansion of the steam and determining the direction of the revolution of the rotor.

Pertaining to Recreation.

PUZZLE.—W. WERNER, New York, N. Y.—The puzzle is preferably in the form of a deck of playing cards and consists of a number of cards, numbered consecutively and arranged in sets or suits, each set being formed by a number of cards, and each card being provided with a colored design, preferably a geometrical figure, the designs and their colors in a set being different, and the colors of the same designs in the several sets being different.

TOY.—A. UEBERLE, New York, N. Y. This invention has reference to toys designed for children's use, and consists primarily of a doll and means connected therewith adapted to enable the doll to be placed in different positions and made capable of various movements to suit the fancy of the user.

Pertaining to Vehicles.

LOG-CART.—J. A. PERRY, Burgaw, N. C. The invention is an improvement in that class of log carts or carriers in which the log is suspended from an axle by means of chains. The main feature of the improvement is the pivotal connection between the hounds and tongue, or any form of rigid arm suitably connected with the axle so as to serve practically as a rocking lever.

EYE-PROTECTOR.—E. VERBAU, New York, N. Y. The more particular object in this invention is to provide a form of mask suitable for use by chauffeurs and drivers of vehicles, the construction being such as to prevent the collection of snow, sleet, frost, or water from gathering upon certain parts of the mask so as to obstruct the vision.

WHIFFLETREE.—S. A. HAZELTON, Pavilion, N. Y. Among other objects of this invention the inventor provides a whiffletree which can be automatically operated to detach and attach the traces of the harness quickly and with little labor, and to inclose all of the operating parts in order that they may be obscured from view and protected from the weather.

LAMINATED TIRE.—J. W. CARHART, Austin, Texas. The invention relates to tires, such, for instance, as are used upon automobiles and other road vehicles, the more particular object being to produce a tire built up of laminae so as to possess great strength and resiliency, and to be easily constructed of comparatively cheap materials as well as to be easily repaired, or to be replaced either in whole or in part.

JOINTED-SPINDLE AXLE.—M. BIDEAU, 16 Cité d'Antin, Paris, France. The invention relates to axles having jointed spindles, chiefly designed to receive the steering wheels in a motor-car, and the object is to so mount or fit the axle that it will allow of a ball bearing or washer being arranged between the body part of the axle and the spindle around the stud of the vertical joint of these parts to avoid any injurious movement out of the perpendicular with respect to the said stud.

AXLE-NUT.—T. MILLIGAN, Fortuna, Cal. In this instance the improvement pertains to axle nuts, and has for its object the provision of a compensating means adapted to take up the lost motion occasioned by the wearing of the end of an axle box, and thereby holds the box against longitudinal motion on the axle.

WHEEL.—I. W. GILES, New Bedford, and C. W. TOBEY, Fairhaven, Mass. This improve-

ment is in the tire construction of wheels. An elastic tire is employed which may be of solid rubber. The construction of the tire fastening devices with the lugs and links connecting the hooks provide means that co-operate with independent rings of the supporting tire, the flexibility of the stud connection co-operating with the yielding of the rings of such supporting tire in securing flexibility of the wheel. Means operate for extending the supporting plates toward securing the desired flexibility of the wheel.

VEHICLE-TIRE.—G. E. HUGULEY, Atlanta, Ga. One purpose of the present invention is to provide a supplemental tread section for the outer tubes of pneumatic tires, or any rubber tire used upon wheels of automobiles or similar heavy vehicles, which supplemental tread section can be quickly, conveniently, and firmly applied.

Design.

DESIGN FOR RIBBON.—E. M. CORBETT, Paterson, N. J. This ornamental design for a ribbon comprises a band of fabric with vertical double lines and single cross lines which make a pattern of very small squares. Bow knots run in an oblique direction and at regular intervals down the ribbon.

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.



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.

(10542) V. B. asks: I would like to obtain some rule for the repulsion of permanent magnets: For example: if two magnets have an attraction of two pounds pull, what would be the repulsion between them if one of the magnets be turned end for end? Also, what repulsion would it be possible to get between two magnets, one of any weight and either electro or permanent, and the other to weigh two ounces and be permanent? A. The repulsion between two similar magnet poles is the same as the attraction between two opposite poles in the same position, whether they be permanent or electro-magnets. The repulsion dies out very rapidly as the poles move away from each other, and the attraction increases very rapidly as the poles approach each other. This is due to the low permeability of the air. The force varies inversely as the square of the distance between the poles. We have never tried the experiment to find the maximum force which could be obtained in any given case, but there is no answer to your indefinite question as to the force between a magnet of any weight and form and a permanent magnet weighing two ounces.

(10543) C. E. R. asks: 1. Will an alternating current meter register if the current is coming in at one of its entrance wires and leaving by one of its exit wires? A. We should not expect a meter to register unless all its binding posts had wires attached to them. You should, however, refer the matter to the company controlling the meter, since there are many kinds of meters of widely different construction. No general answer can be given. 2. What liquid and plates are used in a cell which chokes off one of the alternations of an alternating current, giving an intermittent direct current? A. The plates in an electrolytic rectifier are generally iron and aluminium, the electrolyte some potash salt. 3. On a ground return 1/4 mile telephone line when one end is grounded and a receiver connected at the other, sounds are heard which are separated into dots and dashes, which sound exactly like the sparks of an induction coil. The steady hum of alternating current lighting circuits is also heard, but has a quite different sound. At times there are apparently dots and dashes being sent by several different coils at the same time, as their tones are different, some high, some low, some loud, some weak. There is no coherer or other detector in the circuit. Under these conditions is it possible to hear wireless unattended messages? A. The grounded telephone line upon which you hear sounds is able to take up any sort of sound in the neighborhood. The telegraph signals you hear are probably those of

some neighboring telegraph line. The alternating current hum is from some line, it may be farther off. It is doubtful if you hear wireless telegraph signals, although it is possible that you do so. The remedy is to put in a metallic return on your telephone line. All these sounds will then cease. 4. Does the covering of the high potential electric lighting wires completely protect them, or is it still dangerous to touch the insulation? A. The insulation of a wire is supposed to protect any one from the current which it is carrying. If the covering is in good condition, it will be sufficient to insulate the current.

(10544) I. C. D. asks: I should like to ask upon what do mosquitoes feed other than human blood? What attracts them to a residence? Are vaults favorable breeding places? A. Mosquitoes feed on blood in the imago state. They bite other animals besides man, as you may see by watching them. They fly about and into houses in search of food. Stagnant water is their usual breeding ground. They like cisterns of rain water near houses. They emerge from the water in the afternoon, dry themselves, and are ready to fly at dusk. Any receptacle with water standing in it will be used for bringing up a family of mosquitoes, even old cans for tomatoes and vegetables. All such things should be carefully picked up and put bottom upward where they will not get water into them, if one would be rid of the pest and danger of mosquitoes.

(10545) J. S. J. asks: I wish to ask you a probably very simple question in your estimation, thus: Will an electric light meter register the same at the end of a month when 4 C. P. lamps are used as it would had 16 or 32 C. P. lights been used, voltage being the same in both cases? A. An electric meter usually registers watts, or the product of volts and amperes. A 4 C. P. lamp cannot take as many watts as a 16 C. P. lamp, and a 16 C. P. lamp will use only about half as many watts as a 32 C. P. lamp. The meter only registers the watts which are used. Lamps of 16 and 32 C. P. use 3 to 4 watts per candle when the lamp is in good condition. This quantity the meter should show.

(10546) J. C. R. asks: Will you explain the following experiment? I set the front wheel of a bicycle in motion and then I placed one end of the axle on my first finger. The result: While it revolves on its axle it also tends to revolve in an orbit around me. If you revolve it with the axle vertical, it tends to revolve in an orbit as before. A. The bicycle wheel in your experiments is a form of gyroscope and revolves as this instrument does. You will find it explained in Hopkins' "Experimental Science," where many forms of the gyroscope are illustrated.

(10547) L. C. asks: 1. I have made a sidestrot. The rather substantial mirror mount is attached to the shaft of a bicycle fore-wheel bearing. From a 4-inch pulley on this shaft a belt runs to an inch pulley on the hour sleeve of an ordinary clock. Could you suggest any wrinkles for reasonably accurate adjustment? It is intended for projection work in latitude N. = 45 deg. 30 min. 24 sec. A. You will require that the mirror of your sidestrot should rotate in altitude 47 deg., the amount by which the altitude of the sun varies in a year. In December the sun will at noon be 21 deg. above your southern horizon, and in June it will be 68 deg. above your southern horizon. A gear and a rack will be as simple a method of adjusting the mirror as any. The rack can enter the room through an opening and give you the ability of adjusting the beam at any time. 2. What is the longitude of the places in the different time zones whose local mean time is taken for the standard time for the whole zone? A. The longitudes which are taken as the standards for the time zones in the Western Hemisphere are: 60 deg. west, colonial time; 75 deg. west, eastern time; 90 deg. west, central time; 105 deg. west, mountain time; 120 deg. west, Pacific time. This system is independent of the location of places or cities. Eastern time happens to differ less than four minutes from local time at New York. Chicago is about ten minutes from the 90th meridian. The central lines of the time sections are the meridians of even hours from Greenwich.

(10548) R. L. H. asks: Kindly publish in the columns of your paper whether or not the magnetism in a watch can be detected with an ordinary compass. If not, what is the proper method? A. To determine whether a watch is magnetized, place it on the face of a compass in a flat position, and turn it slowly around. If it is magnetized, it will in some positions repel the magnetic needle, turning it away from its north and south position, and in others it will attract the needle. If it is not magnetized, it will attract the needle feebly in some positions, and more strongly when the main spring is near the needle. There will be no repulsion in any position.

(10549) W. M. F. says: Please inform me what would take away the echo from a hall which is on the third floor of a building. I do not want to use a sounding-board, as it is too expensive. I have inclosed a small plan of the hall. A. We do not think a sounding-board would assist the acoustics of your hall. It is just as bad as a hall can be: a square box with a curved ceiling (if we read your

drawing aright) and with a hard wall. An abundance of soft hangings along the side walls, such as heavy curtains upon poles, as if there were windows in the wall, is advisable. Such echoing halls are often much improved by stringing fine wires across them, several feet above the heads of people; in your hall this might be done nine feet above the floor. Another decoration can be added which would deaden the noises, by putting up an abundance of bunting or cheesecloth from the center of the ceiling to the sides and corners as when the hall is dressed for some patriotic occasion. A gallery with rising rows of seats would assist much in breaking up waves of sound. You cannot hope to destroy the echoes except by such means as these. The idea is to replace the hard surfaces of the wall by soft and yielding materials, and to break up the rectangular character of the room, and particularly the vaulted ceiling, as much as possible.

(10550) C. N. writes: It has been asserted recently in a photo-magazine that the beam of light entering the lens of a camera during the exposure of a plate for 1-1000 of a second is 185 miles long. (1-1000 part of the velocity of light taken at 185,000 miles per second.) It is stated in support of the allegation that the light entering the lens during an exposure has "its origin in the sun, and the beam, or rather the multiplicity of rays, hit the object, are reflected therefrom, and ultimately reach the plate." Without contesting the explanation of the action of light, is the explanation a sound argument that the length of the beam is 185 miles? If not, is the length merely the distance of the object—say 50 feet from the camera? A. The statement as quoted from the journal is quite correct. As much light strikes the plates as light travels in the time of exposure. A second exposure, and 185,000 miles of light waves strike the plate. The light does not stand still between a plate and an object 50 feet away. It comes from the object all the time. It moves as fast from the object to the camera as it does anywhere in the air. And the action of the light is cumulative upon the plate; 185 miles of waves beat against the plate and affect it 1-1000 as much as 185,000 miles of waves would do.

(10551) H. L. F. says: Can a locomotive make better time on a high mountain than on the sea level, provided that the grade is the same in each case? It appears as though if air is rarer there would be less back pressure, and for that reason the steam would act more powerfully on the piston rod. A. Whatever advantage in steam pressure a locomotive would derive at a high altitude from the reduced pressure of the air would be met by the reduction of the quantity of oxygen in the air. If back pressure is reduced by the former cause, the amount of air needed to consume a certain weight of coal would be increased by the latter. We also think that the steaming qualities would be impaired on the mountain. We have no data of actual runs at hand, but should not expect any great difference between sea level and the altitudes attained by ordinary roads.

(10552) M. F. S. says: Will you please give, in an early number of the SCIENTIFIC AMERICAN, a receipt for polishing horns for hat racks, etc.? A. First scrape with glass to take off any roughness, then grind some pumice stone to powder, and with a piece of cloth wetted and dipped in the powder, rub them until a smooth face is obtained. Next polish with rottenstone and linseed oil, and finish with dry flour and a piece of clean linen rag. The more rubbing with the stone and oil, the better the polish.

(10553) C. R. V. says: If a water pump, plunger type, should be made from a tube having a 1/2- or 3/4-inch bore, and plunger fitting snugly in same, check valve each side, etc., plunger moving or having a stroke of 4 inches, what would be the limit of revolutions per minute if fastened to a wheel and crank, that it would work satisfactorily? Would it be necessary to decrease the revolutions per minute in ratio to increasing the stroke to gain same results as a smaller or shorter stroke? What is the fixed rule for this? A. The most practical speed for the plunger of all pumps is about 100 linear feet per minute. This speed is irrespective of the size of the plunger and the length of the stroke. If this speed is much exceeded, the valves do not seat properly and the pump does not work smoothly. If the stroke is decreased, the number of revolutions per minute may be increased in the same ratio to keep the piston speed the same.

(10554) H. W. H. asks: Is there more expansion of a charge of air and gas when burnt or exploded in a closed chamber than in a jet in the open? What is the cause of a pipe snapping when steam is first turned in it? A. The result of the burning of a certain charge of gas and air is not dependent upon its being in a closed or open space. The same amount of heat and gases should be produced, whether the explosion takes place in the open or in a closed chamber. In the open air the resulting power cannot be used, and is soon dissipated into the space around. The noise produced when steam is turned into a cold pipe is due to the partial vacuum produced by the condensation of the steam. It is called a water hammer.

NEW BOOKS, ETC.

NAVIGATING THE AIR. By members of the Aero Club of America. New York: Doubleday, Page & Co., 1907. 8vo.; 259 pp.; numerous half-tone illustrations. Price, \$1.65 by mail.

This book is intended to give a scientific statement of the progress of aeronautical science up to the present time. Opening with a preface on the "Aero Club of America" by Mr. C. F. Bishop, its president, and an introductory chapter by Carl Dienstbach telling in brief what has been done up to the present in all branches of the art, the book consists of twenty-three chapters proper by leading American aeronauts and experimenters.

A number of these deal with balloons and ballooning in all of its phases, and include articles by A. Lawrence Rotch, William J. Hammer, Augustus Post, Leo Stevens, and J. C. McCoy. Others, such as "The Use of Kites and Balloons in the United States Weather Bureau," by Oliver Passig, Ph.D., and "The Direction and Velocity of Air Currents," by Charles Fiesse, will be found interesting by all aeronauts and students of meteorology. "The Coming Dirigible Airship" is a very interesting chapter furnished by Capt. Homer W. Hedge.

Turning now to the heavier-than-air craft, the reader will find a brief chapter by Octave Chanute describing "The Wright Brothers' Motor Flyer," and another short essay by the brothers themselves on "The Relations, Weight, Speed, and Power of Flyers." Israel Ludlow describes the experimental flights made with his man-carrying aeroplane, which was towed by a tugboat and by an automobile, and through an attempt at riding in which Mr. Ludlow received a serious injury. Dr. Alexander Graham Bell has furnished an extract from his address on "Aerial Locomotion," which was delivered before the Washington Academy of Sciences last December. This extract is entitled "A Few Notes of Progress in the Construction of an Aerodrome," and it deals with some of his experiments with tetrahedral kites. "How to Fly as a Bird" is the title of a very interesting chapter dealing with an aeroplane constructed along the lines of a Venetian blind. Phillips, in England, found that this arrangement of long, narrow, superposed planes was the most efficient, and Mr. Holland has designed a very interesting machine along these lines. Mr. William A. Eddy contributes an article entitled "Experiments with Kite-Sustained Aeroplanes," and Mr. A. M. Herring describes a simple propeller-testing device with which he has made several hundred tests of various propellers. "Rubber Motors and Flying Machine Models" is the title of a very interesting article by Mr. William R. Kimball. Mr. Kimball has experimented with numerous helicopter models, some of which are illustrated. Prof. William H. Pickering, of Harvard University, also discusses this type of flyer. Prof. David Todd, Ph.D., contributes an article on "Aerial High Speed," in which he discusses the problem of the hydroplane, or gliding boat, and the much more difficult one of the aeroplane. Charles M. Manly, who was the late Prof. Langley's assistant in his experiments with an aeroplane, makes some "Critical Remarks on Progress," and Dr. A. F. Zahn discusses Dr. Alexander Graham Bell's paper, and also furnishes an article on "The Law of Atmospheric Resistance of Wires and Rods." The book is illustrated with some sixty half-tone plates, a considerable number of which have already appeared in the columns of the SCIENTIFIC AMERICAN, while most of the other photographs are from the collection of William J. Hammer. This book will be welcomed by all aeronauts and others interested in the new science, as it gives a very good idea of the state of this science at the present time.

LA TÉLÉGRAPHIE SANS FIL ET LA TÉLÉ-MÉCANIQUE. A la Partée de Tout le Monde. Par E. Monier. Preface by D. E. Branly. Paris: H. Dunod et E. Pinat. Second edition, revised and enlarged. Price, \$1.

An excellent idea of this volume can be gained from the preface to it, written by Dr. Branly, the inventor of the coherer, the translation of a portion of which is given below: "Although the explanation of the effects obtained does not present great difficulty, the authors who have endeavored to popularize the new methods have thought it necessary to leave them in a sort of half obscurity which imposes on the good nature of the reader, and probably increases his respect for science.

"In dealing with the elementary principles, M. Monier has succeeded in giving a sufficiently precise and complete idea of wireless telegraphy, and he should be congratulated on not having given way to the temptation of writing a heavy, abstract scientific work. Those who may have the good fortune to read his work will owe him great gratitude, for they will know those things that they should know about the subject without having had much trouble in learning them."

THE CONCENTRATION OF WEALTH. By Henry Laurens Call. Boston: The Chandler Publishing Company. 12mo.; cloth; 48 pages.

Mr. Call's paper, read before the American Association for the Advancement of Science, at Columbia College, New York, December 27, 1906, presents in very clear form,

backed up by statistics, the fact that the working classes are obliged to struggle more strenuously for existence than formerly, and that the small dealer and the small producer have been entirely crushed out of existence by the trusts. This state of affairs is generally admitted as being a very grave menace to our national development. A remedy must be sought; yet we think Mr. Call's plan of relief too radical and too visionary.

LEHRBUCH DER GERICHTLICHEN CHEMIE IN ZWEI BÄNDEN. ZWEITE GÄNZLICH UMGEBEITETE AUFLAGE. Bearbeitet von Dr. George Baumert, Dr. M. Denstedt, und Dr. F. Voigtländer. Zweiter Band. Der Nachweis vom Schriftfälschungen, Blut, Sperma, u. s. w., unter besonderer Berücksichtigung der Photographie. Braunschweig: Druck und Verlag von Friedrich Vieweg und Sohn. 8vo.; paper cover; 248 pages, illustrated.

Dealing with such problems only as admit of scientific and tangible solution, this work is of rare service to the criminologist. Various methods of tampering with handwriting are discussed and their detection explained, as are also described the microscopical examination and identification of the many substances that are apt to figure in criminal cases.

TYPES AND BREEDS OF FARM ANIMALS. By Charles S. Plumb. Boston and New York: Ginn & Co. 8vo.; cloth; 563 pages, illustrated. Price, \$2.20 post-paid.

Not since 1888 has a volume devoted to the breeds of horses, cattle, sheep, and swine been published in America. The most recent work devoted to the breeds entirely omitted a consideration of the horse. This book differs somewhat from others that have preceded it, in that a number of breeds have received recognition for the first time, these being the ass, the mule, the angora and milch goats, all of which are important in certain localities. The more important breeds have received more minute mention than those that have had less influence in developing the given stock. The photographs of typical individuals, with which the text is freely illustrated, give a better idea of the desirable qualities of the different varieties than could be gathered from pages of descriptive matter.

MODERN METHODS OF TESTING MILK AND MILK PRODUCTS. By Lucius L. Van Slyke. New York: Orange Judd Company. 12mo.; cloth; illustrated; 214 pages. Price 75 cents.

Now that the full danger of impure milk, due either to unsanitary conditions in its production, or to adulteration, is realized, a knowledge of how to test milk is of value to everyone. The tests described by Mr. Van Slyke are chosen from those that do not require complicated apparatus or an undue degree of technical skill, and yet are reliable. The volume is written simply, so that by paying strict attention to details, the experimenter can acquire the necessary expertness with very little practice.

THE WALSCHAERT LOCOMOTIVE VALVE GEAR. By W. W. Wood. New York: The Norman W. Henley Publishing Company. 12mo.; cloth; 193 pages; illustrated. Price, \$1.50.

Now that the enormous size of our modern locomotives makes the weight of the "Stephenson link motion" a factor that must be taken into consideration, engine builders are commencing to install a method of valve actuation that has been in satisfactory use in Europe for over half a century, namely, the Walschaert valve gear. The work by Mr. Wood treats of this gear from four different standpoints in as many divisions of his volume. The First Division is a simple analysis of the gear; the Second Division deals with designing and erecting the gear, and is suited for the master mechanic; the Third Division tells of the advantages of the system, and the Fourth Division is devoted to "Questions and Answers on the Walschaert Valve Gear." Numerous drawings accompany the text as illustrations to the various points emphasized; one set especially, showing the valve gear in nine different positions, makes the book a necessity among railroad shop men.

INDEX OF INVENTIONS

For which Letters Patent of the

United States were Issued

for the Week Ending

May 28, 1907.

AND EACH BEARING THAT DATE

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

Acid, concentrating nitric, E. Collett.....	854,928
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Advertising device, G. L. Thorne.....	854,779
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