EDWARD ORTON.

BY MARCUS BENJAMIN, PH.D.

When the council of the American Association for the Advancement of Science, met in Boston last summer to decide upon a place in which to hold the meeting this year, invitations were presented from several cities, but the cordial and earnest words of the representatives of Columbus, Ohio, proved irresistible, and it was decided to accept the invitation from that place. So strong a plea was presented by them that when the choice of a president came to be considered a few moments later, the unwritten but time-honored rule that a representative of the physical sciences be chosen to succeed a representative of the natural sciences was passed over in the desire to do honor to the distinguished State Geologist of Ohio.

Edward Orton was born in Deposit, N. Y., on March 9, 1829, and he is the son of the Rev. Samuel G. Orton, a Presbyterian clergyman of well known standing in New York State. The boy spent his early life in Ripley, Chautauqua County, and there obtained a common school education. He was ambitious, and desiring greater knowledge, opportunities were afforded him to procure a college course, and he entered Hamilton, where he was graduated in 1848. The home influence is clearly indicated by his desire to follow in the footsteps of his father, and he began his theological studies in the Lane Seminary, where Dr. Lyman Beecher was then dominant, and later he studied at the Andover Theological Seminary.

No student of the history of science in this country can ignore the wonderful advancement of science that followed the coming of Louis Agassiz to America; and beyond doubt it was his influence, direct or indirect, that led the young student of theology to turn his steps toward Harvard and enter the Lawrence Scientific School, where he came in personal contact with that great master.

The wise words of the poet, "Knowledge comes, but wisdom lingers," were fully appreciated at the Lawrence School in those days, for the students were taught to think. Thinking students make good teachers, and good teachers are successful men. In President Orton's career this fact is clearly demonstrated.

Soon after completing his studies, he accepted a call to the chair of natural sciences in the State Normal School in Albany, N. Y., and there began a successful career of teaching, which he has never abandoned. In 1865 he was invited to the professorship of natural sciences in Antioch College, Yellow Springs, Ohio, and of this institution he was made president a few years later.

Success was the result of his ability to teach, and his reputation extended beyond the limits of his own college, for he was called in 1872 to the presidency of the Ohio State Agricultural and Mechanical College in Columbus, Ohio, with charge of the department of geology. Later, that college became the Ohio State University, and the duties of its president became more onerous, and in 1881 he resigned from the higher office, but retained his professorship of geology.

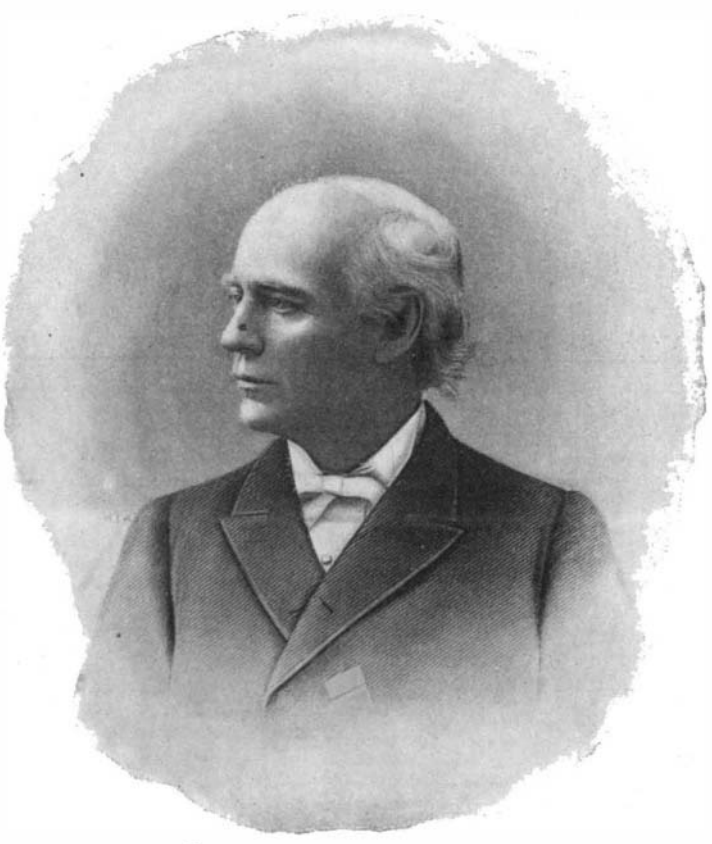
As a geologist President Orton has gained for himself also a high place among his contemporaries. During the years 1869 to 1875 he was assistant State geologist under the able and gifted Newberry, and then after a brief interval returned to the survey in 1881 as State geologist with full charge of its work.

His special investigations have shown a leaning toward the development of the economic wealth of Ohio, and his published writings include the two volumes of the "Economic Geology of Ohio," issued in 1883 and 1888, and his valuable report on "Petroleum and Inflammable Gas," issued in 1887.

One of the finest of the University buildings was named Orton Hall in appreciation of his services both to the State and the University. The building, which cost more than $100,000, is of decided architectural beauty and contains a series of geological specimens collected from every part of the State. It is regarded "as a monument to the worth and work of Doctor Orton." Other honors have come to him. The degree of Ph.D. was conferred upon him by his alma mater in 1876, and on his retirement from the presidency of the Ohio State University in 1881 that institution gave him the degree of LL.D. Scientific societies have recognized his worth, and he was president of the State Sanitary Association of Ohio in 1884–85, and later of the Geological Society of America.

He joined the American Association at its Troy meeting in 1870, and five years later was advanced to the grade of fellow. In 1885 he presided over the section on Geology and Geography at Ann Arbor, but "a fitting crown to his long and useful life was placed on his brow last summer when the American Association for the Advancement of Science made him its president."

It has recently been well said of him, "as a scientist of rare attainments, and as a man of rare personal charm, Dr. Orton has always retained the admiration and the affection of the University, the community, and the State." We hail him as a worthy successor of Agassiz and Newberry in the presidential chair of the American Association.



Edward Orton

PRESIDENT OF THE A. A. A. S.

Women Inventors.

Rev. Ada C. Bowles gave an interesting talk lately on "Women as Inventors," the result of twelve years' research, the substance of which is reprinted in The Woman's Journal. She said that in China silk-weaving was invented by the wife of the fourth emperor, for which divine honors are still paid to her. Japanese bronze work was the invention of a woman. In India the weaving of Cashmere shawls was invented in the seclusion of the harem by a woman, who also gave so wise consul to the prince, her husband, that he changed her name from Nourmahal (Light of the Harem) to Nourjehan (Light of the World), and had coins struck bearing this title. Attar of roses was invented either by the same woman or by her mother, the authorities differing on this point.

The secret of Venetian point lace which had been lost in the thirteenth century, was rediscovered in this by an Italian work-woman. The beautiful gauze called "woven wind" is a woman's invention. When Harriet Hosmer took her Yankee brains to Rome, she found out the way to make marble from limestone, which the Italian government had long been seeking.

In this country women's progress in invention has kept pace with their progress in education. Mary Kees was the first American woman to take out a patent, in 1808. It was for weaving straw with silk or thread. At this time girls received hardly any education. During the next quarter of a century only fifteen patents were taken out by women. These included a globe for teaching geography, a baby-jumper, a fountain pen, a deep-sea telescope, and the first cook-stove.

By 1834 women had a few more educational privileges, but not many, and in the next twenty-five years women took out patents for thirty-five inventions. By 1859 high schools were opened to women, and the war was coming. The high schools taught them to use their minds, and the war forced them out into many new avenues of work. During the quarter of a century from 1859 to 1884 the number of inventions patented by women rose to 1,503. Women who took their husbands' places on the farms invented many improved agricultural implements especially at the West; women went into the shoe-shops, and at once began to take out patents on machinery; women nursed in the hospitals, and invented improved bandages, canteens, camp-beds, etc. Colleges, Sloyd, and manual training are now developing the latent inventiveness of women, and during the twelve years from 1884 to 1895, the latest date to which the Patent Office reports have been published, women have taken out 3,905 patents.

Some large and important inventions are due to women. Mrs. Harriet Strong, who began by inventing a corset, afterward moved with her husband to California; and since his death she has taken out patents for reservoirs and dams. She is now an old woman, but the other day I saw that she had just patented a device for the storage of water. Mrs. Ada Van Pelt, while her husband was postmaster at Oakland, Cal., invented a permutation lock with three thousand combinations; also a letter-box for the outside of houses, that throws up a signal when there is a letter inside for the postman to collect. This is now in daily use. Satchel-bottomed paper bags were invented by a woman, who was offered $20,000 for the patent before she left Washington. An invention which revolutionized the making of screws originated with a little girl. A woman invented the Burden process of making horse-shoes, which turns out a perfect horse-shoe in an incredibly short time. This invention has saved the country $2,500,000 in fourteen years. Yet there are still many persons who believe that women cannot invent.

The Consumption of Quinine.

More than 125,000,0 0 grains of quinine have been consumed by American soldiers during the past year. In some cases men who were in the hospitals in Cuba and Porto Rico used as much as 300 grains a week, and hardly any have failed to use the drug at some period of their service. It is stated that the people of this country consume one-third of the quinine of the world, the drug being used in the preparation of many patent medicines, tonics, bitters, cold cures, etc., as well as in pills and in bulk, and a considerable quantity is consumed in the manufacture of hair tonics. The official figures in the Treasury Bureau of Statistics show that there were imported last year, into the United States, 1,539,056,750 grains of quinine, and as there was practically no export of this article, this means that the consumption of quinine was about twenty grains for each inhabitant. As is well known, quinine, Peruvian bark, and calisaya bark are the products of the cinchona tree, which is a native of western South America, more particularly of Peru and Ecuador. Now, however, but a small part of the supply comes from that region. At present two-thirds of the quinine consumed is produced in Java from cultivated trees. For many years the Dutch government was urged to undertake the cultivation of this plant from Peru. Finally this was accomplished and a large number of specimens of the different varieties were obtained by botanists, who took them to Java in 1852. The English government also started cinchona plantations in India which now produce large quantities of quinine.

The Cambridge Anthropological Expedition.

Certain members of Dr. A. C. Haddon's expedition to New Guinea and Borneo, including Dr. Haddon, have returned and the members are now actively engaged in arranging their facts and specimens. The main object of the expedition was to continue and supplement the investigations on the Torres Straits islanders that Dr. Haddon commenced ten years before. The islands lie between the smallest continent and the largest island in the world, and it is important to definitely establish the affinities of the natives and to record their customs and beliefs before they entirely disappear or become inextricably modified by contact and mixture with alien races. The Murray Islands were selected for the most prolonged and careful study. These were the most isolated and less accessible islands. The natives are less in contact with the pearl divers who have so modified the natives of the other islands. They have for a long time, however, been well under the control of the missionaries, so that most of their former practices have been abolished. Numerous natives were photographed and measured, and some of the old men were able to give information respecting their former customs and ceremonies. A psychological laboratory was instituted, and this is the first occasion on which trained psychologists have experimented in the field on a primitive people. The numerous ethnographical and anatomical objects collected during visits to the main island of New Guinea together with those obtained in the islands of Torres Straits form interesting and important additions to the collection in the Cambridge University Museum at Cambridge, England.

The Longest Asphalted Street in the World.

Philadelphia can boast of the longest asphalted street in the world. Broad Street has that unique distinction. First, as already stated, it is the longest asphalted street in the world; secondly, it is the only street which is of even width for eleven miles, and this width is the greatest ever attained by any street for a course of eleven miles. It is also the straightest street, for from League Island to the county line it does not vary an inch, except where the great city building causes the street to turn around it. Seven miles of the street are asphalted, but the remainder is provided with a roadbed of fine macadam, which is continued by the old York road, which extends for about twenty miles farther on. A carriage can drive on this street and road and make only one turn in thirty-one miles. Broad Street is 113 feet wide and measures 69 feet from curb to curb, and thirty-five men can walk abreast of it.

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The New Kachin and Acetone Developer.

In the Photogram Mr. W. Ethelbert Henry gives the following formula for a single combined developing and fixing solution :

A.—Sodium sulphite crystals..	30 grammes,	or	3 ounces 6 drachms.
Distilled water.....	75 c. c.	"	9 " 3 "
Caustic soda, pure.....	7 grammes,	"	7 drachms.
Kachin.....	7 "	"	7 "
B.—Hypo.....	20 "	"	2 ounces.
Water.....	100 c. c.	"	10 "

For use, take twelve parts of A, 20 parts of B, and 30 parts of water. The mixed solutions form a combined developer and fixing bath which works with great rapidity, fixation and development taking place at the same time. It is well to bear in mind, however, that plates must be fully exposed for this treatment, which is quite unsuitable for under-exposures. A few trials will also be necessary in order to determine the most suitable quantity of hypo solution for the particular brand of plates in use, some requiring more than others to give the best results. The negatives produced by this means are quite brilliant and free from any indication of fog. The next formula is one that I have found gives better results in a shorter time than any other yet worked out. It is open to improvement, no doubt, but it works so rapidly and excellently that I give it as it stands, leaving any improvement that may be made for publication in the future.

Three solutions are requisite as follows* :

A.—Water.....	250 grammes,	or	10 ounces.
Sodium sulphite	25 "	"	1 ounce.
Kachin.....	5 "	"	96 grains.
B.—Lithium oxide.....	3 "	"	58 "
Water.....	250 "	"	10 ounces.
C.—Acetone.			

If very rapid development with extreme contrast is desired, take A, 1 part ; B, 1 part ; water, 1 part. This developer is very energetic, and is not suitable for over-exposure ; development starts in about three seconds, and is generally complete in less than a minute. For the development of snapshots with detail and density the following is highly recommended : A, 3 parts ; B, 3 parts ; C, 2 parts. This combination works very rapidly, giving complete development in from 60 to 90 seconds. The addition of 2 parts of water to the foregoing slows development to a slight extent, but gives a brilliant negative in less than two minutes in most cases.

I find "Kachin" particularly suitable for "stand" development, the following being the proportions : A, 3 parts ; B, 3 parts ; C, 2 parts ; water, 50 parts. This is the strength that so far has given the best results, development of under-exposures being completed in about 40 minutes. There is no doubt that the time of development may be materially governed by increasing or decreasing the added water ; for instance, with 100 parts of water instead of 50, two hours were necessary to effect the development of a snapshot. With this long development there was no stain or fog, and the plate fixed rapidly. On the other hand, I have left a plate to develop itself in a solution containing only 20 parts of water, yet the negative (developed in 15 minutes) was quite free from sootiness.

* The following being for development only, it is, of course, necessary to fix the negatives in a 20 per cent solution of hypo.

The Production of Gold for 1899.

The world's production of gold for 1899, if Australia and South Africa maintain the rate with which they began the year, will probably reach $340,000,000, or about $50,000,000 more than in 1898. At the end of the current year the three principal countries will rank in the following order in the list of gold-producing districts :

South Africa.....	$106,000.000
Australia.....	78,000,000
United States.....	74,000,000

The State of Washington, it is thought, will far exceed its usual production ; and the Klondike, which in 1897 and 1898 produced respectively 6,027,000 and 13,700,000 dollars' worth of gold, it is estimated will yield in 1899 at least $20,000,000 in yellow metal.

Arctic Food.

A company was recently formed for the breeding and raising of reindeer in eastern Norway, for the purpose of supplying southern markets with reindeer meat. There is a growing market for this meat in France and Belgium. Reindeer are quite cheap in this part of Norway, and 2,400 animals were purchased for $7,500. In a short time it is believed that 1,000 deer can be killed a year without diminishing the herd. A slaughtered deer is worth about $7.50. In order to prevent the market from being flooded with fresh deer meat, a canning plant will be attached to the farm. The company controls about 60 miles of mountain land. The reindeer is the real Arctic venison and is a highly approved article of food in the northwestern part of Europe. A considerable part of the supply comes from lands far north of the Arctic circle. Russian bears have also been on the market in London and Paris, where they are much esteemed. The business of importing frozen game from the far North is a comparatively new one, but it is rapidly developing into an important industry.

The Current Supplement.

The current Supplement, No. 1233, has many articles of more than usual interest. "The Automobile Race 'Tour de France'" describes this most important race. "Elevators," by Charles R. Pratt, illustrates several of the leading types of elevators. "Life on the Schoolships of the German Navy" describes the instructions in seamanship which are given. "The Electrical Protection of Safes and Vaults" is an article by Clyde J. Coleman. Probably the most interesting article in the entire paper is "Variations in Human Gait," by Dr. E. H. Bradford. It is most profusely illustrated and is a highly important paper on the subject.

Contents.

(Illustrated articles are marked with an asterisk.)

RECENTLY PATENTED INVENTIONS.

Bicycle-Appliances.

DRIVING GEAR FOR BICYCLES.—Arthur Doyle, Seattle, Washington. The gear consists of a pair of toggles suitably pivoted upon the bicycle frame and connected to a gear wheel or sprocket which is in gear with the driving sprocket of the machine. A pedal is mounted upon the primary toggle and the necessary power is transmitted through it by means of a short vertical motion. A hand lever is also arranged to be used when auxiliary power is needed. By means of this driving gear, a short up-and-down movement of the rider's feet is said to develop a large amount of power and to run the machine at a high rate of speed.

BICYCLE DRIVING GEAR.—Charles H. Sperle, Third and Sixth Avenue, Williamsbridge, New York, N. Y. This device consists of a lever pivoted at one end to the bicycle frame near the rear wheel, and carrying a pedal on the forward end. The lever is connected by a pitman to a gear wheel, also fastened on the frame and meshing with the driving pinion on the rear wheel.

Engines and Valves.

ENGINE.—Gabriel P. B. Hoyt, Jamaica, Borough of Queens, New York, N. Y. The object of this invention is to provide an engine capable of running at a high rate of speed without much vibration. It seems especially applicable to explosive engines as a means of reducing vibration. A transverse elongated slot extends across the center of the piston, and in this slot travel the wrist pins of two crank arms, which rotate two transverse shafts in opposite directions. The shafts are connected to each other at both ends by gears and each carries a flywheel at one end. By means of this arrangement the piston is always perfectly balanced, as the wrist-pins, revolved oppositely by the gears, are at all positions of the stroke equally distant from the center of the piston on opposite sides of the center line.

ROTARY VALVE.—Joseph Bradley Stage, Talbot, Mich. The invention provides a rotary valve for the steam feed for sawmills so constructed as to automatically shut off the steam in case of a break in the connections that operate the valve. The valve core has a Y-shaped opening running through it from one side to the other. The top of the Y connects with the main inlet pipe and allows of the bottom part being shifted from one side to the other in order to send the steam through either of two ports to the cylinder. When the Y is in a vertical position, the bottom end is between the two ports, and the valve is closed. A weight is arranged on the shaft to bring the valve to this position in case the connecting rod that operates the valve becomes broken. Exhaust ports are also provided in the valve core.

Railway-Appliances.

ROLLING PLATFORM.—Henry P. Johnson, Dillon, S. C. The invention consists in providing the platform of a freight house with a movable section for use in transferring freight with convenience and dispatch. The movable section is flush with the stationary platform and is arranged to move at a right angle to the edge of the latter out over one track, so that a car on the outer track can easily be unloaded.

Electrical Apparatus.

ELECTRIC MOTOR FOR BRAKES.—Richard A. J. Evans, Chicago, Ill. The motor comprises field pieces extending upward from field magnets and connected at their top with a brass yoke and at their bottom with an iron one. The armature is placed between these field pieces and is mounted on a vertical shaft having bearings in the two yokes. A lever fastened on the end of the shaft projects backward a short distance and is kept in an open position by a horizontal spring pressing against the short end. The ends of the armature are curved slightly to fit around the field rods. When current is applied, they are attracted to these rods and move the lever horizontally.

Mechanical Tools.

SELF-FEEDING HAMMER.—Clarence H. Craig, Boulder, Col. The handle of the hammer contains a longitudinal slot into which the tacks or nails are inserted from the outside. By means of a simple spring arrangement they are fed one at a time into place before a small driving head, and held there till started into the wood by a single stroke, the springs which hold them in position then releasing them as the hammer is withdrawn. At the same time another nail is automatically slipped into place. The first nail is then driven in with the regular hammer head.

MAGAZINE TACK HAMMER.—Lewis W. Sammis, 986 Manhattan Avenue, New York, N. Y. The hammer has a magazine containing tacks attached to the handle. A curved chute extends from the lower corner of the magazine to the tack-inserting head of the hammer. The tacks slide down this chute by gravity and are held between two spring clips while the first blow is given, after which the tack is freed from the hammer by pulling the latter bodily away from it.

Agricultural, Lumbering, and Mining Apparatus.

POTATO DIGGER.—Mathias G. Bean, Rice Lake, Wis. This potato-digging machine is light and durable in construction. It is intended to be drawn by a team and can be operated by one person only if necessary. The digging fork is adjustable and may be set to enter the ground to any desired depth or adjusted at will. The potatoes, dirt, and vines are received upon the fork and separated at that point. The vines are carried to one side of the machine and there discharged, the dirt is sifted and returned to the ground, and the potatoes are raised on an endless belt elevator and fed into bags.

APPARATUS FOR TRANSFERRING SUGAR CANE.—Augustus Barbay, Plaquemine, La. This apparatus was designed for the purpose of transferring bundles of sugar cane from the carts to the railway cars. It consists of a slightly inclined upright pole, having a cross-arm or sweep. The wagon containing the cane is driven under the sweep at its lower end and the bundle fastened to a rope or chain. A suitable lever arm is then run out from the base of the pole and fastened to the cart. The horses are driven around to the other side, thus turning the pole and sweep. Since the pole is inclined, the end of the sweep is raised higher on this side and thus the bundle of cane is brought to the level of the car.

RAKE ATTACHMENT FOR HARVESTERS.—John Pegg, Bloomingport, Ind. The attachment is simple and durable in construction, effective in operation, and readily applied to a harvesting machine so as to work automatically. It is so arranged as to effectually carry the straw or clover from the front to the rear of the platform behind the cutter, and to drop it in bundles behind the latter. When not in use it is carried by one of the wheels of the harvester in a fore-and-aft position, parallel to the sides of the frame. It will, therefore, not wear to the usual extent, since it is in operation only when actually required.

SHOCK-BINDER.—George Youngs, Fayetteville, Mo. The binder consists of a single shaft or rod pointed at one end and having a T handle at the other. Two bent pins are fastened in the shaft at about the middle, to which the rope to be tautened is fastened. A second pointed shaft or prong runs parallel to the main one and has its top bent at right angles and fastened around it as a collar. A ratchet-wheel fastened to the main shaft just above this horizontal arm and a pin passing through just below it hold it in place on the shaft, while a pawl fastened to the arm engages the ratchet-wheel. A small thumb piece disengages the pawl from the ratchet when the shock is bound. All that is necessary to do this is to stick the two prongs in the bundle, fasten the cord to one of them, and turn the handle.

LOG-LOADING APPARATUS.—Horace B. Phillips, Halifax, N. C. This apparatus consists of a platform and framework on which is mounted a derrick, and a steam engine and boiler for operating it, as well as a pump or compressor for air or liquids. The platform is made to fit the top of an ordinary flat car and have its edges extend slightly over the sides of the latter. Near each of the four corners of the platform guideways are fastened to it and extend upward to the framework. Movable legs containing hydraulic rams which bear directly upon the platform slide in the guideways and permit of raising it so that the car can be withdrawn.

ORE PULVERIZER.—James H. Steele, Butte, Mon. The invention consists of a large drum having a cog gear around it adapted to be engaged by a small pinion, so that the drum will turn slowly. The drum contains three crushing rollers made up of solid disks, one edge of each of which is beveled. The rollers are arranged in such a manner that they are in peripheral contact with each other and with the sides of the drum. The material is fed through the shaft in the end of the drum (which is hollow), going in at one end and coming out at the other.

Miscellaneous Inventions.

TOY PARACHUTE.—Joab Q. Brown, Bethany, Mo. The parachute is hung from the point of an arrow or dart, so that when the latter is shot into the air, the parachute will be released at the end of the arrow's upward flight and descend slowly to the ground.

ANIMAL PEN OR TRAP.—Joshua D. Fox, Frankfort, Ind. The pen is constructed for the purpose of holding the head of an animal while it is being operated upon. It consists of a cage having two neck-holding parts, one of which is carried by the side of the pen, which is fulcrumed at its rear end to swing inward. An operating lever swings the side inward, and the lever is held at any desired point by a suitable locking bar.

ACETYLENE GENERATOR.—Robert L. Doherty, Palmyra, Mo. This generator is of the type in which the water falls upon the carbide. It has a gasogen in two parts, the upper one of which contains water and the lower one carbide. The walls of the upper compartment project downward some distance below the bottom and terminate in a water seal at the side of the lower compartment. Two cones, one inside the other, project downward from the bottom of the water compartment. The outer one has a small hole near its top part, and the inner, a hole in its apex. A valve regulates the supply of water flowing into the cones and dropping from them on the carbide. A second valve in the end of a short pipe is connected with the gasometer bell and is opened when the bell falls in the usual manner. The gas generated passes through a cooling coil in the water chamber before entering the gasometer.

HOG-TRAP.—John P. Tarr, Augusta, Ill. The trap consists of a simple box with a drop door in each end. The doors are held open by catches connected by suitable levers with a slightly raised trap door in the bottom. When the animal enters and treads on the trap, the doors are released and fall by their own weight. Provision is also made for inserting a neck-holding frame in which to hold the animal's head while it is being operated upon.

PORTABLE CRADLE AND CARRIAGE.—Mark I. Knapp, 280 Broome Street, New York. The invention provides an improved cradle and baby-carriage which can readily be taken apart and packed away in small space for storage or transportation purposes. The cradle is hung from each end on two uprights that are fastened to a suitably braced folding frame mounted on small wheels, so that it can easily be rolled about and used as a carriage as well as a cradle.

FORM FOR HULLS OF VESSELS.—Millard F. Mithoff, New Orleans, La. The object of this inventor is to so form the hulls that they will be fully adapted to the action of the displaced water in their immediate vicinity when the vessel is under way, thus reducing to a minimum the resistance to the movement of the vessel. The inventor found by experiment that the waves made by the bow of a boat describe parabolic branches and the motion of the water caused by the stern is also in parabolic branches running in the opposite direction. Consequently he constructs the hull so that a horizontal section through it at the water-line or at any point below will show two parabolas facing each other and joining in a center section about a third of the way from the bow.

SCHOOL FURNITURE.—Wilhelm H. Metting, Trenton, N. J. The invention consists in a new method of firmly fastening the wooden backs of school seats to the iron supporting framework. The backs are made of wooden slats with dovetailed grooves crossing them near each end. The iron supports have a rib of the same cross-section to fit into the grooves, but this rib is formed of two parts, one of which is cast with the support, the other being separate. A semicircular groove runs in the face of each of them, and after the slat has been slipped on, a flexible rod is driven through the hole, thus firmly fastening the slat in place.

COPY-HOLDER.—Louis Hudgin, Lochiel, Arizona. This holder is intended to be fastened to a typewriter desk for the purpose of holding the copy in an inclined position over the machine and directly in front of the eyes of the operator. It consists of a rectangular vertical support frame hinged to foot pieces which are fastened to the desk, and having two pairs of hinged arms projecting out at an angle from its front face, one pair being at the center of the frame and the second or shorter pair projecting from the top. These arms carry the copy-holder, which is a frame having spaced rods. The holder may be adjusted by raising or lowering the longer pair of arms, which are held by a ribbon.

PROCESS OF RENDERING WRITING INERADICABLE.—Stanley J. Morrow, Peoria, Ill. This process consists in writing on specially prepared asbestos paper with an acid ink, and then carbonizing the writing by means of heat. The asbestos fibers in the paper prevent it from falling apart in the places where the writing occurs.

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