

Wampum.

This is the English name for the shell beads used for ornament and as currency among the northern tribes of Indians previous to the settlement of the country. They were made chiefly on Long Island and around New York Bay, and were of two kinds, one made of conch or periwinkle shells and the other of hard clam shells. The making of wampum, to be sold for ornaments, has been carried on for nearly a hundred years by the Campbell family at Pascack, N. J., and they are now said to be the only persons who know how to bleach and soften the conch shells used in making white wampum or to drill holes through the still harder clam shells that are made into the more valuable black or deep purple wampum. The conch shells are brought from West Indian ports by schooners. The clam shells are of the largest size obtainable, the smaller ones being too thin for the purpose.

The white wampum and hair pipes are, according to the New York Sun, made from the lip of the shell, which is cut into suitable sizes after being detached from the body and put through a softening process that also bleaches it white. The hair pipes are somewhat thicker than a clay pipe stem, tapering from the center to both ends, and are graduated in length, by half inches, from one to six inches. They have a hole through the center lengthwise. They were used to ornament the long hair of the chiefs, which was run through the holes and secured with gaudy colored strings.

Black or dark purple wampum has always been more costly than the white because it was worn only by the chiefs and medicine men and because of the difficulty of drilling the holes. But a small portion of a clam shell yields material of the proper hue, and when it is cut in sections there is so much waste by breakage that only the most expert workman can be intrusted with the task. The dark shell is cut in lengths like the white. A number of sections having been drilled, they were, according to the old process, strung on a wire and placed in alternating grooves running around a fine grindstone. As the stone revolved Rockaway sand and water were dropped on it and a piece of hard board was rubbed back and forth across the face, thus moving the wampum and rounding its outer surface. Then it was washed, dried, dipped in olive oil to give a gloss, and afterward made into strings for market. The clam shell could not be softened without ruining its color.

NEW ARMY BICYCLES.

The new army tandem and the model 40, mounted with a Colt's automatic machine gun, which have been made by the Pope Manufacturing Company, were exhibited at the Madison Square Garden Cycle Show and attracted great attention.

The tandem is one of the Pope Company's regular model 43s taken directly from stock and finished plainly in enamel and nickel. On the front handle bars are tightly strapped two army overcoats, and on the rear bars a pair of blankets. Resting safely in brackets on either side of the machine is a twelve shot repeating rifle, and hanging on each seat post a Colt quick action revolver of the latest pattern. In addition to this there is a case of signal flags extending almost the whole length of the machine, but not interfering with the riders in the least; and this is the case with all the equipments, being as well and safely placed, ready for use in a moment, and yet causing not the slightest interference.

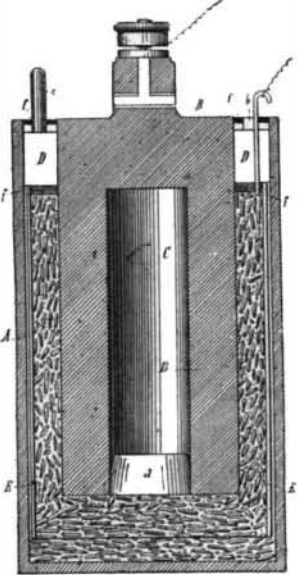
The Colt automatic gun mounted on the model 40 is the one recently adopted by the government for our navy. This gun weighs between thirty-nine and forty pounds, shoots two hundred and fifty or five hundred times—being automatically fed—and is remarkably accurate. It is fastened securely to the head of the machine, can be easily directed at any angle, and does not interfere with the rider or affect the steering of the machine.

These two wheels are as perfectly equipped with the necessary accouterments of war as would seem possible, and the interest which army people and civilians alike have shown in them leads one to believe that it will not be long before the wheel will form a very effective adjunct to regular army service.

It is proposed to construct a railroad from the city of Mexico to the harbor of Acapulco, on the Pacific coast. Acapulco has one of the finest lock harbors to be found anywhere, with 25 feet of water, and capable of floating all the navies in the world.

A NEW DRY BATTERY.

The battery represented herewith is said to be more durable than its congeners when not in operation. It consists of a glass vessel, A, in which is placed a carbon electrode, B, and a zinc one, E, which is closely applied to the inner surface of the vessel. In the carbon electrode there is a cavity, C, which may be filled with any kind of depolarizer and then be closed with a stopper, a. The space between the zinc and the carbon, as well as the lower part of the battery vessel, is filled with chopped rye straw, to which adheres bichloride of mercury, and which is quite strongly compressed. This filling extends to within three-quarters of an inch or an inch and a half of the upper



NEW DRY BATTERY (VERTICAL SECTION.)

edge of the vessel, so that a space may be reserved for the reception of the liquid before the reaction is brought about. Upon the filling, moreover, there is placed a cap of hemp, f, designed to prevent the element from emptying when it chances to be inverted. The aperture of the glass, likewise, is closed with a cap of hemp, f, impregnated with a resinous substance, and to which is applied a coating of asphalt cement. Finally, three filling apertures are formed in the cover and are closed with stoppers, c.

After the liquid that is to dissolve the exciting salt of the battery has been introduced, the electric current produced decomposes the bichloride of mercury into chlorine and mercury. The latter amalgamates the zinc, and thereafter prevents it from being attacked when the battery is at rest. As for the chlorine, that combines with the hydrogen of the reaction and forms hydrochloric acid, which, when the bat-

tery is not in operation, dissolves the layer of oxide of zinc, and thus permits of a new attack of the positive electrode over its entire surface.

At rest, the element, however, remains perfectly dry, and so no reaction occurs, and it loses neither its electromotive force nor the force of its current. Thus is explained the longer duration of this new battery.—*La Vie Scientifique.*

Egypt's History Traced from its Plants.

Dr. Schweinfurth made recently before the Egyptian Geographical Society, of Cairo, an address on the origin, or, more exactly, on the history, of cultivated plants in Egypt. He spoke in the first place on the route of the Hamitic race to the Nile valley, and concluded that they first lived in Northern Abyssinia and Southern Nubia as cattle breeders. From this point a nation of herdsmen could easily spread, and they certainly brought the ass with them from Somaliland and Nubia—an animal that had been used by man in Africa from prehistoric ages. The agriculture, literature, and religion of the ancient Egyptians were connected in the widest sense with the cultivation of plants. If all means of historical research are directed toward this subject, we find that of the 1,320 existing plant species of Egypt, of which 150 are useful plants, cultivated in great quantity, only 50 species of the latter were known before the Christian era, of which 40 are pictured on the monuments and the remaining 10 are mentioned in the inscriptions. If we would have a conception of the agriculture of the ancient Egyptians, we must exclude fully two-thirds of the plants cultivated in Egypt to-day. Dr. Schweinfurth distinguishes six epochs, according to the kinds of plants that were introduced into the country, as follows:

Epoch I.—Egypt is covered with grassy plains and forests, inhabited by the primitive African race, now extinct. Part of the cultivated plants belonged to the primitive flora of the Nile valley, whose representatives yet flourish over about 15° of latitude. . . .

Epoch II.—Colonization of Egypt by the Hamitic race. Disappearance of the forests, spread of the pastures, beginning of agriculture.

Epoch III.—Beginning of civilization; development of religion and art. Introduction of frankincense; acclimatization of the sacred trees of Arabia. . . . Toward the end of this epoch the cereals were brought in from the Euphrates valley. Beginning of the cultivation of corn, barley, flax, and the vine.

Epoch IV.—Epoch par excellence of Egyptian agriculture. The three kingdoms and the Lybian-Ethiopian domination.

Epoch V.—Egyptian agriculture spreads to foreign lands and the land receives in return many useful plants from abroad. This epoch includes the Persian, Greek, Roman, Byzantine, and Arabian periods.

Epoch VI.—Decay of Egyptian agriculture, about A. D. 1517. In the latter half of this epoch a regeneration followed and a return to civilization. By means of the Venetians the land received useful plants from America, such as maize, tomatoes, sweet potatoes, pimento, and tobacco. Tropical Africa gave it sesame, rice, sugar cane, and sorghum; Arabia, the sycamore, the fig, the pomegranate; Babylonia, cereals, speltz, corn, barley, etc. . . . and America again the most valuable of all her plants, namely, cotton.—Gaea, Leipsic.

Poisoning by Stale Eggs.

Dr. Cameron has reported the occurrence of vomiting and purging in seventy-four nuns and girl pupils in the boarding school attached to a convent in Limerick, following a dinner at which mutton and a custard composed of eggs, milk, corn flour, and sugar were eaten. The corn flour was suspected to contain arsenic, but analysis showed it to be free from poison of any kind, and to be of good quality. The sugar also proved to be pure. No other constituents of the meal could be obtained. The vomit and the stools were intensely green from the presence of biliary matter, but careful analysis failed to disclose the presence of ordinary poison. The viscera of two patients who had succumbed were also examined, but no poison was found. Ptomaines were found present, but in small quantity. The milk used had been boiled, and the meat was above suspicion. The eggs, however, were not fresh, and one presented a reddish-brown color and was thought to be bad. Some of the custard given to pigs induced severe diarrhoea.—*Dublin Medical Journal.*



NEW ARMY BICYCLE MOUNTED WITH A COLT MACHINE GUN.



NEW ARMY TANDEM BICYCLE.

Discoveries in Pompeii.

The excavations at Pompeii are a continual source of interest. The new system of conservation inaugurated this year makes them doubly important. The last mansion unearthed in the buried city, whose history every one now knows so well (or ought to know), has been made the test of these improved methods instituted by the able and excellent directors. Instead of hiding away the statues, pictures, and other movable objects in the Naples Museum, as has previously been the custom, everything has been left in situ, and many objects sufficiently restored to give an idea of their original appearance. The excavation may be said to have begun in August of 1894; but the weather and lack of funds retarded the work. In November the atrium was reached; but during the winter the work progressed slowly, and the last rooms were not unearthed till June, 1895, the labors of restoration, cleaning, and preservation not being completed till August, exactly a year from the date when the first layer of earth was removed. The main entrance of the house leads into a street still blocked up with rapilli; it consists of an ostium, or passage, on one side of which sat the janitor, his little division being separated by a partition of wood that has disappeared. Facing his seat is a semi-"religious" picture, only suitable to that barbarous period of Europe's history, and which has now very properly been covered over. There were two great doors in this passage. On the outer wall of the house can be seen the remains of the iron hinge and staple that held the bar across the outer door when the house was locked up and the family had deserted it.

The room on the left of the ostium contains two small and ordinary pictures of the stereotyped kind: one represents Leander swimming across the Hellespont to Hero; the other Perseus in his ship deserting Ariadne. . . . On the opposite wall is a picture of Cephalus and his devoted wife Procris, in the form of a wounded deer, the latter being probably also represented by the woman high in the left of the same painting gazing earnestly at her husband. These pictures are let into the wall, and the prepared stucco on which they were painted was probably first laid on a board, to afford greater facility to the artist, and then, when it had dried, was inserted in the space prepared for it in the stucco on the wall's surface; the brown, yellow, or sometimes black band of paint that usually borders them hides the joining line. In the frieze is seen Leda and the swan, a bacchant with a thyrsus and a bacchante with a tamboreen, while two

centaurs appear on the tops of this delicate painting. The garlands painted on the white wall, the architectural studies capped with winged sphinxes, and the cornices of red, white, and blue mouldings above and below the frieze, and separating it from the curve of the arched ceiling, add immensely to the appearance of the colors; and this elaborately painted apartment is the more attractive by the amount of brilliant red cinnabar that has been used in its decoration, and that adds considerably to the splendor of the effect.

Beyond this room, at the side of the atrium, is a little passage leading through the kitchen into the little street named by Fiorelli the Vicolo di Mercurio; in it is a staircase. Near its entrance in the atrium are the remnants of a safe, once built and riveted on a foundation of heavy stones. The iron parts are original, but the case of wood on which they are fastened is modern. Near this safe were found a bronze ring and two seals, both of iron, which are preserved in the house of the Administration of Pompeii preparatory to going to the Naples or the local museum. On one of the latter is "A. VETTI. RES. V.," and from this the house is to be called the "Casa di Vetti." On the opposite side of the atrium is another and larger safe, likewise restored. Both safes bear evidence of having been broken to pieces either by those who had dug their way down into the house, or perhaps by thieves under cover of darkness on the very night itself of the destruction of the city, when the mountain's awakened "voice at intervals" was heard roaring "through those roofless halls," and

Temple and tower went down and left a site:
Chaos of ruins!

A delicate little gold chain, with pearls and a few coins, besides a bronze seal with the name "P. CRVSTI. FAVSTI," were found in the highest level of earth over the rooms on the right of the atrium; but these objects may have belonged to the owner of another house, and not to the proprietor of the safes. Close to the larger of these latter is the entrance to an irregular shaped room, that contains a lararium, or altar. It stands out from the wall about eight inches, and on its sides rise two columns; between them, painted on the back of the niche sunk in the wall, is the usual picture of the two Penates or genii, and a female between them who represents either the Lar or, as some suppose, Vesta; at their feet is the tutelary genius in the form of a serpent, which is the symbol of regeneration, or of new life, accepting the offering of fruit

placed before him on a small altar. The colors are wonderfully fresh, the tints are principally red, brown and yellow.

When the garden in the marble-decked peristylum is again green with shrubs, and its beds continually stocked with gay and sweet-scented flowers, the mansion will assume (except in its protecting roofs) an aspect as if the inhabitants had only just deserted it, and the earthquake had only lately taken place.—H. P. Fitzgerald Marriott, in the English Illustrated Magazine.

A Lighthouse at Cape Hatteras.

Work on the Diamond Shoal lighthouse, off Cape Hatteras, is to be begun next spring. The new plans contemplate an immense structure, built on the screw pile order, with the foundation of the light practically 100 feet beneath the wave surface and protected on all sides by hundreds of tons of riprap to prevent damage from shifting sands. Iron piles will be driven down by hydraulic pressure until a sound footing is secured, and the actual structure for the lightkeepers and materials to maintain the light will be built on the interior of the skeleton to a height of 165 feet above the water. The cost of the structure when completed is estimated at \$1,200,000, and of this sum there is now available \$400,000. Diamond Shoal projects into the sea seven miles off Hatteras, and is covered with from 6 to 20 feet of water. It is marked now only by Hatteras light, standing on shore seven miles from the outer edge, and not discernible in hazy or foggy weather. The proposed light will be on the extreme edge, seven miles from the nearest shore, and visible twenty-three nautical miles. The latest fog apparatus will be provided, and there will be accommodation for three keepers. It will probably take two years to complete the project from the date the work begins. When completed it will be the most notable lighthouse in the world.—Army and Navy Journal.

The Lancet announces that a subscription has been opened in Bristol to provide for the purchase and retention in that city of the celebrated collection of relics belonging to Jenner in connection with his introduction of vaccination. The collection is at present the property of Mr. Frederick Nockler, of Wotton-under-Edge, and was exhibited by him at the Bristol Exhibition in 1893, and since then in London, at each of which places it attracted a considerable amount of attention.

RECENTLY PATENTED INVENTIONS.

Railway Appliances.

CAR FENDER.—Charles A. L. du Quesnay, New Orleans, La. A frame secured to the front end of a car carries an inclined pivoted netted fender, the fender being curved upward at its rear end to form a protecting pillow. A spring-controlled front strand of the fender is adapted to yield inwardly, when a person is caught in the path of the moving car, and when one falls on the fender it is tilted and its front end raised to lift the feet from the ground, the head and shoulders being protected by the pillow.

CAR BRAKE.—George E. Wheeler, Minneapolis, Minn. This is a brake more especially adapted for use on street cars, requiring but little effort on the part of the motorman or gripman, and not interfering with the ordinary brake, which may be left on the car for use in case of accident. The improvement comprises a fixed and a loosely mounted bevel faced wheel on the axle in proximity to each other, and both adapted to be engaged by a conical friction wheel on a shaft connected with a hand lever extending upward through the car platform.

CAR OR VEHICLE DRAUGHT DEVICE.—James H. Turbush, New York City. This improvement provides conveniently attachable supports for the inward and outward thrust of the drawbars, the supports being rigid and constituting travelers upon which the followers may have movement, while relieving the confining strap or tie for the springs from the strain they ordinarily sustain.

CAR DOOR.—Thomas W. Bradman and Harrison Hines, Beardstown, Ill. This is a sliding exterior freight car door, on the upper part of which are hangers adapted to move upon a track, and the door is adapted to be locked in closed position by means of three bolts actuated from a central disk, the bolts being moved outward into suitable keepers at the top and two sides of the door by a crank, when a seal finger may be conveniently applied. The door is easily opened and closed, and is designed to afford effective protection to property in cars on which it is employed.

RAILWAY RAIL NUT LOCK.—Green Smith, Montgomery, West Va. This device has a base plate that may be extended or adjusted longitudinally to bring its bolt apertures into alignment with the rail and fish plate aperture, a ratchet washer having a recessed outer face receiving the adjacent face of the nut to be locked. The ratchet washers having nut receiving recesses, the improvement may be applied to any bolts and nuts now in use on railroads, or the ratchet teeth may be formed directly on the nuts where they are to be supplied with the other parts.

Miscellaneous.

BICYCLE.—Samuel A. Donnelly, Chicago, Ill. This is an improvement on a formerly patented invention of the same inventor, and the box or casing for the bearings consists of two parts, each having a radial

lug and opposite turned lip receiving and engaging the lip of the other part. An improved diamond frame also has upper and lower bifurcated truss members, each formed of a single rod doubled at its middle, the head having arms with sockets to receive the doubled ends of the members, while the saddle block, at the angle of the upper member, has angular grooves to receive the member, there being straight transverse stay rods whose upper ends enter sockets in the block, and a bolt which clamps the block to the parts in contact with it.

PROPULSION OF VESSELS.—James H. Meacham, Petersburg, Va. An endless band propeller, patented by this inventor, comprises sprocket wheels at some distance apart on each side of the vessel, the sprocket chains or bands of steel, copper, or other metal with suitable tenacity and flexibility, carrying the buckets or paddles. To avoid undue strain upon the bands, the wheels are polygonal, but are rounded instead of presenting true angles, and the paddles may be feathered.

VENDING MACHINE.—Charles W. Goldsmith, New York City. This is a coin-controlled apparatus especially adapted for delivering bulky packages, and has two pairs of oppositely arranged supports movable toward and from each other, and capable of supporting alternately crossed elongated packages, each pair of supports alternately dropping a single package for delivery. The coinway is of the usual construction, and coins cannot be inserted when the merchandise has been exhausted.

DENTAL FILLINGS.—James W. Dennis, Cincinnati, Ohio. An absorbent of mercury during the process of filling teeth with amalgam has been provided by this inventor, consisting of rubber saturated with comminuted metal having an affinity for amalgam, the material thus formed being apertured, whereby a maximum of metallic surface will be presented to the amalgam filling. The material may be made into pads or plugs of a size or shape to enter a tooth cavity, and thus facilitate making non-shrinkable metallic fillings by absorbing the surplus or loose amalgam.

LOCK.—Lewis O. Wilson, Charleston, West Va. This is an improvement in knob locks, providing a lock more easily applied to doors by simply boring a hole instead of mortising in its edge, the lock being capable of being unlocked only from the inside. The lock has a slotted cylindrical barrel in which is a spring-acting bolt with a hole, in which is arranged a retracting bar whose end extends into a slot in a frame plate on the outside of the door. A knob shaft with crank also receives the end of the retracting bar.

PHOTOGRAPH PRINTING FRAMES.—Allen E. Willis, Oxford, N. C. An automatic register for keeping tally of the number of prints in the frame has been devised by this inventor, the improvement permitting the examining of prints without disturbing the register and the proper setting of the register in case a print is spoiled. A toothed bar is mounted to slide in guideways on the print-holding back, a pawl engaging the bar, while a spring-pressed cam arm connected with the pawl is adapted to be engaged by the frame.

HAME FASTENER.—Joel P. McAhee, Erie, Ala. A connecting bar pivotally connected with

one of the hame sections, according to this improvement, has a latch extension and head, while a keeper pivotally connected with the opposing section has recesses to receive the latch extension and a locking device. The improvement is especially adapted for hames having iron bands, the fastening device facilitating the connecting of the two members of the hames at the bottom around the collar and the necessary adjustment to fit any size of collar.

SLEIGH BRAKE.—Adelbert Mecham, Edinburg, North Dakota. This is an improvement on a formerly patented invention of the same inventor, providing means whereby the brakes may be strengthened and the drag bar readily lifted from the ground when it is necessary to back the sleigh. A brake bar is employed for each runner, terminating in a shoe as wide and strong as desired, and the brakes are automatically applied when the team backs, as in going down hill, the braking engagement being removed when the team pulls forwardly. In going up hill the drag bar enters the surface when the team stops.

HOSE NOZZLE.—John M. and Albert W. Dosch, Kittanning, Pa. This nozzle is forked, one of the members carrying an adjustable yoke in which is a cone, there being a three-way cock in the nozzle at the junction of its members, the nozzle being adapted for either garden or fire purposes, and providing for bringing into action instantly either a solid or a spray stream. The spray is thrown out in conical form, covering a large area, and may be conveniently made either coarse or fine.

POCKET KNIFE.—William Schmachtenberg, New York City. This is a knife in which the blades may be opened without using the finger nails, a lever fulcrumed inside the handle engaging the knife blade near its fulcrum end to swing the blade to partly open position, and this lever being moved by the shank of a button on the outside of the handle. There is a similar lever for each blade in opposite sides of the handle, a spring in the back of the knife holding the blade open or closed as usual.

SELF-CLOSING LACING HOOK.—La Roy S. Upton, Governor's Island, N. Y. This is an article adapted especially for use on shoes or gloves, and the hook is composed of two parts, a fixed base seated in the leather and having at one side a vertical arm or hook, another movable part being a lower swinging arm pivoted to the base arm and normally closing the open side of the hook. By drawing the string outwardly or laterally against the movable arm it is opened and the string disengaged, while by passing the string laterally between the open arms and drawing it taut, its re-engagement is automatically effected.

Designs.

SCARF RACK.—Homer E. Eyman, Lancaster, Ohio. This rack has convergent ornamental holders adapted to retain a number of scarfs, rising from a circular base and presenting convergent openings.

TABLE CLOTH FASTENER.—Theodore R. Desjardins, Attleborough, Mass. This is a corner

piece with scalloped shell-like top portion and two spring side and bottom members for holding a table cloth in position on a table.

INSCRIPTION PLATE.—Edward K. Jones, Portland, Oregon. This is a plate to be applied to sidewalks at street corners, to receive street names, advertisements, etc., the plate having a straight back edge and a wave-like curved front edge.

NOTE.—Copies of any of the above patents will be furnished by Munn & Co., for 25 cents each. Please send name of the patentee, title of invention, and date of this paper.

NEW BOOKS AND PUBLICATIONS.

ELEMENTS OF MODERN CHEMISTRY. By Charles Adolphe Wurtz. Fifth American edition. Revised and enlarged by Win. H. Greene, M.D., and Harry F. Keller, Ph.S. (Strasburg). With portrait of the author and numerous illustrations. Philadelphia and London: J. B. Lippincott Company. 1895. Pp. 808. Price \$2.50.

Wurtz's modern chemistry is so well known and enjoys so wide a popularity that it really requires no review. Sixteen years ago the first translation was given to the American public by one of the editors of the present work. The book is now thoroughly re-edited and presents a very acceptable treatise on the science, including, we are glad to see, both argon and helium.

PRACTICAL PROOFS OF CHEMICAL LAWS. A Course of Experiments upon the Combining Proportions of the Chemical Elements. By Vaughan Cornish. London and New York: Longmans, Green & Company. 1895. Pp. xii, 92. Price 75 cents. No index.

It is an open question how far the study of chemistry can be treated inductively. It certainly seems that the student has a right to accept the work of the world of chemists, and that he should not be obliged to obtain for himself proof of many known chemical laws. But this little manual really gives an inductive treatment of a small portion of chemistry, only enough to show how the laws can be and have been proved. We note in the preface that the work has been done by pupils from twelve to eighteen years of age, spending one and a half hours at a time in the laboratory, with two weekly attendances. We certainly think the amount of inductive research given in this manual could properly and advantageously be performed by all chemical students. The work is destitute of an index.

AMERICAN ANNUAL OF PHOTOGRAPHY AND PHOTOGRAPHIC TIMES ALMANAC FOR 1896. Edited by Walter E. Woodbury. New York: Scovill & Adams Company. Pp. 370. Price 75 cents.

There can be no question but that this annual has come to occupy a leading position among publications of its character in the United States. The volume for 1896