

Correspondence.

A Black Calla Lily.

To the Editor of the Scientific American:

I saw in your last issue an account of the "yellow calla lily," which reminds me of two callas a jeweler in this city got among a lot ordered from the nursery. As no one in this section had ever seen or heard of them before, I will describe them. After keeping them for a few weeks they put out a bloom which was as black as night and had a very noxious odor, but in other respects are just the same as other callas. He removed them to his back yard, where they continue to bloom. Is there a scientific name for it?

Richmond, Ind.

J. EDWIN WELLER.

Coal Ashes as a Fertilizer.

To the Editor of the Scientific American:

Querist 5996, No. 18 SCIENTIFIC AMERICAN, vol. lxx., asks: "Do coal ashes possess any value as a fertilizer?"

I answer yes. My father bought a tract of depleted or worn-out land. On returning from a neighboring market with his team he would bring a load of hard coal ashes, which he would spread upon the surface of said land in the fall of the year, and the succeeding summer it would invariably be covered with a thick growth of white clover.

EDWIN LEACH,

A subscriber since 1846.

[Coal ashes have no direct value as a fertilizer. By lightening a clay soil they might do good, and clover itself is recognized as having a good effect on land.—Ed.]

Snake and Blue Jay.

To the Editor of the Scientific American.

I witnessed a novel sight a short time ago, viz., the killing and eating of a snake by a blue jay. I am living in an oak grove here where Mr. Jay makes his home the year round. I sat watching one of them feeding a short time ago, in the grass, when I noticed he got excited from some object. With his feathers ruffled on his neck and head, and tail erect, he charged from the lower branch of an oak and made a vicious thump at something in the grass. Again and again he whacked at his snakeship, jumping from one side to the other as lightly as an expert "light weight." Then he picked the snake up in his bill, and with neck stretched, tried to carry him to a tree, but the snake was too much alive, and had to be dropped. Twice did this occur, when he finally got him to an oak limb, cut him in two, dropped one half and carried the other half to another tree and ate him. The snake was about ten inches long and three-eighths inch round. I was not more than thirty feet from the scene of battle and the whole thing was done in five minutes.

JOHN BURNS.

2026 Buchanan Street, Minneapolis, Minn.

The Forty-third Annual Meeting of the American Association for the Advancement of Science.

The American Association for the Advancement of Science will hold their forty-third meeting in Brooklyn, N. Y., from August 15th to the 24th, under the following officers:

President: Daniel G. Brinton, Media, Pa.

Vice Presidents: A. Mathematics and Astronomy—George C. Comstock, Madison, Wis.; B. Physics—William A. Rogers, Waterville, Me.; C. Chemistry—Thomas H. Norton, Cincinnati, Ohio; D. Mechanical Science and Engineering—Mansfield Merriman, South Bethlehem, Pa.; E. Geology and Geography—Samuel Calvin, Iowa City, Iowa; F. Zoology—Samuel H. Scudder, Cambridge, Mass. (resigned); G. Botany—Lucien M. Underwood, Greencastle, Ind.; H. Anthropology—Franz Boas, New York; I. Economic Science and Statistics—Henry Farquhar, Washington, D. C. Permanent Secretary: F. W. Putnam, Cambridge (office, Salem), Mass. General Secretary: H. L. Fairchild, Rochester, N. Y. Secretary of the Council: James Lewis Howe, Louisville, Ky.

The meetings of the different sections will be held in the buildings of the Polytechnic and Packer Institutes, the Art Association, the Long Island Historical Society, and the Academy of Music, which are near one another, and peculiarly available for the purpose.

The lanterns used in the lecture rooms of these institutions will be at the service of the speakers. Several excursions will be arranged for the geologists, mineralogists, engineers and others to the most interesting points about New York. The list of papers as far as published indicates a most interesting meeting.

Foot Bicycles.

An ingenious inventor has provided himself with a pair of bicycles for his feet. The wheels are about four inches in diameter and are strapped to his feet like skates. They have rubber tires and glide over the concrete pavement with great ease. They are very superior to the common roller skates and the owner moves along almost as fast as the bicyclist.

THE PERIODICAL CICADA, ALIAS SEVENTEEN-YEAR LOCUST.

BY C. V. RILEY

(Continued from page 355.)

OVIPOSITION.

The female oviposits preferably in the previous year's growth of oaks, but also in the twigs of a large number of other trees, some fifty having been recorded by myself and others, including our chief fruit trees, but very few evergreens. The eggs are laid somewhat obliquely in a double row, each row separated from the other by a portion of woody fiber, which is wider at the bottom than at the top. Each egg is of a pearl-white color, 1-12 of an inch long, and tapers to an obtuse point at each end. The life and moisture of the twig are necessary to the development of the egg, and it is a mistake to suppose that the mother insect severs the twigs. The dried leaves and twigs which are so abundant on the tips of the branches of our forest trees during a Cicada year are caused by the force of the wind breaking the twigs at the point where they have been sawed. The breaking is accidental and not essential. The proportion of broken or severed twigs, or twigs heavily charged with eggs, upon which the leaves prematurely dry and die, though it may be sufficient to give a withered appearance to the whole exterior of the

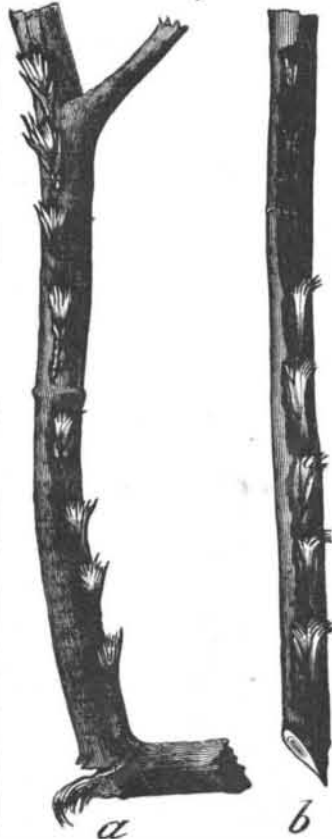


FIG. 1.—a, twig showing recent punctures, from front and side, and illustrating manner of breaking; b, twig showing older punctures, with retraction of bark, and more fully displaying the arrangement of fibers. Natural size.

tree, is but small compared with the thicker and stouter twigs which are punctured but do not break; and from past calculations I judge that about 90 per cent, and in many cases a larger percentage than this, of the eggs which hatch are laid in twigs which never break off. The external appearance of the punctured twigs is indicated at Fig. 1, while in Fig. 2 a single puncture is shown enlarged at a and sections of the same at b, c, and d.

LARVAL DEVELOPMENT.

The long period of underground development of both

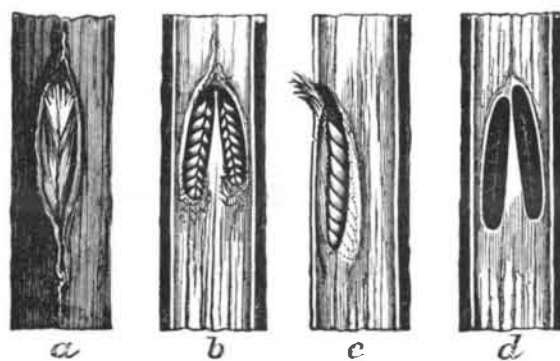


FIG. 2.—a, recent puncture, front view; b, same, surface removed to show arrangement of eggs, from above; c, same, side view; d, egg cavity exposed after eggs are removed and showing the sculpture left by the ovipositor. All enlarged.

the 13-year and 17-year races has been thoroughly established on chronological and historical data covering nearly two centuries. There is, however, chronic skepticism as to facts which are so exceptional, and this is especially true as regards Europeans. The desirability of experimental proof, therefore, has long been felt, and I am happy to state that since 1868 I have been able to watch the larvæ from two distinct broods annually, not in confinement, for this is difficult, but by causing a number of eggs to hatch under a particular tree, and then annually digging and observing the rate of growth and changes that take place in the larvæ.

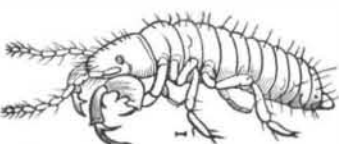


FIG. 3.—Newly hatched larva. Greatly enlarged.

There are six well marked subterranean stages which can be easily identified by the changes in structure. There may be more than six moults, as this is a matter that is difficult to determine, and in an insect which develops so slowly exuviation may take place more often than is usual

among insects. These well marked stages are characterized by differences in the antennæ and particularly in the structure of the front legs. Four of these stages are larval, and without entering into technical detail, it may be stated that the chief interest of these stages lies in the fact that the newly hatched larva, as it comes from the egg and drops gradually to the ground (see Fig. 3), has the front tarsi fully developed, since it must crawl over the ground and has use for the front feet. After the first moult these front feet, being of no service, are lost, and the femora and tibiæ become gradually enlarged to fit the insect for a fossorial existence, these legs reminding one very strongly, in fact, of those of the mole cricket. The last two stages may be called pupal, and the interesting fact may be noted that in the pupa state the front tarsi or feet are regained, but are functionless while the insect remains underground, being folded back on the tibiæ, and are only brought into use after the pupa begins to crawl over the ground or mount some stem or tree for its final transformation. No similar case is found among vertebrate animals of a creature born with certain important structures which it subsequently loses and then regains according to the requirements of its life, though many similar instances are known among invertebrates.

SONG NOTES OF THE CICADA.

There are three prevalent notes which, in their blending, go to make up the general noise which, on approaching an infested woods, is a compromise between that of a distant thrashing machine and a distant frog pond. The first is that ordinarily known as the phar-r-r-r-r-aoh, somewhat variable in pitch and volume, according to the conditions of the insect and the atmosphere. Its duration averages from two to three seconds, and the aoh termination is a rather mournful lowering of the general pitch. The rolling nature of the note, when heard in sufficient proximity, recalls more the croaking of certain frogs than anything else. The second note, and the loudest, is that described by Fitch as represented by the letters tsh-e-e-E-E-E-e-ou, uttered continuously and lasting from two to three seconds, though occasionally longer, and repeated at intervals of about every five seconds. This note is chiefly made during the height of the season, when the insects are numerous. It is also made in unison by all the males on a given tree. The third note is what may be called an intermittent chirping sound, being a series of 15 to 30, usually about 22, sharp notes, sometimes double, lasting in the aggregate about five seconds. Readers of the SCIENTIFIC AMERICAN hardly need to be told that it is only the male which produces this song, a fact well known to the ancients and well voiced by the Rhodian bard Xenarchus in the somewhat hackneyed lines:

Happy the Cicadas' lives,
Since they all have voiceless wives.

ENEMIES OF THE CICADA.

In its adult state the Cicada has many enemies, as almost all predaceous animals, including many birds, pursue them, particularly when they are freshly issued from the pupa. The eggs are also much injured by mites, and the mature insect, when old, is affected by the fungus *Mesospora cicadina* Peck, which is found in the shape of a yellow-brown or clay-colored powder permeating all parts of the body, and often entirely filling the abdomen. This fungus is most often seen in the males. It is interesting to note, however, that no true insect parasite has yet been discovered as affecting this insect, a fact undoubtedly due to its long subterranean life, which is so exceptional and would preclude the breeding of any of the ordinary parasites upon it. We may, in fact, find in this some explanation for this long, exceptional subterranean existence.

SUPPOSED STING OF THE CICADA.

During every Cicada visitation the newspapers publish accounts of injury to children or other persons by the sting of the Cicada. It suffices to say that no well authenticated cases of stinging have ever been recorded, and that, while the insect has a strong beak by which it can puncture twigs and draw sap, no one has ever known it to be inserted in flesh, though hundreds of persons have handled the insects and endeavored to cause them to puncture. The same may be said of the ovipositor, which, though capable of puncturing the twigs of trees, can only be worked where the insect can obtain perfect repose and a proper purchase against a sufficiently hard and unyielding surface. The best explanation of the newspaper accounts is that the stinging is done by one of the large Digger wasps belonging to the genus *Stizus*, which is known to use the Cicada as food for its young and to carry them in its heavy flight from some shrub or tree to the ground in the neighborhood of its burrow. Our periodical Cicada, however, in most latitudes, is about to disappear before the *Stizus* is seen, though exceptionally the two are contemporaneous.

THE CICADA VS. CIVILIZATION.

The following quotation from the writer's report as entomologist of the Department of Agriculture for 1885 is just as applicable to-day as when it was written:

"That this insect, in its distribution and its num-