

A Mountain takes the Place of a Lake.

Interesting particulars begin to come in with regard to the effects of the series of earthquakes experienced in San Salvador toward the close of last year. The severest shocks were felt in the neighborhood of Lake Ilopango, which has always been regarded of volcanic origin.

On December 21 the earthquake movements were particularly marked, and accompanied by a horrible rumbling sound beneath the earth, which, more than its tremblings and oscillations, spread terror through the already alarmed population. That night no fewer than 150 distinct shocks were felt, and the people abandoned their houses in dismay. During the succeeding days of the month the movements continued, and on the night of the 31st a tremendous subterranean detonation was heard, like the discharge of heavy cannon, succeeded by three successive shocks of great violence, which were felt throughout the entire republic, and, in the immediate theater of their action finished the ruin their predecessors had begun. In the vicinity of the lake a rainstorm followed, of such violence as has not been experienced for years, the rush of waters carrying to the lake vegetation, soil, trees, and everything in their way, making huge gullies, rendering useless some valuable lands on the margin of the lake. The waters of the lake, instead of appearing to be increased by this large addition to their volume, actually diminished.

As the water retired conical-shaped peaks or hills appeared in the center of the lake, while the water surrounding them was in a state of commotion as though it were boiling, and on examination it was found that its temperature had materially increased. From the highest of these peaks, which are constantly increasing in size, smoke, vapor, and flame issued, the column rising as high as that which issues from the Izalco, and may be seen from the capital, a distance of several leagues. The central hill of the group thus forming appears to be increasing in size more rapidly than the others, people in the neighborhood estimating its growth as prodigious. The water of the lake has gradually resumed its level and raised in height as the process of formation of the volcano continued, escaping through its outlet at an immense rate. It is thought that it will soon be emptied into the sea and the mountain will take its place.

The volcano keeps regularly at work, occasionally sending up showers of stones, which, falling on its sides, add to its dimensions. Since it has begun its functions in such a marvelous manner the shocks of earthquake have ceased, although at intervals the subterranean noises are heard, but only in the immediate neighborhood of the burning mountain. The vapors which issue from it are heavily charged with sulphurous materials, which produce a nausea, and in many cases have induced sickness, mostly fevers. With the beginning of the volcanic activity springs broke out in various places, some of potable water, and others horribly fetid and disgusting. Mr. Goodyear, State Geologist, will probably soon issue a report upon the remarkable phenomena involved.

VENUS' GIRDLE.

This pretty creature is found in the Mediterranean, where it attains the extraordinary length of five feet, the breadth being only two inches. The mouth of the Venus girdle is in the center of the body, occupying a comparatively small space. The body is ribbon-shaped toward two opposite sides from the mouth. The edges of the ribbon-like body are serrated or provided with numerous little lips, by means of which the creature propels itself forward. It can also propel itself from one place to another by a peculiar spiral movement.

The Venus' Girdle, with its magnificent colors, is a most beautiful object. Various attempts have been made to keep them in aquariums, but they survive for a few days only. They are attacked by the other animals in the aquarium, and have such a ravenous appetite that it is almost impossible to supply them with sufficient food. When touched they immediately roll themselves up into a regular spiral.

Owing to its great length and tenuity the Venus' Girdle is seldom found quite entire, but it seems to care little for a foot or so of its substance.

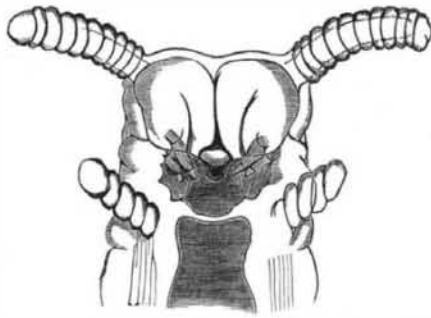
The Spirilla-Spirochetes.

It has been pretty conclusively proved by Obermeier that relapsing fever is due to the entrance into the blood of this minute air-born vegetable organism. In further proof of this, we are informed by the London *Medical Record*, January 15, 1880, that Vandyke Carter, in India, has injected under the skin of monkeys defibrinated blood proceeding from patients suffering from relapsing fever, and which contained spirilla. On the sixth day the monkeys were attacked with violent fever, and the blood was filled with spirilla. Cohn, of Breslau, has further cultivated this spirilla in successful culture fluids outside of the body, and reproduced feverish attacks with the third or fourth culture fluid.

PERIPATUS CAPENSIS.

In his interesting "Challenger Notes," writing from the Cape of Good Hope, Mr. H. N. Moseley says:

I stayed at Wynberg for a fortnight, while working at the anatomy and development of *Peripatus capensis*. *Peripatus* is an animal of the very highest importance and antiquity, and I believe it to be a nearly related representative of the ancestor of all air-breathing arthropoda, *i. e.*, of all insects, spiders, and myriapods.



HEAD OF PERIPATUS CAPENSIS MAGNIFIED.

The animal has the appearance of a black caterpillar, the largest specimens being more than three inches in length, but the majority smaller. A pair of simple horn-like antennae project from the head, which is provided with a single pair of small simple eyes. Beneath the head is the mouth, provided with tumid lips and within with a double pair of horny jaws.

The animal has seventeen pairs of short conical feet, provided each with a pair of hooked claws. The skin of the



PERIPATUS CAPENSIS. (Natural Size.)

animal is soft and flexible, and not provided with any chitinous rings. The animal breathes air by means of tracheal tubes like those of insects. These, instead of opening to the exterior by a small number of apertures (stigmata) arranged at the sides of the body in a regular manner, as in all other animals provided with tracheae, are much less highly specialized. The openings of the short tracheae are scattered irregularly over the whole surface of the animal's skin.

It appears probable that we have existing in *peripatus* almost the earliest stage in the evolution of tracheae, and that these air tubes were developed in the first tracheate animal out of skin glands scattered all over the body. In higher tracheate animals the tracheal openings have become restricted to certain definite positions by the action of natural selection.

The sexes are distinct in *Peripatus*. The males are much smaller and fewer in numbers than the females. The females are viviparous, and the process of development of the young shows that the horny jaws of the animal are the slightly modi-

and peculiar distribution. Species of the genus occur at the Cape of Good Hope, in Australia, in New Zealand, in Chili, in the Isthmus of Panama and its neighborhood, and in the West Indies. If its horny jaws were only larger they would no doubt be found fossil in strata as old as the Old Red Sandstone at least.

The animal is provided with large glands, which secrete a clear viscid fluid, which it has the power of ejecting from two papillae, placed one on either side of the mouth. When the animal is touched or irritated it discharges this fluid with great force and rapidity in fine thread-like jets. These jets form a sort of network in front of the animal, which looks like a spider's web with the dew upon it, and appears as if by magic, so instantaneously is it emitted. The viscid substance, which is not irritant when placed on the tongue, is excessively tenacious, like bird-lime, and when I put some on a slip of glass some flies approaching it were at once caught and held fast. It appears from the observations of Captain Hutton on the New Zealand species,* that the jet of slime is used by the animal not only as a means of offense but to catch insects, on which the animal feeds.

I found only vegetable matter in the stomachs of the Cape species, and concluded that the animals were vegetable feeders. The animals live at the Cape in or under dead wood, and I found nearly all my specimens at Wynberg in Mr. Maynard's garden in decayed fallen willow logs, which were in the condition of touchwood. I tore the logs to pieces and found the animals curled up inside.

The animals are very local, and not by any means abundant, so that an offer of half a crown for a specimen to boys did not produce a single example.

My colleague, the late Von Willemsen Suhm, and I both searched hard for *Peripatus*. He was unsuccessful; but I was lucky enough to find a fine specimen first, under an old cart wheel at Wynberg. Immediately that I opened this one I saw its tracheae and the fully-formed young within it. Had my colleague lighted on the specimen he would, no doubt, have made the discovery instead.

Peripatus capensis is nocturnal in its habits. Its gait is exactly like that of a caterpillar—the feet moving in pairs and the body being entirely supported upon them. The animals can move

with considerable rapidity. They have a remarkable power of extension of the body, and when walking stretch to nearly twice the length they have when at rest.

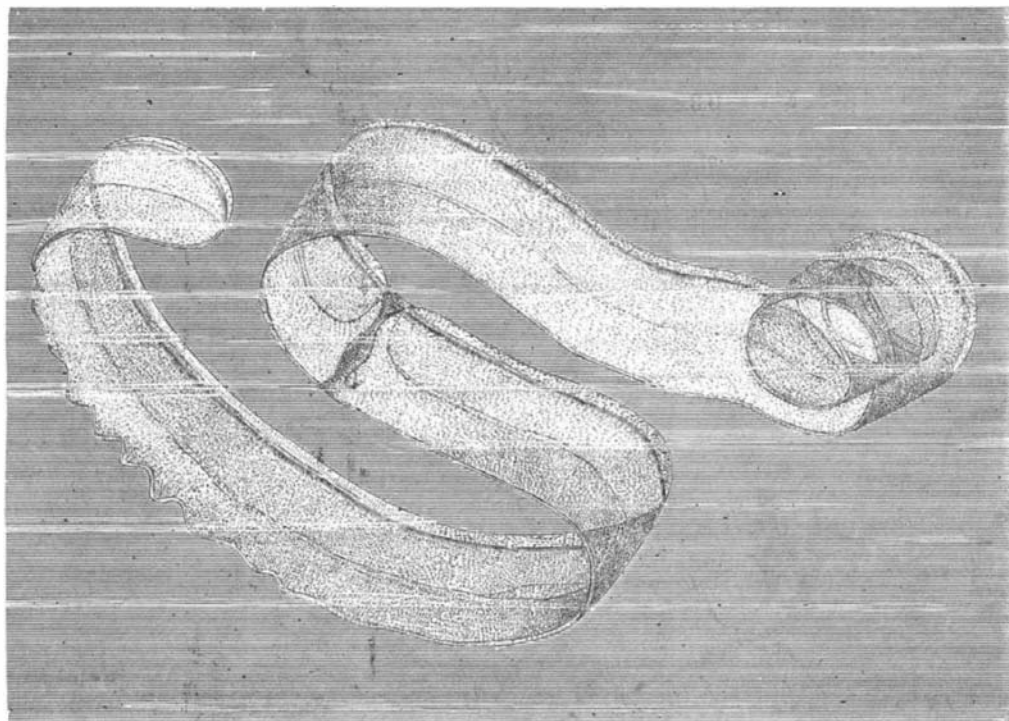
Had I not been engaged for so long a time in working at *Peripatus* I should have certainly paid a visit to the Knysna Forest, accessible by steamer from Cape Town, which contains wild elephants preserved by Government, and numerous antelopes, and other large animals.

[For a detailed account of the anatomy and development of *Peripatus capensis*, see H. N. Moseley, "On Anatomy and Development of *Peripatus Capensis*," Phil. Trans. R. Soc., 1874, p. 757. The engravings and description here given are from the "Challenger Notes."]

How a Botanic Garden is Formed in Japan.

The following extract from a report from Hakodate, Southern Yesso, says the *Gardener's Chronicle*, will indicate the aptness of these intelligent people, the Japanese, to seize a new idea from a foreigner:

"An inkling was given to three of the principal native storekeepers by a lady to start a botanical garden. The idea was jumped at, as this was the very thing they had always desired to have, the Japanese being so very fond of flowers, and more especially foreign flowers; but the individuals in question, who are brothers, did not know how to set about it, and what seeds to order, and when they had them, what to do with them. Accordingly a plan for a garden was drawn up, and some one having an idea of gardening was engaged, after which a spot of ground was selected most suitable for a flower garden; but when application was made for it the Kaitakushi took the matter in hand, and has now started a public garden, the foreign directress still being consulted on all matters. In order to give it the character of a public undertaking, every ward of the town was induced, in succession, to work there one whole day, besides the regular coolies paid by the Kaitakushi. When the whole town had thus contributed its quota of labor, all the singing girls of the tea houses, with the other inmates of these establishments, dressed up



VENUS' GIRDLE.—(Cestum Veneris.)

fied claws of a pair of limbs turned inwards over the mouth as development proceeds; in fact, "foot-jaws," as in other arthropods.

Before I studied *Peripatus* at the Cape nothing was known of its manner of development, nor of the fact that it breathed air by means of tracheae. It was generally placed with the annelids, though its alliance with the myriapods had been suspected by Quatrefages.

That *Peripatus* is a very ancient form is proved by its wide

in gay colors, were engaged there one whole day in smoothing down the paths with a stone fastened to ropes handled by about a dozen girls each, singing and dancing all the time; and, to crown all, one Sunday all the officials, from the highest to the lowest, dressed in laborers' working clothes, were engaged in finishing the 'fusi-yama' of the garden, without which no Japanese garden is complete."

* Captain F. W. Hutton, "On *Peripatus Novae Zealandiae*, Ann." and Mag. Nat. Hist., 1876, p. 362.