

**Work of a Scientific Expedition in the Gallapagos Archipelago.**

Dr. W. H. Harris, of Augusta, Maine, recently received an interesting letter from his brother Charles M. Harris, who is now at the head of the Rothschild expedition to the Gallapagos Archipelago after flora and fauna. Mr. Harris sailed from New York on March 20, for Panama, with a party of five. At Panama they expected to charter a schooner for the trip, but yellow fever was contracted, from which three of the party died. Mr. Harris proceeded to San Francisco, reorganized the party, and sailed on June 21 in the schooner Lila and Mattie, arriving at the islands after a forty-day passage. So far as is known, no such collection as he has gathered has been made since that of Darwin, in 1836.

"As to our success, I think, barring accident, it is assured," says the letter. "We have now on board thirty live tortoises of two species, and two prepared skins. About two thousand birds have been saved so far. Besides the tortoises and birds, we have a large number of two species of iguanas, and numbers of lizards, snakes, birds' eggs, turtles, etc. We have covered about half our ground, having visited the following islands in the order named: Culpeper, Wenman, Abingdon, Bindloe, Indefatigable, Duncan, Jervis, James and Chatham. From here we will go to Hood, Charles, Brattle, Albemarle, Marlborough, Tower and Cocos, and then start for San Francisco, which we expect to reach about the middle of March next. We have so far succeeded in getting about all the species of birds recorded for the different islands visited, and undoubtedly some new ones.

"On James Island is an enormous volcano in a state of great activity. This is the first active volcano on the island since 1855. Twenty-nine of our tortoises were taken from Duncan Island, where it was supposed they were extinct. They were at the top of the island and in the bottom of an immense crater."

**AN EFFICIENT FENCE POST DRIVER.**

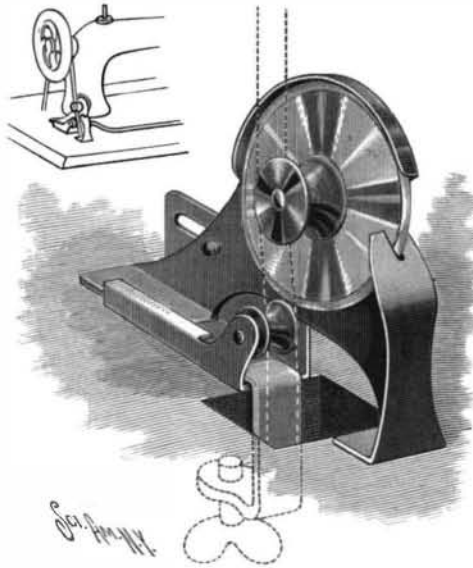
A fence post driver, simple in construction and effective in operation, has been patented by Lincoln H. Ketcham, of Corning, Ohio. In Mr. Ketcham's machine, of which we present a perspective view, a hinged mast is mounted upon a portable truck-frame and is adapted to be raised in a vertical position, or lowered to lie lengthwise of the truck. Drums and guy ropes are provided for raising and lowering the mast to the desired position, and a plumb bob located within a longitudinal groove in the mast enables the operator to adjust the position of the mast and to drive his posts vertically, notwithstanding the roughness or unevenness of the soil. A heavy hammer-block slides vertically on the mast and is operated by a pair of tongs carried by a bracket sliding above the hammer. A device at the upper ends of the tong members, consisting of a link pivoted to one of the members and striding the other, a pivoted wedge carried by the link, and a cord attached to the link, enables the operator to control the tongs, opening and closing them at pleasure, and causing them to grasp or release the lifting eye of the hammer.

In operation the mast is elevated, the hoisting rope is attached to a horse, and the hammer lifted half way up the mast. In this position a transversely movable finger controlled by a pivoted operating lever is made to slide through an orifice in the rear face of the mast and located in the longitudinal groove, thus holding the hammer in a raised position. A pointed post is now put in place, and the finger withdrawn. The hammer glides down and starts the post in the ground. The hammer is now raised to its utmost height until the previously mentioned pivoted wedge touches the head block of the mast, thus acting on the tong members and releasing the hammer. By backing the horse the tongs are lowered until they again reach and engage the lifting eye on the hammer. The operation is repeated until the post has been driven to the required depth. The machine is now moved forward in the line in which the posts are to be driven until an adjustable bar or gage arm which extends rearwardly from the truck comes into contact with the last driven post.

The distance between the posts is thus automatically regulated, and the machine is now in position for driving another post. With this machine posts up to eight feet in length may be rapidly and effectively driven.

**A NOVEL RIPPING ATTACHMENT FOR SEWING MACHINES.**

A ripping device of simple and practical form, to be used in connection with sewing machines, has been re-



**TALLEN & CROFT'S RIPPING ATTACHMENT FOR SEWING MACHINES.**

cently patented by Maurice Talen and George H. Croft, of Geneseo, Illinois. As shown by our engraving, the device is intended for attachment to the table of a sewing machine at the point where the belt passes upward through the table. The ripping is done by a rapidly rotating cutting disk driven by friction pulleys in connection with the driving belt of the machine. The cutting disk and its pulley revolve on a stud projecting from a vertical supporting plate which slides upon a base clamped to the table. At its upper edge the plate rounds over to form a guard-flange for the disk. To expose a section of the cutting disk, the plate is recessed at one edge, and a slitted guide flange at the recessed portion receives the disk and keeps the work in position. The base upon which the plate is mounted is provided with a shorter and a longer upwardly extending flange. The shorter flange is situated on the same side as the pulley of the cutting disk and in it a roller is journaled coacting with the pulley of the cut-

ting disk. The longer flange is horizontally slotted to receive a set screw which works into the disk-carrying plate, holding the latter in adjusted position. In using the device, the clamping bracket is made fast to the table, with the belt running between the two pulleys, as indicated by dotted lines in the cut. The relative angular position of the two pulleys may be varied by shifting the disk-plate along its base and fastening it in the desired position by the set screw. By this

**Are Canned Goods Fit to Use?**

The so-called canning industry has made such strides all over the world, and notably in America, that it is not surprising that this method of preserving foods should form the subject of inquiry at the hands of the bacteriologist. When we learn that in Baltimore alone 1,250,000 bushels of oysters are annually canned and that the United States is responsible for 120,000,000 cans of tomatoes, and of other articles, such as fish of various kinds, and fruits, etc., in similarly large numbers, it is remarkable that Messrs. Prescott's and Underwood's paper, "Micro-organisms and sterilizing processes in the canning industry," published in The Technology Quarterly, should be the first contribution to so important a subject. These gentlemen have specially studied the bacterial flora of canned clams and lobsters, which have broken down, or, in other words, been imperfectly preserved. In every case where "spoiling" had occurred, bacteria were present in large numbers, while in no instance were any discovered in sound cans. Sometimes only a single variety, or a pure culture of a particular microbe, was found in unsound cans, but usually the latter contained a mixture of several species. Nine different bacteria were selected and isolated for subsequent study, both as regards their macroscopic and microscopic appearances; two of these were cocci, the remainder bacilli forms. These bacteria were afterward inoculated into the contents of sound cans, with the result that the latter invariably decomposed, while experiments were also made to test the method of applying heat to canned articles which would most effectually destroy the chances of these micro-organisms surviving and spoiling the contents. An account of the numerous experiments carried out by the authors on this highly important commercial side of the inquiry will be published later; meanwhile their investigations go to show that, given a proper control of the temperature, it is possible to preserve clams and lobsters with absolute certainty, and in a more perfect condition than has hitherto been possible.

**Thirty Miles for an Acorn.**

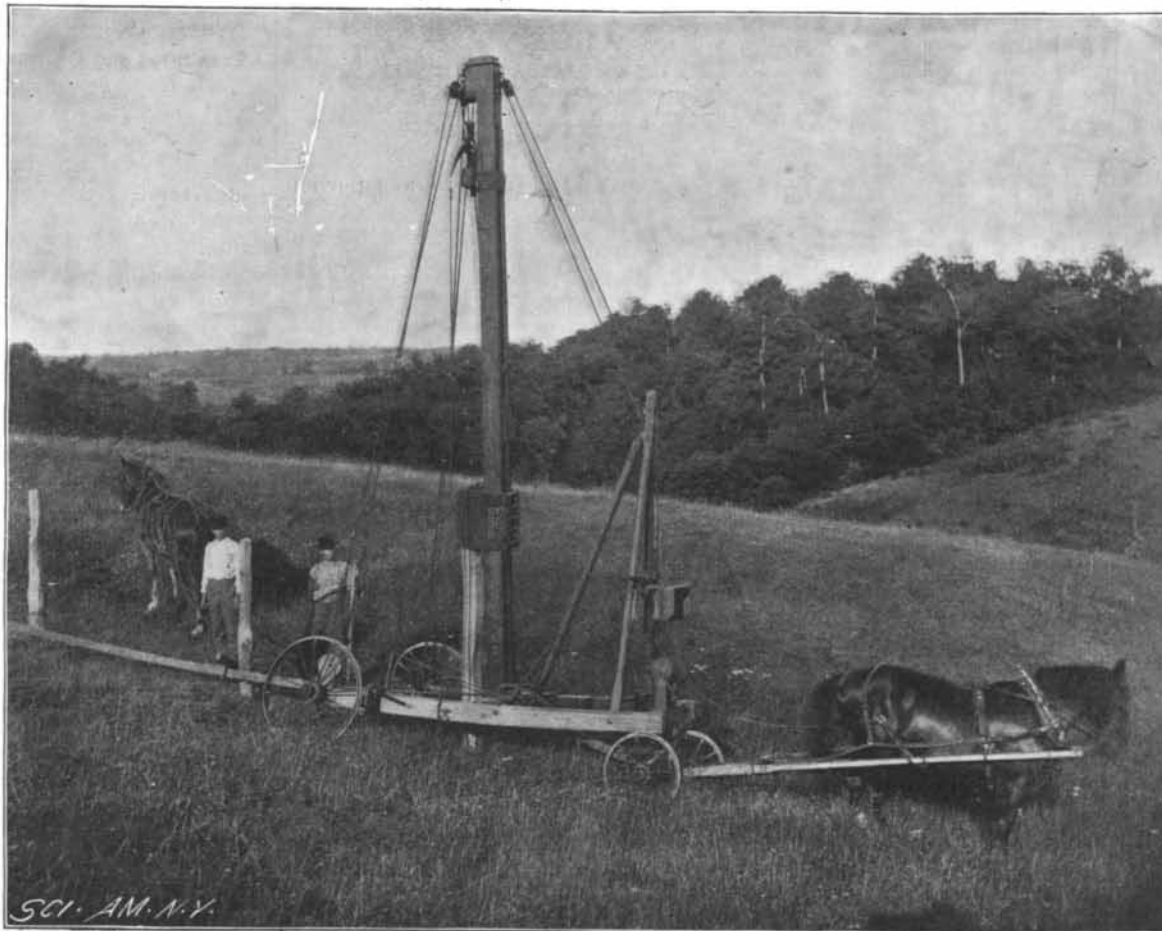
Down in Mexico there lives a woodpecker who stores his nuts and acorns in the hollow stalks of the yuccas and magueys. These hollow stalks are separated by joints into several cavities, and the sagacious bird has somehow found this out, and bores a hole at the upper end of each joint, and another at the lower, through which to extract the acorns when wanted. Then it fills up the stalks solidly and leaves its stores there until needed, safe from the depredations of any other thievish bird or four-footed animal.

The first place in which this curious habit was observed was on a hill in the midst of a desert. The hill was covered with yuccas and magueys, but the nearest oak trees were thirty miles away, and so, it was calculated, these industrious birds had to make a flight of sixty miles for each acorn stowed thus in the stalks!

An observer of birds remarks: "There are several strange features to be noticed in these facts: the provident instinct which prompts this bird to lay by stores of provisions for the winter, the great distance traversed to collect a kind of food so unusual for its race, and its seeking in a place so remote from its natural abode a storehouse so remarkable."

Can instinct alone teach, or have experience and reason taught these birds that, far better than the bark of trees or crevices in rocks or any other hiding place are these hidden cavities they make for themselves with the hollow stems of distant plants?

This we cannot answer. But we do know that one of the most remarkable birds in our country is this California woodpecker, and that he is well entitled to his Mexican name of el carpintero—the carpenter bird.—St. Nicholas.



**POST DRIVER IN OPERATION.**

ting disk. The longer flange is horizontally slotted to receive a set screw which works into the disk-carrying plate, holding the latter in adjusted position. In using the device, the clamping bracket is made fast to the table, with the belt running between the two pulleys, as indicated by dotted lines in the cut. The relative angular position of the two pulleys may be varied by shifting the disk-plate along its base and fastening it in the desired position by the set screw. By this

## Science Notes.

A French ironclad launched a few days ago was christened the Lavoisier.

Lake Huron divers have accomplished the feat of recovering a cargo of 600 tons of copper from a wreck submerged to a depth of 160 feet, where it had been for thirty-two years.

Cambridge University has sent out an expedition to Torres Straits, between New Guinea and Australia, to study the anthropology of the natives. Seven professors are in the party: two will study native psychology; one, who carries a phonograph, their music; another their decorative art. They have a cinematograph to record native dances and ceremonies. The expedition may provide a valuable contribution to native gastronomy.

M. L. Decombe, of the Paris Academy of Sciences, now enjoys the record for rapid photography, having been successful in photographing the period of the Hertzian oscillation, which occupied less than the five-millionth of a second. A rapidly rotating mirror was employed, and the explosive spark reflected from it through a collimating lens of very short focus, so as to present the spark in the focal plane of the lens. Previous to this Prof. Boys' photographs of bullets in their flight was the best achievement in the photography of rapidly moving objects.

Dr. Marpmann, of Leipzig, has recently published the results of the microscopical examination of sixty-seven samples of ink used in schools. Most of them were gall inks, and contained saprophytes, bacteria and micrococci. Nigrosin ink, taken from a freshly opened bottle, was found to contain both saprophytes and bacteria. Red and blue inks also yielded numerous bacteria. In two instances Dr. Marpmann succeeded in cultivating from nigrosin ink a bacillus which proved fatal to mice within four days. The presence of these pathogenic organisms in ink accounts for the nasty sores which sometimes result from the scratch of a pen.

Science announces that Prof. W. A. Rogers died at Waterville, Maine, on March 1, aged sixty-one years. He was assistant professor of astronomy in the observatory of Harvard University from 1875 until 1886, when he accepted a call to the professorship of physics and astronomy at Colby University. He had expected to enter on a professorship at Alfred University, N. Y., on April 1. Prof. Rogers was a member of the United States National Academy and a past vice-president of the American Association for the Advancement of Science. He made important contributions to astronomy and physics, especially to the technique of measurement.

An argillaceous earth named "tfol," which contains free gelatinous silica, is largely used in Northern Africa by the Arabs as a substitute for soap in washing linen. Lahache finds that it has great capabilities of absorbing oil, one part of this substance completely absorbing five parts of heavy tar oil. When the compound is mixed with water a perfect emulsion is formed, which does not adhere to the sides of the vessel. It is proposed to employ this earth for the purpose of emulsifying heavy tar oil for disinfecting purposes. For this purpose the "tfol" is first mixed with an equal weight of water and then intimately incorporated with sufficient heavy tar oil to make a paste.—*Journ. de Pharm.*

Dr. Charles Wardell Stiles, of the United States Department of Agriculture, has been appointed attaché to the United States Embassy in Berlin, says Science. Dr. Stiles' duty will be to keep the Agricultural Department informed on important discoveries and other matters of interest to agricultural science, to defend American meats, fruits and other exports against unjust discrimination, and to advise the Secretary of Agriculture from time to time concerning the purity of the food products that are shipped from Germany to the United States. It is said that the appointment of Dr. Stiles will probably be followed by other similar appointments, and it consequently represents an important advance in the application of scientific principles to diplomatic and commercial affairs.

The Meteorologische Zeitschrift, a German scientific publication, contains a treatise by Dr. F. Maurer on the regular periodical repetition of cold and warm years. During certain intervals of time, extending as a rule to about fifteen years, there is a recognized change of warm and cold periods. The warm periods, he says, do not simply include a series of summers of extraordinary warmth, but also a series of mild winters. Similarly, during the cycle of a cold period, not only are the winters more than ordinarily severe, but the summers are far below the average heat. Dr. Maurer affirms that we can predict with tolerable accuracy the time when the next cycle of warm periods will occur. It is due, he calculates, somewhere about the turning point between the two centuries; and he thinks it probable, from the data obtainable, that the early years of the next century will be distinguished by a series of hot, or rather extremely hot, summers and a series of exceptionally mild winters.

## The Metric System Legalized in Great Britain.

In its issue of December 25, 1897, The London Times says a report by the Board of Trade on their proceedings and business under the weights and measures acts, 1878 and 1889, has just been issued as a parliamentary paper, in which it is stated that, during the past session, an act (60 and 61 Victoria, chapter 46) has been passed to legalize the use in trade of weights and measures of the metric system. A table of new equivalents of metric weights and measures, in terms of the imperial weights and measures, is given in the report. This table of equivalents is based on comparisons made by the Comité International des Poids et Mesures, Paris, and the Standards Department, which have been completed during the year.

## SUGAR PLANTER'S HOE.

A sugar planter's hoe, designed for use on hard ground to clean out cane furrows, is presented in the accompanying engraving. The hoe comprises a blade of increasing width from top toward the bottom, the side edges from the rear to a point terminating at a distance short of the front edge presenting a series of elongated teeth. The blade in front of the teeth is plain and un-toothed, the untoothed side portions being approximately in line with the teeth. In the center toward the upper edge is an orifice surrounded by a flange or neck in which a handle may be inserted. After cutting the weeds, they are raked together or between the rows,



AN IMPROVED SUGAR PLANTER'S HOE.

a turn of the wrist sufficing to bring the rake portion into position.

The hoe has been designed by Frank H. Foster, of Wahiawa, Koloa, Kawai, Hawaiian Islands.

## The Mosquito—A Nuisance Easily Abated.

The summer months will soon be upon us, and it behooves us to equip ourselves in a manner to meet the discomforts of the season with patience and grace, and in so far as we can escape them.

One of the most annoying features of the latter months of the summer, along the banks of rivers and on the sea coast, is the mosquito, and anything helping us to abate the nuisance is important. Apropos to the subject, says The Monthly Retrospect, a recent number of The Public Health Journal observes:

"Two and one-half hours are required for a mosquito to develop from its first stage, a speck resembling cholera bacteria, to its active and venomous maturity. The insect in all its phases may be instantly killed by contact with minute quantities of permanganate of potash. It is claimed that one part of this substance in 1,500 of solution distributed in mosquito marshes will render the development of larvæ impossible; that a handful of permanganate will oxidize a ten-acre swamp, kill its embryo insects and keep it free from organic matter for thirty days at a cost of 25 cents; that with care a whole State may be kept free of insect pests at a small cost. An efficacious method is to scatter a few crystals widely apart. A single pinch of permanganate has killed all the germs in a thousand-gallon tank."

The belief has been generally held that the filling in of the meadows with the ashes from near-by cities would prevent the development of these pests, and the providing of a place for the ashes would be another good. It is doubtless true that the potash which would leach from ashes will—like a solution of the permanganate of potash—render the development of insect life impossible.

## Miscellaneous Notes and Receipts.

**Weighting Silk.**—For the weighting of silk Renard recommends the following process in L'Industrie Textile: Pass through a chloride of zinc solution and wash. Then pass in the cold or warm through a solution of phosphates, silicates or tungstates of the alkalis, and finally, after another washing, in cold or warm solutions of such metallic salts as form insoluble phosphates, silicates or tungstates.

**To Produce Stuccoed Flowers from Plaster of Paris.**—Take natural flowers and coat the lower side of their petals and stamens with paraffine or with a mixture of glue, gypsum and lime, which is applied lightly. Very fine parts of the flower, such as stamens, etc., may be previously supported by special attachments of textures, wire, etc. After the drying of the coating, the whole is covered with shellac solution or with a mixture of glue, gypsum, lime with lead acetate, oil, mucilage, glycerine, colophony, etc. If desired, the surface may now be painted with bronzes in various shades. Such flowers are now much employed in the form of festoons for decorating walls, ceilings, lusters, etc., and are very handsome.—*Der Dekorationsmaler.*

**Bleaching Shellac.**—Dissolve 1 part of shellac in 2 parts of absolute alcohol and let stand a few days in a warm place. Then prepare a mixture of 1 part of chloride of lime (20 per cent) in 3 parts of water, filter through linen and wash the residuum with  $\frac{1}{2}$  part of water. The filtered and the wash water are united and mixed with an aqueous potash solution (33 per cent) until no more precipitate falls down. The filtrate of this process is stirred into the warm solution of shellac, and after half an hour sufficient hydrochloric acid is added to produce a decided acid reaction, whereupon the shellac settles as a perfectly white mass. Same is taken out, washed in boiling water until this no longer runs off milky, and dried in the air. The alcohol can also be recovered from the solution.—*Färben Zeitung.*

**Coating for Metallic Reservoirs.**—According to the Ges. Kohl. Ind., a French process consists in mixing intimately barium sulphate with albumen and using the paste received for painting the metallic surfaces to be protected. The tank must first be cleaned with a soda lye, then it is painted with a priming coat, which is dried by the application of heat until hard. Then the reservoir is furnished with a second coating, which is also dried; the coat is exposed to the action of steam or boiling water, which causes the white of egg to coagulate. Finally, the whole is once more moistened with albumen, and steam or boiling water is used again. This paint is extremely resisting and durable against mechanical as well as chemical agents. It adheres so firmly that it can only be scratched off by means of sharp instruments. Finally, this coating does not crack or scale off, even if the reservoir receives knocks and dents.

**Treatment and Decoration of Furniture, Woodenware, etc.**—L. G. Andes gives, in the Zeitschrift für Drechsler, E. and H., some directions on this subject. In order to produce colored decorations on wood, the wooden plates are treated with hydrochloric acid, which renders the surface of the wood porous. Now the figures are pressed in with an engraved plate and strong pressure, and the whole plate is polished off smooth with pumice stone. When the wooden surface is subsequently coated with a color solution, a handsome design will result, because the pressed and denser places take up less color, thus showing a lighter tone of the same color than the places not pressed.

For preserving varnished and stained woodenware, the following process is recommended: The lye, prepared from 3 parts potash, 1 part calcined tartar and 24 parts water, and thinned with 48 parts water, is spread out uniformly, to prevent the formation of spots. After three to four minutes' action, the lye will have dissolved the dirt, and rinsing off with water should follow. It is also advisable to clean varnished articles with olive oil. Flour, hair powder or prepared white hartshorn is dusted on the applied olive oil, and the olive oil is rubbed off again with a soft rag. By this means not only the dust and spots are removed, but the gloss of the furniture is restored at the same time.

The following process is well adapted for the production of black, faintly lustrous polished surfaces: Plane the surface smooth and clean it nicely, stain with a strong decoction of logwood chips, and after this coating is half dry, finish staining with iron liquor (iron pyrolignite); allow the resulting black coloring to dry well and rub down the raised grain carefully. If light places appear in consequence of the rubbing, stain them black again. After the last rubbing with pumice stone and oil, polish the surface with pale shellac polish in which some aniline black has been dissolved, or dissolve the aniline black in the alcohol necessary for rubbing down, and finish coloring in this manner. When the polished surface has become dry, rub it down with burnt pumice stone and water, using a piece of hat felt, remove the mass entirely, and give the surface a dull luster by treatment with wax salve.—*Dingler's Journal.*