Correspondence.

Insects as Food.

To the Editor of the SCIENTIFIC AMERICAN:

The enclosed copy of a letter which I have just received from Mr. Claude Fuller, Government Entomologist of Natal, Pietermaritzburg, Natal, contains comments upon a recent publication from me published in your journal of February 3, 1900, page 71.

Yours most truly,

L. O. HOWARD,

Entomologist, United States Department of Agriculture.

DEPARTMENT OF AGRICULTURE, NATAL.
OFFICE OF THE GOVERNMENT ENTOMOLOGIST.
PIETERMARITZBURG, March 13, 1900.

DEAR MR. HOWARD: I have been much interested by an excerpt from your paper on the "Economic Status of Insects as a Class," which has just caught my eye in the SCIENTIFIC AMERICAN. My old friend Richard Helms also published some notes on "Bugong Moths." He says that "the natives entered the crevices with burning bushes, the heat and smoke from which stifled the moths so that they fell into nets and skins spread upon the ground to catch them. Afterward they were cooked upon a carefully prepared bed of hot ashes and then eaten with great gusto." He adds that the natives foregathered from great distances by the end of each year to participate in this feast and that they throve and waxed very fat. As a school youngster, in N. S. W., I often enjoyed the acid drop exuded by a large bush ant when captured; that said drop originated from the tip of the abdomen made no difference to the relish with which it was absorbed. On arriving here last September I was first struck with the numbers of flying termites around the lamps of the city each night, and then by the number of natives and small white fry gathering them. I have since learned that they are excellent bait for fish and that the natives eat them both cooked and raw. They are toasted in the fire spitted on a pointed stick. I have also made several acquaintances who have tried them fried in a pan with butter. They tell me it is an acquired taste. I can quite believe it, all tropical tastes are acquired. Locusts are eaten by the natives in Basutoland. I am told they make cakes of them—how, I do not know—using only the heads and thorax. Quite recently information was received at this office that the Basutos were eating locusts killed by fungus, accompanied by solicitous inquiries from the Commissioner concerning the possible effects of such a diet.

Most faithfully yours,

CLAUDE FULLER.

Austin Dam.

To the Editor of the SCIENTIFIC AMERICAN:

It is not necessary to suppose that the destruction of the Austin Dam was caused by washing away of the rock at its toe. It failed because it had not width and mass enough.

Before the description of how it failed came here, a prediction was made by me that it had failed by sliding, and this turned out to be correct.

This dam was a submerged weir, having a pressure on its upper side from the hydraulic head due to the difference of level of water above and below it. Added to this was the current running at the rate of seven or eight miles an hour.

To resist this was the weight of the dam. But this must be treated as a submerged body, and the weight of the water displaced be deducted. The resistance to the sliding of rubble masonry is given by Trautwine at 0·47 of the pressure. A short calculation will show that, under the circumstances of 11 feet of water passing over its crest, this dam must have failed. Had it been built a monolith of concrete, and its base carried down 8 or 10 feet into the rock, its chances would have been much better.

THOMAS C. CLARKE,
Mem. Am. Soc., C. E.

New York, April 30, 1900.

[Our correspondent has misread our article on the failure of the Austin Dam, if he understands us to imply that disintegration of the river bed at the toe of the dam was the only, or even the chief, cause of the failure. Resistance to sliding in dams is secured either (1) by building the dam in the form of an arch, convex to the impounded water, and transferring the horizontal thrust to abutments on the banks of the river, or sides of the canyon; (2) by providing sufficient base and mass in a straight dam to resist overturning and to insure that the frictional resistance to displacement between the dam and the river bed shall amply exceed the horizontal thrust; (3) by extending the foundation masonry down into parallel trenches cut in the river bed, and depending upon the sheering strength of the masonry in the trenches to assist the frictional resistance due to the weight.

The last named method was followed in the present case, four trenches appearing in the first design for the dam, although but two were actually built. Of these the one at the toe was the most effective, and if the rock at the toe was cut away by the flood waters, it may well be that the frictional resistance, none too great, as Mr. Clarke points out, at any time, was immediately overcome, and displacement of the whole mass occurred.—ED.]

The Current Supplement.

The current SUPPLEMENT, No. 1271, has a large number of articles of unusual interest. "The Manufacture of the Pneumatic Tire" describes the intricate operations in great detail. "Motor Vehicles for Heavy Traffic" gives sectional views and details of this important means of transporting heavy goods. "Useful Boring and Tapping Machine" describes a most ingenious German machine. "Rails" is a valuable article dealing with the subject in an authoritative manner. "Paints and Varnishes" is by Prof. A. H. Sabin. "Hypnotism in Medicine" is a most interesting article. "The Gold Deposits of Cape Nome" is by Charles G. Yale, statistician of the United States Mint, San Francisco.

Contents.

(Illustrated articles are marked with an asterisk.)

RECENTLY PATENTED INVENTIONS.

Agricultural Implements.

COMBINED LAND-ROLLER, STALK-CHOPPER AND CLOD-CRUSHER.—JOHN K. GOODMAN, Mount Ulla, N. C. The machine is particularly adapted for cutting corn and cotton stalks and dry weeds, either in rows or broadcast, by passing over them and pressing them down. For breaking clods and rolling land the machine is also useful. In the ends of a drum circular frames are fitted, the drum and frames having coincident radial holes. The drum is also provided with holes intermediate of its ends. A series of detachable knives, each have at the ends shouldered bolts provided with threaded shanks, and at the middle shouldered studs having smooth shanks. The studs are left free so that the knives are held in place; and the studs support the middle portions of the knives, although adapted for instant detachment along with the knives when the bolt-nuts are removed.

APPARATUS FOR OPERATING HAY-STACKERS OR THE LIKE.—JESSE H. STICE, Allerton, Iowa. This invention is concerned chiefly with the provision of simple and effective means for raising the derrick. These means comprise a drum, having a pinion and a ratchet-wheel, and a brake-wheel journaled with respect to the drum. A pawl engages the ratchet-wheel and a brake, the brake-wheel. A sweep is provided, operating a master-wheel meshed with the drum-pinion and provided with a mutilated portion so as to permit the automatic return of the drum under the control of the brake.

CORN-PLANTER.—ISAAC B. ULLOM, Claysville, Penn. By means of this planter corn, pumpkin seed and fertilizer can be discharged from the seed-box simultaneously or independently, or in any desired combination. The seed-box is provided with compartments containing the various kinds of seed, each compartment having an independent outlet. A ready means is provided for throwing the actuating mechanism of the drop-slide out of gear with the slide.

TRANSPLANTER.—PETER S. HOLUM, De Forest, Wis. This machine is devised for transplanting tobacco, cabbage, or other plants, and is constructed in a most simple and durable manner. The transplanter is wheel-supported, and so constructed that the plants to be transported can be placed in position on the machine and held in position until required. The action of the machine is automatic, to the extent that the plants are taken from the carrying device provided for them, and set in the ground and watered without the aid of an attendant. The entire mechanism is under the complete control of the driver.

Mechanical Devices.

AUTOMATIC CANAL-LOCK GATE.—T. T. STODDART, Ottawa, Canada. The inventor states that his invention includes simple mechanism, quick and sure in its movements, operated with a minimum expenditure of power. The power in question is derived from air, water, and gravity. The gate is hollow and oscillates in a horizontal plane on its horizontal edge, on a hollow shaft journaled in the bottom of the side walls and connected with the head water and the lower water. A three-way wicket connects the feed and discharge pipes with the axle of the gate and can be operated to lower the gate into the desired position. A special arrangement is provided for emptying the lower or water gates.

MOTOR-VEHICLE.—EDWIN S. SUTCH, 439 Lemont Street, Roxboro, Philadelphia, Penn. In this motor-vehicle, the means for guiding, for varying the speed, for reversing, and for applying the brakes are all operated by a single handle, so that even a one-armed man can run the carriage. The handle in question, as well as its shaft, has a rectilinearly and longitudinally sliding motion, and also a rotary motion. The shaft is detached from its bearing by the sliding motion. The rotary motion is transmitted to the driving-gears. The shaft also has a horizontally-swinging motion which is transmitted to the steering-gear, and a vertically-swinging motion which is transmitted to the brakes.

PAPER-BOX MACHINE.—JOSEPH T. CRAW, Jersey City, N. J. The object of the invention is to provide a machine which will open the completed blanks even after they have been passed through a printing-press or subjected to great pressure, and by automatically reversing the folding of the box blanks or forms, deliver them in such condition that they can be duly sealed at their ends and set up to receive material.

FIRE-ESCAPE.—CORINNE DUFOUR, Savannah, Ga. The fire-escape comprises a number of balconies, arranged one above the other on the face of a building and provided each with guideways. The guideways extend downwardly and outwardly, so that the uppermost balcony on sliding down its guideway, alights on the next balcony below in step form. Counterbalancing weights are provided for each of the balconies, so that a balcony automatically rises after the person has stepped to the balcony below.

MERRY-GO-ROUND.—WILLIAM JOHNSON, Coney Island, Brooklyn, New York city. The machine is an improvement on such merry-go-rounds which employ crank-arms for seats. The improvements have been so devised that, as the shafts carrying the crank-arms revolve, the crank-arms will descend as regularly as they ascend, thus avoiding the quick return and discomfort usual to this form of machine. The gears and crank-shafts are so constructed that all unnecessary strain will be taken off the track upon which the gearing for the crank-shaft travels.

AUTOMATIC SAFETY-GATE.—WILLIAM T. TAYLOR, Evans, Colo. The invention provides a device intended automatically to open a flood-gate or waste-gate in case the water in a ditch flume, or channel reaches a dangerous level. In front of the gate a perforated bucket is pivoted. The bucket and gate are connected by a chain passing over a wheel, the pivot being located between the ends of the chain. The water as it rises flows into the bucket, thereby drawing on the chain and closing the gate. When the rising of the water ceases, the water flows out through the perforations of the bucket, causing the gate to fall back to its normal position.

Railway Appliances.

RAIL-CLAMP.—CHARLES W. HILL, Forest City, Ill. The invention is concerned with stopping or blocking devices for steam shovels and excavators mounted on a car-truck and traveling on a railroad for ditching, excavating, and the like. This new and improved rail-clamp is arranged to be carried on a car-truck in order automatically to form a stop for the wheels to prevent backward movement of the truck, and to allow a free forward traveling as the work progresses.

Miscellaneous Inventions

FLANGE-SHIELD.—FREDERICK C. BILLINGS, Macon, Mo. The invention provides a new shield designed for use on the several flanges of a piano-action to prevent the flanges from becoming loose on the rail and to hold the pivot-pins from working out of the flanges, and to hold the flanges themselves in position, even though they be split. The flange-shield can be used under the flange as well as on top. The shield is made in different sizes, according to the size of the flanges to which it is applied.

STORAGE APPARATUS.—ROBERT T. LAMB, Alpika, Miss. The invention is a storage-house with elevating apparatus and revolving chute for quickly and economically storing in suitable bins seed-cotton, cotton-seed, or grain, and also quickly unloading the bins and carrying their contents to the gin-house. The elevating system is independent of that of the gin-house. The motive power is a gasoline-engine, which operates a fan, the seed-cotton being unloaded by suction. When the gin is running two wagons can be unloaded at once.

FOLDING BEDSTEAD.—AIMÉ FRANÇOIS ROUTIER, Boulevard Dienain 4, Paris, France. The bedstead is particularly intended for explorers, but is otherwise serviceable. It is characterized by the supporting cross-pieces connecting the standards or posts at the ends. These cross-pieces afford a comparatively large surface of support and permit the bedstead to be fitted upon any ground, however soft or irregular it may be, without any risk of the bedstead's sinking.

VEHICLE-WHEEL.—JAMES BURNS, Cincinnati, Ohio. This ingenious invention provides a road vehicle-wheel with a flange which can be adjusted to project outward from the rim of the wheel, thus adapting the wheel for use on rails or on roadways. The construction is such as to render the wheel stronger and cheaper than other wheels of its class. The possibility of moving the flange in or out enables the wheel to be used as a vehicle, which can run on rails or on roadways, for which reason the inventor calls his device a "supermotor."

COFFEE-ROASTING APPARATUS.—CHARLES WATSON and ALVER G. LOTZ, Brooklyn, New York. The object of the invention is to provide a heater so constructed as to prevent flame from coming in direct contact with the coffee in the roaster, thus preventing burning. The roaster comprises a cylinder in which the coffee is contained and which communicates with a furnace. Gas and air pipes lead into a combustion-chamber in the lower portion of the furnace; and bars of refractory material are placed radially in the furnace above the combustion-chamber. The heated air is admitted to the furnace, is superheated on its passage through the furnace, and is conducted into the roasting-cylinder at a temperature sufficiently high to roast the material uniformly without burning.

SHAVING-TOOL.—JAMES J. BRYANT, Nailsworth, England. The tool is a leather skiver, or shaver, which is also applicable for scraping or smoothing cross-grained, knotty, and hard wood. The knife is double-edged and reversible, capable of being adjustably guided in its operation so as to insure the making of a true continuous cut. The tool is adapted to work upon a horizontal slab with a degree of efficiency equal to or greater than that of the ordinary inclined beam, so that the inconveniences due to the stooping position over the beam are avoided, and that the working of the tool can be more easily supervised and controlled.

FIRE-ESCAPE.—FREDOUS H. AMES and WILLIAM F. BRYSON, Fort Wayne, Ind. To the outside of the building drums are secured, about which an endless flexible ladder is passed. To the ladder platforms are secured by chains, the platforms serving as supports for the escaping persons. The novel feature of the invention consists in the use of a compressed-air brake to check the speed of the descending platforms.

WIRE-FENCE GATE.—JAMES K. THOMA, Winfield, Kans. The gate has the usual two posts. To one of these posts and to one end of the gate a retractile spring is attached. A keeper in the form of a hook is secured to the other post and designed to be engaged by the gate to hold the spring under tension, whereby the gate is held in closed position.

SUSPENDER-END.—JACOB HEYMAN, Manhattan, New York city. The invention provides an improved suspender end, having its strap reinforced at the inside to withstand the strain exerted by the button-piece on the strap. The strap, its reinforcing-strip, and the drawers-supporting tongue being all made of a single piece of leather, cheapen the cost of manufacture, and also render the suspender-end very durable.

TANK-MOLD.—ORRIN A. DEVER, Cassopolis, Mich. The mold is designed to form cement stock-watering and other tanks. The mold consists of an inner and outer part, each forming a wall, and each having two curved end portions joined by parallel side portions. All of the portions are interchangeable, to permit the making of tanks of various forms.

METALLIC SEAL OR STAMP.—WILLIAM T. REMMEY, Brooklyn, New York city. The seal or stamp has a centrally-located sunken character, a milled background formed by straight and crossing ridges. A plain border surrounds the background and is separated therefrom by an annular groove, extending in depth below the background. The border is in a plane below the background, so that the background will project above the border and will be formed with a uniform milled surface throughout.

MUSIC-BOX ATTACHMENT.—ENNIS C. ROBERTS, Phœnix, Arizona. The invention provides a simple, novel construction, by which a music-box is operated from the wheel of a bicycle. The arrangement is such that the music-box will not play when the bicycle is moved backward.

PERFORATOR.—JAMES F. MCNAMARA, Far Rockaway, Queens, New York city. This device for perforating check-stubs and the like is applied to a printing-press, and is composed of a longitudinally-slotted tympan and a perforating-plate movable in the slot and having an integral spring extension at one end secured to the tympan.

Designs.

BOX-FASTENER.—HOWARD L. MOULE, Richfield, Utah. The fastener is designed for egg-boxes and is constructed with holes whereby it can be screwed in place.

MATCH-BOX.—JAMES J. B. MCELRATH, Centre, Ala. The leading feature of the design consists of a body having a contour approximating that of a shield, surmounted by a partially-open tent, upon which a hand is delineated. The tent has an ornamental canopy, bearing an eye, and at the side of the tent are crossed shepherd's crooks and crossed arrows. Below the tent the shield is decorated with the links of a chain.

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.