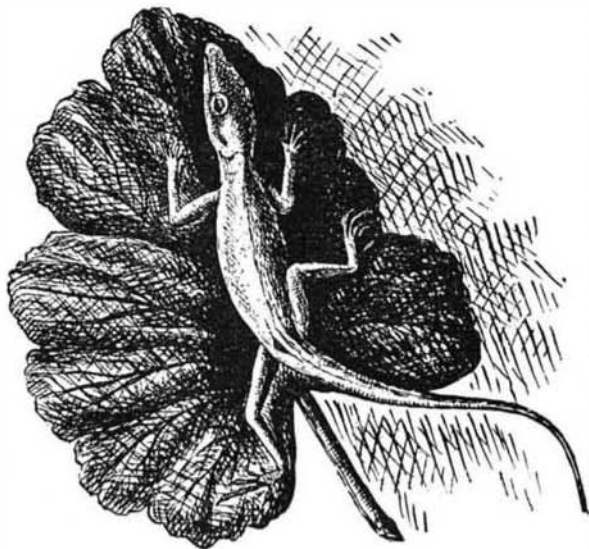


**THE CAROLINA LIZARD.**

This little lacertilian reptile, of the family *anolidae*, is known to herpetologists by the name of *anolis principalis* (Linnaeus). It is the *anolis Carolinensis* (Cuvier) of Holbrook. It has been called a chameleon. It does not, however, possess the prehensile tail and elongated and extensile tongue of the true chameleon, but resembles it only in the changing hues of its skin.

The specimen in our possession, upon which the few following observations were made, was captured in Florida. Its prevailing color is grayish brown, with a slight greenish tint. In the night, when in a state of repose, the color has always been whenever observed, of a clear bright green above; the labials and inferior parts white, or grayish white. A few times only during the day has it assumed the green hue, yet this is the common color of the Carolina lizard when in a wild



state. The reason of this may be want of light-colored and green insect food. I have seen it of a uniform grayish-brown color above, with a few spots of clear green dispersed over the body. At one time it changed from lead-brown to clear, bright green, after it had crawled and remained upon some geranium leaves for a few minutes. It retained this color for over ten minutes, when, without quitting the leaves, it gradually faded into a uniform grayish-brown.

The inferior surface of the epidermis of this lizard seems to contain numerous minute glands or chromatophores, by means of which the animal can, by secreting pigments into them, or withdrawing the same, change from one color to another. Thus, when all pigment is entirely withdrawn from the chromatophores, the whole upper part of the animal is bright green colored; when partly filled, grayish-brown with a greenish tinge; and when entirely filled, dark grayish-brown approaching to lead color. When one portion of the pores is empty and the other filled, the animal is bi-colored, or spotted with green and grayish-brown.

The assertion that every scale of the animal is furnished with sets of muscles, and that the change of color is produced by the action of light alone, is at best doubtful. On the inner parts of the scales of the epidermis I observed numerous minute glands or ducts, but no separate muscle attachments.

Before the old skin is about to be cast from the head, it becomes whitish in color on the occipital and frontal regions, and around the orbits. From the anterior part of each eye, also around the eye, and extending to beneath each nostril, the skin is broken by forcing outward the eyes, and the muscles around them. The edge of the skin is then observed

to spring loose from the occiput, after which it is pushed off from the entire head by the fore feet of the lizard.

After the skin of the head had been removed, the skin of the new tail became lighter in color, and then parted along the dorsal line, when the whole of it slipped from the tail, a longitudinally hollow piece. When purchased our specimen was minus part of its tail, but a new one soon began to sprout, and now, an inch of new tail has been developed.

Our lizard is an expert fly-catcher, and it feeds almost entirely upon common house flies. It has eaten several Croton bugs (*ectobia germanica*), also small beetles, day flies, moths, and butterflies. It does not swallow its prey whole, in the manner of a frog, but tears and mashes it with its teeth and jaws, before swallowing. It drinks often, licking drops of water from the leaves, and from the sides of its cage.

It became quite excited on seeing its reflected image in a small looking glass, and made a bold advance towards it, at the same time erecting and depressing its head rapidly. This nodding motion I have also observed in the horned toad (*phrynosoma cornutum*, Harlan). As it is practised only at the meeting of individuals, it is reasonable to suppose it to be an action of greeting, or, in other words, a how-do-you-do nod.

From that remote period in the great chain of human development, when our forefathers were yet lizards, even to the present enlightened period, a nodding of the head was and is an action of salutation or friendly greeting; and although forgotten in many intervening links, it still survives!

**A Move in the Right Direction.**

The Massachusetts Society for Promoting Agriculture has offered a series of prizes for the encouragement of tree planting in this State—the awards to be made 10 years from the 1st of March next for the best results produced in the interval. The white ash, the European larch, and the white and Scotch pine are the varieties especially favored. Something has been done already toward promoting a new centennial growth of trees, and the inducements here offered will give another impulse to the work. Mr. Sargent, of the new Arboretum of Harvard College, estimates that over 1,000,000 trees will be planted in Massachusetts this year. In Connecticut the General Assembly of this year gave public sanction and encouragement to the same enterprise by exempting from taxation all plantations of timber trees to be thereafter planted, for a period of 10 years after such trees have grown to an average of 6 feet in height.

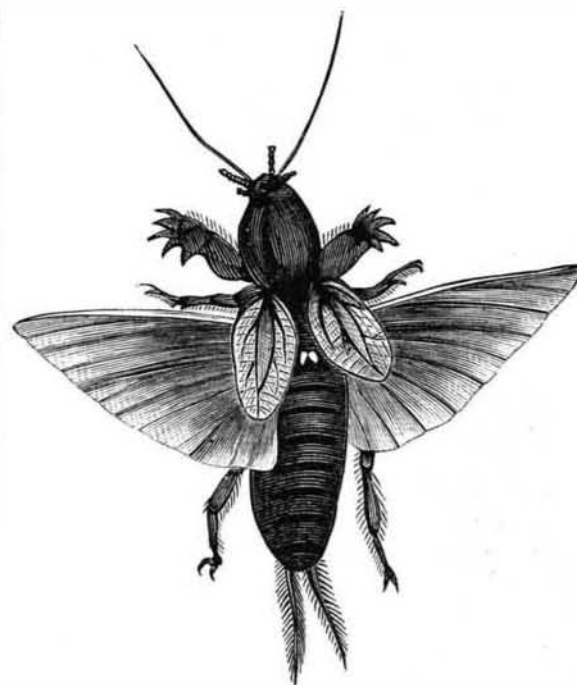
**THE SEA MONSTER.**

We are indebted to Lieut. W. P. Haynes, of H.M.S. *Osborne*, for the sketch of the sea monster seen by the officers and crew of that vessel off the north coast of Sicily on the 2d inst., notice of which we gave in the SCIENTIFIC AMERICAN for July 14. In a letter accompanying the sketch he says: "My attention was first called by seeing a long row of fins appearing above the surface of the water at a distance of about 200 yards from the ship, and 'away on our beam.' They were of irregular heights, and extending about 30 or 40 feet in line (the former number is the length I gave, the latter the other officers); in a few seconds they disappeared, giving place to the fore part of the monster. By this time it had passed astern, swimming in an opposite direction to that we were steering; and as we were passing through the water at 10½ knots, I could only get a view of it, 'end on,' which I have shown in the sketch. The head was bull-shaped, and quite 6 feet thick, the neck narrow, and its head was occasionally thrown back out of the water, remaining there for a few seconds at a time. It was very broad across the back or shoulders, about 15 or 20 feet, and the flappers appeared to have a semi-revolving motion, which seemed to paddle the monster along. They were about 15 feet in length. From the top of the head to the part of the back

where it became immersed, I should consider 50 feet, and that seemed about a third of the whole length. All this part was smooth, resembling a seal. I cannot account for the fins unless they were on the back below where it was immersed."—*London Graphic*.

**THE MOLE CRICKET.**

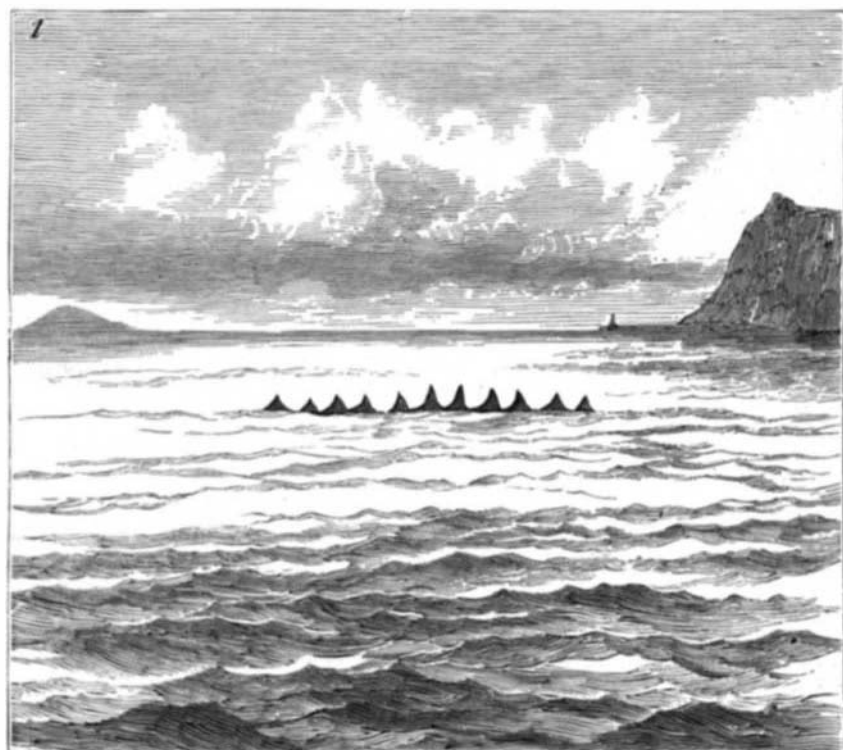
This insect is one of the most curious of all the *orthoptera*, to which order earwigs, crickets, grasshoppers, cockroaches, locusts, and the strange looking leaf and stick insects also belong; it is widely distributed over the world, from the torrid zone to the arctic circle; allied species inhabiting Java, China, Australia, Van Diemen's Land, North



and South America, and even Melville Island. It has been variously called eve-churr, churr worm, jarr worm, and crocker, names derived from its peculiarly jarring song; also fen cricket, earth crab, and mole cricket, the last being by far the most appropriate, and that by which it is generally known. With its powerful fore limbs it burrows underground, raising ridges in its progress. Its shape is long and cylindrical (a full-grown specimen measures 2¼ inches in length by barely half an inch across the thorax), just that best fitted for locomotion through long narrow galleries; its color is a rich, dark, velvety brown of various shades, its thorax is very hard, and so formed that the head can be withdrawn into it, much after the manner of some tortoises; its whole body is covered with fine down. It has a long sensitive pair of antennæ or horns projecting in front of its head, and another pair on its tail, projecting backwards, also very sensitive; and as it moves with equal facility either forwards or backwards, should danger threaten from front or rear, it is ready to escape without turning round, an operation which would be difficult or almost impossible in its narrow tunnels. Like all the crickets and grasshoppers, its nearest allies, its hind legs are formed for jumping; though perhaps not often employed for this purpose, they form the ordinary locomotive organs of the animal, both below and on the surface of the ground; the middle pair being comparatively weak, while the fore pair are carried raised up.

The fore limbs are rarely used in walking, but are the tools with which the insect burrows. They bear a very close outward resemblance to the fore pairs of a mole.

The mole cricket is furnished with two pairs of wings, the



**A SEA MONSTER.**

upper pair being small and serving as covers for the lower ones, which, when expanded, measure two and a half to three inches from tip to tip. They fold up very much in the manner of a lady's fan; and when in this condition, the points project somewhat beyond the end of the body.

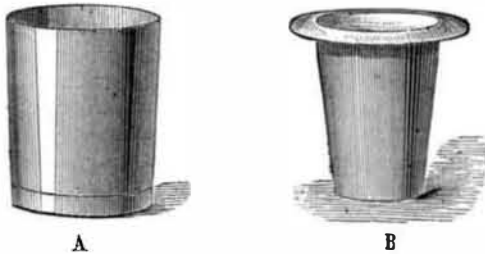
In May or June the female lays 300 or 400 eggs, which are about the size of turnip seed, but oval and yellowish, in a nest which she makes for the purpose underground, and which is thus described by Gilbert White: "There were many caverns and winding passages leading to a kind of chamber, neatly smoothed and rounded, and about the size of a moderate snuffbox. Within the secret nursery were deposited near 100 eggs, of a dirty yellow color, and enveloped in a tough skin. The eggs lay but shallow and within the influence of the sun." In a few weeks, according to the heat of the weather, the young are hatched. At first they are very small creatures, somewhat resembling black ants, very active and voracious in their habits. They grow rapidly, changing their skins three times before winter, when they hibernate, and, according to Röseler, cast a fourth skin during this period. The warmth of spring revives them, when they appear, having the rudiments of wings; and after one more change they become perfect insects, possessed of ample wings and in all respects similar to their parents.

Though having such large wings, the mole cricket does not appear to make as much use of them as might be expected. They never fly by day, remaining concealed in their burrows, but towards evening they may be found sitting at the mouths of the tunnels, uttering their "low, dull, jarring note," caused by the friction of one wing case over the other; and it is at this time, and during the night, that they are occasionally found upon the wing.

So destructive are these insects that they have been known to destroy a sixth, nay, even a fourth part of a crop of young corn. They are particularly fond of barley, young peas, and beans, and Mr. Brackenridge says "nothing in the herbaceous way is proof against its ravages." Many and various schemes have been suggested for their extirpation. Louis XV. even purchased a recipe to kill them by first filling their burrows with water, and then adding some oil. Turpentine, soapsuds, soot, lime, and similar materials have also proved efficacious.

#### A SELF-COOLING GOBLET.

M. Toselli proposes the convenient little device illustrated herewith for cooling a tumbler of water by refrigerating mixtures. It is well adapted for localities where ice cannot readily be obtained, as by its aid a glass of fresh cool water can be produced in a few moments.



A is a simple cylindrical vessel which holds the water or beverage to be cooled. B is a smaller vessel with a flange around the rim, and which is placed within the goblet or tumbler, A. In the inner vessel, B, is dissolved the refrigerating mixture, about five ounces of nitrate of ammonia in water. The solution is agitated and in a few minutes the cold produced is said to be sufficient to lower the temperature of the water in the outer vessel some 50° Fah. The salt can be used over and over again, indefinitely, as it is merely necessary to pour the solution on a flat dish, when re-crystallization will take place as evaporation progresses.

#### The Great Lick Telescope.

Richard S. Floyd, one of the trustees of the Lick Trust, has just returned from an extended European tour. During his absence he has talked with many scientific men of this and other countries, but almost invariably found them afraid to commit themselves to an opinion as to whether a greater success can be obtained with a reflecting or refracting telescope. Professor Newcombe, of the Observatory in Washington, after his visit to Europe to look into this matter for Mr. Lick, reported warmly in favor of a gigantic refractor, and forwarded estimates as to cost. He has since changed his opinion, however, and now recommends a silver-on-glass reflector of about seven feet diameter. Ross's, Herschel's, and other celebrated telescopes have speculum metallic reflectors, which have until lately been considered the best. Now the palm is claimed for an invention of Leon Foucault's by which silver in solution is deposited on glass. Foucault made a reflector upon this system about thirty-one and one fifth inches in diameter, and excellent work has been accomplished with it. After his death a reflector upon his plan about four feet in diameter was constructed for the observatory. Owing to some not thoroughly explained cause, this has not proved a success, and another of the same dimensions is being constructed to replace it. Great interest is manifested in the result of this second experiment, which cannot be proven for a year yet. Dr. Huggins, the well known astronomer, also favors a large reflector, as it is better for spectroscopic analysis, his favorite study. It is natural that he should prefer a reflector, as he desires to have the field of physical astronomy enlarged.

Theoretically, a reflector of 4 feet in diameter is about equal to a refractor of 26 inches. The Ross reflector is 6 feet in diameter, only 4 feet of which are effective, and so far it has not been proven that more than 4 feet of a reflector can be made effective. The great trouble with the reflector is that it is very sensitive to atmospheric changes, while with the refractor the difficulty lies in the secondary spectrum. The object glass of the refractor is composed of two glasses joined, the outer being of crown glass, the inner of flint. Rays passing through the crown glass are refracted. The consequence is that perfect achromatism is impossible, and the difficulty of compensating these refractions increases with the size of the object glass. The largest refractor in the world is that in the Washington Observatory; it is 26 inches in diameter, and is an excellent instrument.

Mr. Floyd said that, after as careful an examination as he could make, he is inclined to believe that the best interests of the fund will be served, to have constructed a larger refractor than any yet made. This ought not to cost complete more than \$150,000. Then there will be a subsidiary refractor, about four feet in diameter, supplied with both silver-on-glass and speculum metal mirrors. Such an instrument has been offered, or rather parties have agreed to construct one, for about \$20,000. Tell, of Paris, will undertake to make crown and flint glass disks for the object glass of a forty inch refractor for \$20,000—stipulating that he shall be allowed two years for construction.—*San Francisco Bulletin*.

#### Preventing Suffocation by Smoke.

I will give some suggestions for the prevention of suffocation by smoke. A pillow case, well saturated with water, and having a small hole torn in it to look through, placed loosely over the head, will be found an admirable impromptu respirator in the densest smoke. I am indebted for the idea to Vice-Admiral Jerningham, who told me how, when he commanded the Cambridge training ship at Plymouth, he made his first experiment with this pillow case respirator. He had 12 lbs. of loose powder exploded in a confined part of the ship, which, although screened off with fear nought, emitted so dense a smoke that those outside had to lie down on the deck. A common pillow case, with a small eye hole, was placed over the head of a man, who, with the hose in the hand, went inside and remained ten minutes, when, to assure his friends outside of his safety, he sang a comic song.—*W. H. Lewis, in London Times*.

#### Fight between a Turkish Monitor and Four Torpedo Boats.

A most interesting affair occurred on the Danube here during the operations attending the passage of the Danube—a fight between a Turkish monitor and four Russian torpedo boats. It was somewhere near the mouth of the Aluta. This monitor had been giving the Russians a good deal of trouble, and showed an amount of activity and energy very unusual with the Turks, continually shelling the Russian batteries, and destroying the boats. The Russians accordingly determined to destroy it.

Four torpedo boats were prepared and sent against the monitor. Hiding behind an island, they laid in wait, and when the vessel was steaming past suddenly darted out from their hiding place, and bore down on her in broad daylight. This monitor, it soon became evident, was handled and commanded in a very different manner from others with which the Russians have had to deal here. With wonderful quickness and skill she was prepared for action, and, nothing daunted by the fate of others, made a successful defence against the four terrible enemies, a defence of which the Russians speak with the greatest admiration.

Her commander began by likewise thrusting out torpedoes on the end of long spars, thus threatening the boats with the danger of being blown into the air first, at the same time opening a terrible fire on them with small arms and mitrailleuses. He beside manœuvred his boat in a most skillful manner, with a dexterity and address which, with the torpedoes protecting, made it impossible for the Russian boats to approach sufficiently near. He beside tried to run them down and very nearly succeeded in doing so. The reason soon became evident. The commander was a European, whom the Russians believe was an Englishman, and who directed the movements from the deck. He was plainly visible all the time, and was a tall man, with a long, blonde beard, parted in the middle. He stood with his hands in his pockets, giving orders in the calmest manner possible.

The torpedo boats continued their attempts for more than an hour, flitting round the monitor and seeking the opportunity to get at her, but without success. The monitor was equally active in trying to run them down, avoiding a collision by quick and skillful movements, backing and advancing, turning, and ploughing the water into foam as she pursued or avoided her tiny but dangerous adversaries—a lion attacked by a rat. At one moment one launch, in rapid manœuvres, found itself between the monitor and the shore, with no great distance between them. The monitor's head was in the other direction, but her commander instantly began backing her down on the torpedo boat, with the intention of crushing it against the bank.

Just at this moment the engineer of the launch was wounded. There was some confusion and delay in starting the engines, while the current carried her head aground in such a position as to render escape impossible. One of the crew sprang out into the water and pushed the ground, while another started the engines just in time to escape with a scrape, the shave was so close. One Russian officer sprang

ashore, and seeing the captain of the monitor coolly standing on the deck with his hands in his pockets emptied his revolver at him, three shots, at a distance of not more than forty feet. The captain of the monitor, in answer, took off his hat and bowed, not having received a scratch. Later, however, the gallant fellow seems to have been killed or wounded, for he suddenly disappeared from the deck. The monitor immediately afterward retired precipitately from the scene of action.—*London Daily News' Turin-Magurelli Correspondence*.

#### Iron Ship Building.

The report of the Secretary of the American Iron and Steel Association furnishes the following statistics of iron shipbuilding. Of the 25 vessels built in the fiscal year 1876, 2 vessels, aggregating 139,78 tons, were built at Buffalo; 1 vessel of 12,99 tons was built at Burlington, N. J.; 11 vessels, aggregating 11,980,94 tons, within the jurisdiction of the port of Philadelphia; 9 vessels, aggregating 8,298,08 tons, in the State of Delaware; and 2 vessels, aggregating 915,12 tons, at New Orleans. At the present time there are building or under contract on the Delaware river, 9 large iron steamships of the best class, ranging from 1,800 to 2,500 tons burden, including two monitors for the United States Government, besides a number of powerful iron tugs of 200 or 300 tons burden, and other small craft.

#### Cutting off Strawberry Runners.

When it is not desired to propagate young plants, strawberries should have their runners removed several times during the growing season; and where half an acre or more is cultivated, the trouble and expense are considerable. The operation is usually performed with shears, or by pinching or pulling off by hand. To save the back ache induced by the operation, we publish (Fig. 1) an engraving showing an attachment to the shears by means of which the work may be done in an upright posture. The *Rural New Yorker* gives two other devices which expedite the operation, and make it far less wearisome. In

Fig. 1.



Fig. 2, B is a circular piece of iron, from seven to ten inches in diameter, one inch wide, about one quarter of an inch thick at the top and beveled to an edge at the bottom; two iron strips, P P, are welded or riveted at opposite sides, as shown, and bolted to the handle. By placing the cutting ring, B, around the hill and pressing downwards, all the runners underneath the edge are instantly severed. Should the soil be hard, or the cutting edge dull, a quick thrust with the foot upon the rest, A, will do the business.

Fig. 2.



By this plan a large patch can be freed from runners in a few hours.

A cheaper implement is shown in Fig. 3. H is a circular and thin wheel, of iron or steel, from four to six inches in diameter, ground sharp at the edge, and attached to a stick

Fig. 3.



(an old hoe handle will answer). If inserted in a slit made with a coarse saw and held in place by a rivet, it revolves easily. Run it half round the hill in one direction, then as far in the other, and it is done; you can cut as close to a hill or as distant from it as you like. It may also be used for cutting sods in squares, preparatory to being cut loose at the bottom with a shovel.—*Weekly Globe*.

#### Earthquake in Tennessee.

The afternoon of July 14, a distinct shock of earthquake was heard by the residents of Memphis, Tenn. There were two heavy shocks, accompanied by a rumbling noise which once heard can never be forgotten. The "shocks," so to speak, lasted several seconds, in fact almost half a minute, during which time buildings quivered and windows rattled, as moved by the mysterious force within. In several instances the floors of the dwellings were sprung and caused no little alarm to the occupants, but no further damage was done.

#### Coal Area of the United States.

There are only 450 square miles of anthracite coal in the whole United States. The Reading Company owns no less than one third of the whole. Of bituminous coal land there are in America 200,000 square miles, and 8,000 square miles in Great Britain.

One of the old landmarks of Baltimore, the City Hall, on Holliday street, is soon to be torn down. It was built by Rembrandt Peale in 1813, as a museum, and was a popular place of resort for nearly seventeen years, when it was purchased by the Common Council. It was the first building in the city that was lighted with gas—Mr. Peale charging a small fee in 1816 for the exhibition of carburetted hydrogen gas.