## ©arrespondence.

## 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 hore 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 bat tle and the whole thing was done in five minutes.

John Burns.
2026 Buchanan Street, Minneapolis, Minn.
The Forty-third Annual Meeting of the American
Assoclation for the Advancement of Science.
Assoclation 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 AstronomyGeorge C. Comstock, Madison, Wis.; B. PhysicsWilliam A. Rogers, Waterville, Me.; C. ChemistryThomas 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. Calvin, Iowa City, Iowa; F. Zoology-Samuel H.
Scudder, Cambridge, Mass. (resigned); G. BotanyScudder, Cambridge, Mass. (resigned); G. Botany-
Lucien M. Underwood. Greencastle, Ind.; H. Anthro-pology-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.
(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 num ber 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


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 dsplaying the arrangement of fibers, Natural size. twigs which compared with the thicker and stouter 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 ex. posed after eggs are
tor. All enlarged.
the 13 -year and 17-year races has been thoroughly established on chronological and historical data cover ing 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. There are six well

## Frg. 3.- alarged.

 ch can beeasily identfied 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 charac among insects. These well marked stages are charac-
terized 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 ies in the fact that the newly hatched larva, asit 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 ser vice, 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, are functionless while the insect remains underground,
being folded back on the tibiæ, and are only brought being folded back on the tibiæ, and are only brought
into use after the pupa begins to crawl over the ground 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 losesand then regains according to the requirements of its life, though many similar in stances 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 be tween that of a distant thrashing machine and a distant frog pond. The first is that ordinarily known as the phar-r-r-r-r-r-aoh, somewhat variable in pitch and the phar-r-r-r-r-r-aoh, somewhat variable in pitch 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 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 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 ancient and well voiced by the Rhodian bard Xenarchus in the somewhat hackneyed lines :

Happy the Cicadas' lives,
ince 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 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 parasitehas yet been discovered as affecting this insect, a fact undoubtedly due to its long subter ranean 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 pub lish 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 sting ing is done by one of the large Digerer 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-
bers, has been and is being seriously affected by our civilization must be apparent to every observer. The records show that the numbers have decreased in the successive appearances of certain broods, owing largely to the presence of our domestic animals in the woods. Then, again, the clearing of land and the building of towns and cities have all had their effect upon the increase of this Cicada. There are doubtless many places in Brooklyn, N. Y., where the insect appeared seventeen years ago in which there will be none the present year. And similarly I opine that whereas around every tree that has been planted more than seventeen years ago the insect is now abundant in Washington, it will scarcely be noticed in any part of the District seventeen years hence. I base this opinion on a new phase in the Cicada bistory, viz., the presence of the English sparrow. It is the first time, perhaps, in the history of the world that Passer domesticus has had an opportunity of feeding upon this particular brood of Cicada septendecim, and so ravenously and persistently does this bird pursue its food that the ground is strewn with the wings of the unfortunate Cicada wherever these have been at all numerous; so that, considering the numbers of the sparrows and their voracity, very few of the Cicadas will be left long

## THE HAUNTED SWING.

The supreme happiness of sitting in a swing which apparently whirls around its points of support, giving the occupant what is most properly described as a new sensation, may now be enjoyed by all. A patent recently granted to Amariah Lake, of Pleasantville, N. J., describes the illusion which we illustrate. It is termed the haunted swing, and has been in most successful operation at Atlantic City and at the Midwinter Fair near San Francisco. Those who are to participate in the apparent gyrations of the swing-and there may be quite a number who enjoy it simultaneouslyare ushered into a small room. From a bar crossing the room, near the ceiling, hangs a large swing, which is provided with seats for a number of people. After the people havetaken their places, the attendant pushes the car and it starts into oscillation like any other swing. The room door is closed. Gradually those in it feel after three or four movements that their swing is going rather high, but this is not all. The apparent amplitude of the oscillations increases more and more, until presently the whole swing seems to whirlcompletelyover, describing a full circle about the bar on which it hangs. To make the thing more utterly mysterious, the bar is bake the thing more ut

The room is as completely furnished as possible, everything being of course fastened in place. What is apparently a kerosene lamp stands on a table, near at hand. It is securely fastened to the table, which in its turn is fastened to the floor, and the light is supplied by a small incandescent lamp within the chimney, but concealed by the shade. The visitor never imagines that it is an electric lamp, and naturally thinks that it would be impossible for a kerosene lamp to be inverted without disaster, so that this adds to the deception materially. The same is to be said of the pictures hanging on the wall, of the cupboard full of chinaware, of the chair with a hat on it, and of the baby. All contribute to the mystification. Even though one is in formed of the secret before entering the swing, the deeption is said to be so complete that passengers involuntarily seize the arms of the seats to avoid being precipitated below. Our drawings are prepared from sketches made at the Midwinter Fair in California.

## The Strike at Pullman.

The employes of the car works of Pullman's Palace Car Company, at Pullman, Ill., struck May 11, and the shops have been closed until further notice. According


Illusion produced by a ride in the swing.
true position of the swing
enough to procreate and perpetuate the species in this district."
some reflections on the popular name. All the leading American writers upon this insect have dwelt upon the necessity of applying correct popular terms to it, since the vulgar name of "seventeenyear locust" leads to a great deal of confusion and causes unnecessary apprehension. The term "locust" in all other English-speaking countries but our own is applied to certain devastating insects of the order Orthoptera and of the family Acrididæ, to which we generally apply the popular term "grasshoppers." Some of the species are migratory and have been re nowned since biblical times for their destructiveness. Biblical and general usage in other countries should serve to fix this term upon this family of insects and disconnect it from the Cicada under consideration, which produces no such disastrous consequences. "Cicada" is short and euphonious, and might be adepted into popular language as Phylloxera, Geranium, etc., have been, while a term in quite common use among entomological writers for the family of Cicadas is "harvest fly."

A bicycle ambulance is one of the latest inventions, and consists of a bicycle with an ambulance attached. The stretcher is fastened to the top of the bicycle, and the wounded or sick person lying on the stretcher can then be rolled along in a very gentle and safe manner.
pass between bar and ceiling. It continues apparently to go round and round this way, imparting a most weird sensation to the occupants, until its movements begin gradually to cease and the complete rotation is succeeded by the usual back and forth swinging, and in a few seconds, as the children say, "the old cat dies." The door of the room is opened and the swinging party leave. Those who have tried it say the sensation is most peculiar and the deception perfect.
The illusion is based on the movements of the room proper. During the entire exhibition the swing is practically stationary, while the room rotates about the suspending bar. At the beginning of operations the swing may be given a slight push; the operators outside the room then begin to swing the room itself, which is really a large box journaled on the swing bar, starting it off to correspond with the movements of the swing. They swing it back and forth. increasing the arc through which it moves until it goes so far as to make a complete rotation. The operatives do this without special machinery, taking hold of the sides and corners of the box or "room." At this time the people in the swing imagine that the room is stationary while they are whirling through space. After keeping this up for some time, the movement is brought gradually to a stop, a sufficient number of back and forth swings being given at the finale to carry out the illusion to the end.
toration of the rates of pay for piecework to what these had been previous to the reduction made on account of the falling off of business. A day or two before the strike President Pullman personally addressed a gathering of the men and gave them some plain statements of the conditions which made low wages for the present necessary. At the commencement of the depression last vear the company employed at Pullman 5,816 men and paid out in wages there $\$ 305,000$ a month. Negotiations that were then pending for new work were stopped, orders were canceled, and it became necessary to lay off a large number of men in every department, so that by the first of November, 1893, there were only about 2.000 men in all departments, or a litthe over one-third of the normal number.
In the effort to keep the shops running and the workmen employed the company made lower bids than were ever before known, and by this means secured work enough to increase the force from 2,000 to 4,300 men, which was the number employed at the time of the strike. This was done by the company eliminating from its estimates the use of capital and machinery, and in many instances going below that and takiag work at a considerable loss; as much in one particular case as $\$ 12$ per car and in another $\$ 79$ per car. The Detroit shops of the company were closed in order to provide work for the men at Pullman, and $\$ 160,000$ was spent since last August in carrying out a system of improvements in the town, which gave work to many.

