

A DWARF ARMADILLO.

In South America, in the stony regions of Mendoza and San Luis, lives a strange little armadillo, discovered in 1824 by Harlan. The colonists have given this singular animal various names. In one place it is called *Juan calado*, "John the pointed," on account of its pointed snout, and elsewhere it is the *pichiciego*, the "little blind one," for it is supposed that, like the mole, whose form and habits it possesses, it must be blind. The scientists of the region call it the *cuirassed mole* and the *Chilian mole*. Naturalists have baptized it *Chlamyphorus*, a word which means "wearer of a mantle," and to this generic name they have added the specific epithet of *truncatus*, for, in fact, the animal appears to have lost the posterior extremity of its body. There are armadillos of all sizes, from the giant *Priodontus*, of Paraguay whose length exceeds five feet, to the nine banded species, which is about eighteen inches long; but there is none smaller than the truncated *chlamyphorus*, the largest specimens of which do not exceed five inches in length. In our engraving this latter is shown of natural size. Among all the members of this family of armored animals there are certainly some that are better protected. Many have a complete shield, recalling those armors of overlapping plates formerly worn in the lists in fighting on foot.

The truncated *chlamyphorus* is lightly armed. Its short head, which is strongly convex behind, terminates in front like a sharp cone, and is covered above by a portion of the carapax that extends over the entire back.

This armor is a solid bony plate (with polygonal divisions) in the shape of a rounded shield, having in the center of its posterior end an aperture, through which emerges a short tail with an enlarged extremity. The rest of the body, with the exception of the tail, the sole of the feet, the chin, and the snout, which are naked, is covered with long, soft, fine, yellowish fur. The short, stout legs are remarkably adapted for digging, especially the fore ones, the feet of which are armed with five large and strongly curved claws. The hind legs, which are not so strong, have likewise five toes to the foot, but the claws are not so strong, and are obtuse, straight, and flat, while those of the fore feet, in the form of a scythe blade, and sharp on the external edge, increase in size from the second toe to the external one, which latter is provided with a wide, flat claw.

The dentition is really that of an armadillo—eight to ten pairs of teeth to each jaw, with neither incisors nor canines. The molars, which are covered with enamel, have no roots and are hollow in the lower half. The one in the center of each row is the largest; the others diminish in size to each extremity. The mouth, which is very small, opens beneath the pointed snout. The latter, which is cartilaginous, recalls that of a hog in miniature. The tongue is long, fleshy, and covered with papillæ.

To consider it more closely, the carapax is of a horny consistency, of a whitish or dirty yellow color, quite thick, and consequently not very flexible; but the bending of the body is favored by the manner in which the bands are articulated. In fact, each band is united to its neighbor by a membrane that permits of a certain extension, so that this cuirass, formed of intricate segments, does not prevent the animal from rolling itself up into a ball. The dorsal carapax is formed of twenty-four transverse bands, each composed of seven or eight scales, then of fifteen to seventeen, and eighteen to twenty-four, in measure as they approach the posterior region, the body progressively widening from the shoulders to the pelvis. These scales are irregular and

tubercular in the anterior region and regular and rectangular in the posterior.

The armor that covers the extremity and forms a right angle with the rest of the body is inflexible, and consists of five or six concentric rows of scales arranged in a semicircle, and each of them being square or lozenge-shaped. The upper and largest row is made up of twenty scales, and the smallest consists of but six. At this point the tail emerges, and is attached to the armor of the rump by a membrane. This armor is united with the pelvis and firmly connected with its apophyses; but the dorsal portion does not adhere so firmly to the back of the animal, the plates being attached to the body only along the spine, through a membrane. The frontal region of the carapax is firmly attached to the cranium, and, further behind, the plates

row has, too, a special conformation. On coming out, the animal throws to the right and left the earth that incommodates him, and probably sweeps it with his paws. This earth forms a hillock on each side, and between these is a passageway. No other South American mammal has such a habit.

The truncated *chlamyphorus* is far from being well known. It appears to be nowhere common, and, as the natives make no use of it, they do not hunt for it.

The skeleton of the animal exhibits remarkable peculiarities. The pelvis is strong, and the legs, which are robust, with flattened femurs and humerus, show by the insertion-apophyses the power of the muscles that cause them to act. This remarkable genus is separated from the armadillos by a great number of features. The *chlamyphorus* (says Oscar Schmidt, in a recent publication), which inhabits the

regions near La Plata, differs so much from the armadillo (*Dasyphus*), properly so called, despite the appearance of relationship, that between these two genera there must have been quite a series of transition forms whose evolution required no less than several geological periods. The German scientist, who is a warm partisan of Darwin's doctrines, thinks that it is necessary to go back to the tertiary period to evolve the *chlamyphorus* from the armadillo.

Carl Vogt remarks that by the strong conformation of its limbs, and other peculiarities of its skeleton, the animal under consideration more closely approaches the extinct gigantic animals of the group of megatheriums and allied forms than does any other living edentate.—*La Nature*.

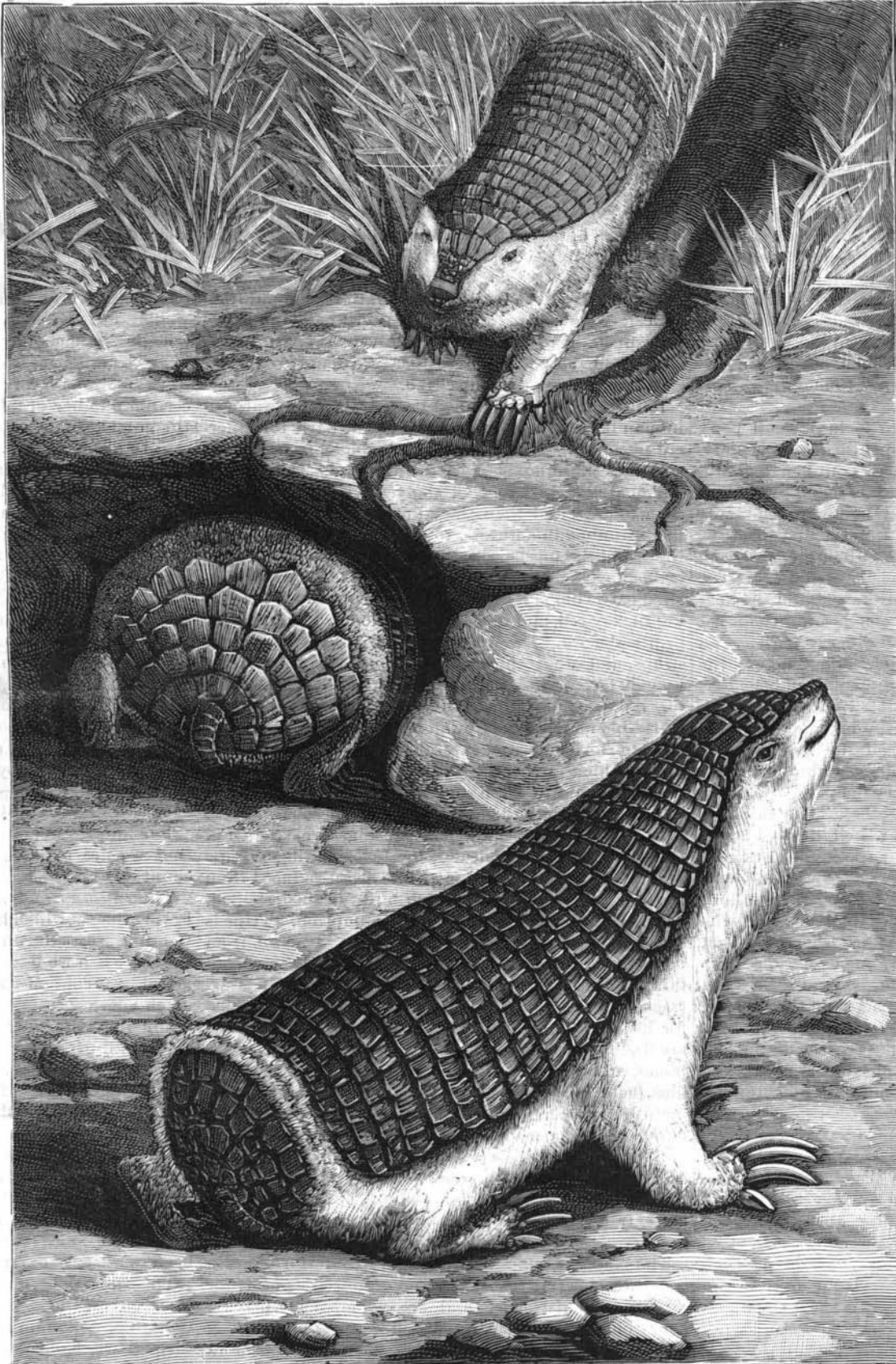
[Trial of the Maxim Gun.

A portion of the official report of the Austrian war office on the trial of the Maxim gun has been issued. From this it would appear that the preliminary trials of last July established the superiority of the Maxim system over all others, both as regards rapidity of fire and ease of manipulation, and thereupon the Austrian government ordered exhaustive experiments to be made, which included tests for range and accuracy at distances from 200 meters to 1,575 meters, and tests for strength and durability. The results showed that the accuracy of the Maxim gun is superior either to the two-barrel Gardiner or the five-barrel Nordenfent. For testing durability, series of 334 rounds, fired consecutively, were almost exclusively used, and an average speed of ten rounds per second was obtained, not only with the greatest elevation and greatest depression, but also when traversing the gun laterally through the greatest angle that the mounting would allow. In all, 13,504 rounds were fired, and the report states that, on the whole,

the gun behaved extremely well, the loading and firing mechanism operated faultlessly, and, if certain reserve parts are supplied, and the buffer spring made stronger, the durability of the weapon would be guaranteed under all circumstances. After 6,356 rounds had been fired, the weapon was tried for accuracy, at a target 2 meters by 3.6 meters, at 600 meters range, and an excellent diagram obtained. The 11 millimeter rifle cartridge (model of 1877) was used, and trials of the barrel with English Henry rifling did not show any advantage over that of the Werndl barrel. The report is signed by Colonel H. Huffzky.

Removal of Old Varnish.

A Mr. Myer has just patented, in Germany, a composition for removing old varnish from objects. It is obtained by mixing 5 parts of 36 per cent silicate of potash, one of 40 per cent soda lye, and one of sal ammoniac (hydrochlorate of ammonia).



A DWARF ARMADILLO.—(NATURAL SIZE.)

are fixed by two scales to projecting eminences over the eyes. The immovable part of the cephalic carapax is formed of two transverse rows of four plates each, and of three others of five plates.

The animal's eyes are very small, and are partially covered by the hairs of the face. There are no ears. The auditory canal opens in a narrow orifice surrounded by a cutaneous fold.

It is not yet known with certainty what the animal's habits are. Doubtless, like other armadillos, it lives upon insects and worms, and perhaps also upon the tender roots and bulbs that it finds in the course of its underground burrowing. It is a nocturnal animal, seeking desert and uncultivated places.

According to Goering, the traces that this singular animal leaves upon the ground are characteristic. Since, in walking, it drags its feet instead of lifting them, it leaves on the ground two continuous furrows that are readily recognized. The entrance to the bur-

Beef, Blood, and Bones.

Hammond, Ind., would not be much of a place without that great cattle slaughtering establishment, the Hammond Packing Company. This firm, on an average, kill a thousand head of cattle per day, six days in the week. This mighty procession of animals surges forward, accompanied by the sound of the trampling hoofs, hoarse bellowings, and tossing heads of the massive beasts doomed to die for the nutrition of mankind. The scene outside the packing house is, in one respect, instructive and suggestive. Shambling around in pens outside the packing house, the uneasy creatures are kept waiting for certain barred gates to be opened and apparent liberty regained. Beside these pens a small streak of dense-looking liquid trickles lazily to a broad stream of water in the distance. Between these cattle and the muddy stream stands one huge connecting link, and that is the great, solid-looking slaughter or packing house. The beasts march in at one end of it, and of all that mass of beef, blood, and bones, nothing is thrown away or wasted, except that little, muddy stream, which is the geometrical difference between the slaughter house and the cattle—the useless residue of a great industry.

The Union Stock Yards Company, of Chicago, occupy 360 acres of land; the Hammond Company owns 90 acres in and around its works.

Let us follow the different operations of killing and dressing under the tutelage of S. F. Fogg, superintendent. Dinner is over, lunch cans are placed aside, brawny arms are bared, and gleaming knives are hastily resharpened. Boys with long poles go to the pens, open the gates and drive the required number of steers to small inclosures, right close to the butchering shop. From this inclosure they are driven along a narrow lane, just wide enough for them to march in single file.

Presently, doors divide the cattle into small pens, and there they stand in a dumb state of visibly nervous apprehension. A strong, active young man climbs up and walks on boards by the side of the tops of these pens. He carries a long-handled hammer, commonly known as a poleax. Stepping up to the first pen, the imprisoned steer looks upward with large, terrified, rolling eyes, as if suddenly conscious of danger. Too late. The vigorous arms skillfully swing, and the next minute the hammer crashes on the head of the beast between the eyes and horns, stretching it senseless on the ground with a dull thud. On and on goes the slaughterer, never halting or hesitating, and the lane of live stock, in a remarkably short time, is a lane of stunned carcasses, ready for skinning and dressing. The butchers' assistants now open the inside doors, and, attaching a strong iron chain to a hind leg, rapid machinery drags the animals from the pens, which are speedily reoccupied by other batches. The skinning is a wonderful example of regular, well directed labor, each man having his specially appointed work and doing nothing else. First comes the "sticker," who cuts the throat and collects the blood in shallow, wide, circular pans. Then follows the "header," who skins the head, next men who attack the front foot, hind foot, belly skin, leg worker, men on sides pulling out the caul, men cutting hams, chopping briskets, cleaning out throat, man rubbing right hand side, man on left hand side, man who catches the film, backer, one who splits, emptying cattle of nucleus of fronts, man to drop hide, splitter of necks and trimmer of inside, trimmer on outside, finishing up with five washers to carefully cleanse the quivering beef with clean water, and pass it to cool places ready to be moved to the immense refrigerators, where it hangs for 48 hours before being loaded into the ice-cooled freight cars. Thence it is rushed to cities in America and to steamers, waiting to be conveyed across the Atlantic.

Let us see, now, about the parts not used as beef. The steer is hanging by a leg to a strong iron chain, and the hide strippers are busy. It is the rule in all packing houses for special men to skin special parts of the hides, and this is one reason why packer hides are so strictly alike in trim and take off, and why the tanners are usually willing to pay a cent per pound more for these hides than for those taken off in the country towns. The hide, then, is thrown into the hide cellar, a cool, pleasant place in the Hammond house, 250 feet wide by about 300 feet long, with another one in progress of building. The first thing the cellar men do is to sort the branded and unbranded green hides into separate piles, and it is remarkable how expertly and rapidly this is done by the old hands. Next comes the salting and packing away in piles. Coarse Syracuse salt is used in preference to all other kinds. It takes about three weeks in summer and four weeks in winter to thoroughly cure hides, although when tanners are in a hurry a little less time is given by mutual agreement and by using necessary precautions. Hides containing four grubs and under, if satisfactory in other respects, are classed as No. 1's. No. 2's have five grubs and over, and are sold for one cent per pound less than No. 1. This is the regular rule; also, all cut hides go as No. 2.

H. C. Tillinghast & Co., of Chicago, who have en-

tire control of the Hammond hides, have these hides swept clean of salt, and then allow to purchasers a tare of 1½ pounds per hide on winter kill and 1¼ pounds on summer hides. Butt-branded steers are picked out of native cattle, most of which sort are found in receipts from Nebraska. Texas steers are not selected for brands, as these cattle are so universally afflicted in this respect. Texans are grubbed for No. 1 and No. 2, same as native hides. The system of grubbing is an ingenious and time-saving arrangement, mutually accepted by seller and buyer. When a tanner orders hides, about twenty are taken at random from each car load, when made up, and selected for grubs. Suppose, out of these twenty steers, five are found to have five or more grubs, this makes them No. 2's, and the twenty hides then stand at a rate of twenty-five per cent No. 2 and 75 per cent No. 1. If this percentage is considered a fair representation by the experienced men looking after the interests of packer and tanner, they agree to call the car load of hides (say 600) as 25 per cent No. 2 and 75 per cent No. 1. If either party objects, a second batch of twenty is sorted by the tanner, who may chance to find ten No. 2 hides, or 50 per cent of the lot. If the packer thinks this is hardly as it should be, a third score of hides are picked over, and, whatever the result, it is accepted as a finality. This seems to be a kind of lottery arrangement, but it does away with the need for scratching and examining all of the 600 hides for the car load, and each car load is separately thus sampled. It is estimated that these green hides shrink in weight 20 to 24 per cent after being cured. H. C. Tillinghast goes to Hammond from Chicago every day, and personally directs the whole hide business of the Hammond company, to which is also added 350 to 400 hides per day, sent from their slaughter house at Omaha, Neb.

Returning to the skinned beast, we find a swarm of human bees taking away the different parts for different purposes. The first run of the blood from the cut throat of the animal is collected in round, shallow pens, which are trucked to cool shelves, where coagulation soon follows, and then the albumen is dried and sold to button manufacturers, to be speedily made up for the use of the unsuspecting public, who are thus blood stained, as it were, in a highly artistic fashion. Coagulated cattle blood is also used by calico printers for dyeing turkey red, and in the preparation of red liquor for printers' work. Dried blood serves to clarify wines, sirups, and other thick solutions. In Scandinavia it is made into a kind of good bread for the poor. Doctors have recommended the drinking of warm, fresh cattle blood in cases of pulmonary diseases.

From the heads are carefully taken small pieces of meat, which go to the sausage factory. The horns find ready sale to comb and knife haft makers, being softened by heat and moulded into numerous articles. The guts, after scrupulous cleansing, are packed in tierces and shipped to dealers in sausage casings. Tripe is a nutritious and cheap food, and it is produced from the animals' stomachs, which are cleaned, boiled, scraped, and placed in kegs for consumption. Tripe is sometimes pickled, according to the demand from buyers. The legs are steamed for what glue they contain, and also to soften the hoof, from which is extracted the celebrated neat's foot oil, which is valuable for keeping shoes soft and waterproof. These hoofs are finally ground up and sold to fertilizers. The shin bones, after being boiled, are in request for knife handles, being shipped to Europe. The Sheffield manufacturers in England convert these shin bones into handles for spoons and knives, backs for tooth and nail brushes. The jaw bones are sawed in two, in order to extract every possible vestige of glue from them. To go to the other end of the animal, even the extreme portion of the tail is cut off and sold to the manufacturers of curled hair.

The bladders, when dried and prepared, form useful coverings for the transportation of glazier's putty, for oilmen, druggists, etc., and are valuable for placing over the jars in which the careful housewife lays away her preserves and pickles. The kidneys, liver, and lights are sold fresh to surrounding butchers' stores, or sent in refrigerator cars to distant points. The tongues are cunningly curled, put into air tight cans, and find their way to many a village at home and abroad, where they are useful for picnics and cold collations.

Hot tanks are great levelers, and every scrap of sinews, loose bones, or small rough pieces is boiled down to threads and fragments, and the liquor, when drawn off and cooled, produces glue or other available material. Even the dirt and residue at the bottom of the tank is sold as "tankage" for fertilizing, and refuse blood is eagerly collected and turned to account in refineries.

Now we come to the utilization of the fat. Oleomargarine has outlived a good deal of the abuse to which it was subjected when first introduced to a people suffering under imitations of everything except air, fire, and water. It is now a cheap and acceptable article of food, and, if honestly made, a satisfactory addition to diet. The oleomargarine department of the Hammond packing house is conducted similarly to a

dairy, though it isn't one. No cows are to be seen pressing their fragrant noses against rustic gates. No bustling farmer's wife is there with red, bared arms, directing trim, plump dairy maids. Even the surreptitious cat is missed, and there is no sound of the watch dog's honest bark, which Byron declared it was "sweet to hear." Oleomargarine is made as follows: The caul and best parts of the fat of the cattle are boiled down to a thin, transparent oil. Fresh milk is brought every morning to the packing house for mixing with this beef oil. The milk and oil are poured into the churn together, and a little pure prime lard is added to cause the mixture to flow more easily from the churn, which is driven rapidly by machinery till the yellow globules separate. This semi-liquid mass drains into a large ice cooler for a short time. Then these globules are taken and kneaded together carefully, drained, and the mass is salted by special machinery with good, clean, English dairy salt. The oleomargarine is colored by common annatto seeds, as used in all dairies, and thus prepared is put into clean white linen cloths by neat-looking girls, and, as ready for sale, is difficult to distinguish from real butter in taste or color. It retails at 15 cents per pound. 40,000 pounds per day of oleomargarine is made at Hammond, Ind. After the first boiling of the beef fat, the residue is wrapped in thin linen cloths and placed under hydraulic pressure, which forces out the remainder of the oil. Before pressure the fat passes through "hashers," which render the after process more effective. The fat, after being under the hydraulic machine, comes out quite white and firm, and is called stearine, a well known article used by candle makers and tanners.

Tallow is made by boiling the rough pieces of fat. The ox tail meat and bones constitute the chief luxuries obtained from cattle. Each car of beef carries a certain number of tails, which are mostly bought by the hotelkeepers. Prior to 1865, the London butchers sent the tails to the tanners with the hides, and even during the past 20 years the men employed in English tanneries used to find these tails in the hides and take them as useful perquisites. French refugees 200 years ago taught the world to utilize this valuable and nutritious food. Even the udder from a young dry cow, when nicely corned and boiled, is very good eating. The ox gall is used for liniments, for the mixing of paints, cleaning clothes, carpets, etc.

The Hammond company carry a steady stock of 150,000 tons of ice, in two large ice houses. They cut and store from the Calumet River. About 600 men and boys are employed, and work progresses year by year in that small, busy town, free from labor troubles or anything tending to disturb the good feeling between employers and employees.—*Shoe and Leather Reporter*.

Will This be a Hot Summer?

The impression seems to prevail, pretty generally, that we are to have a hot summer throughout the country.

The *Indigna Pharmacist* predicates it upon the following theory, which has been advanced by others: The weather seems to run in cycles of about seven years, that is, when we have a hot summer, it is always followed by a cold one, and it takes about seven years to reach another equally hot. It will be remembered by many that the summer of 1867 was very hot, and so dry that during August the grass crumbled under the feet when trod upon. The summer of 1868 was noted for its coolness, the thermometer very seldom getting above 85°, and we did not reach the top wave of thermality again until 1874, when it was extremely hot. The following summer was cold to a remarkable degree. From then on the summers grew gradually warmer until 1881, which was excessively hot and very dry, no rain falling for over nine weeks, and there were more sunstrokes that summer than there has been in all the summers since.

The summer of 1882 was quite cold, a few flakes of snow fell on the morning of July 4, followed by hail in the afternoon, and during the rest of the month and through the month of August the temperature was so low that overcoats were necessary for comfort, particularly at night. The summers since 1882 have grown warmer and warmer, and last summer was a moderately hot one, but unless all signs fail, the coming summer will be the climax of the cycle, and a hot, dry season may be expected. So far this spring the signs have been against the theory here advanced, but possibly the coolness of the spring may be succeeded by a regular old scorching summer whose temperature will rival sheol for hotness.

Torpedo Fired by Lightning.

A letter from a special correspondent with the Italian forces in Abyssinia contains an account of an explosion of a torpedo by lightning. The torpedo consisted of a glass bottle charged with powder and scrap iron, fitted with a detonator to which a wire was attached. Several of these were scattered for purposes of defense in front of the battery of guns, the discharging wires being at the battery. It was found, so it is said, that lightning passing along the wire had produced the explosion.—*Electrical Review*.