

## Familiar Science.

### THE CREATOR'S WISDOM AS SHOWN IN NATURE.

#### THE EARTH-EATERS.

We have received the following query from one of our readers concerning an appearance so apparently insignificant as to fail to attract general notice, but which is well worthy of attention since it is directly connected with one of the most interesting facts in natural history.

*Editor Sacred Heart Review:—*

I notice, sometimes on the roadside and again in the fields where the grass is trodden down, little mounds of sand. There are often half a dozen of these in a square foot of ground. They seem to be formed by some kind of worm forcing its way up through the earth. Is this the explanation, and if so, how can one of these little creatures burrow its way through an almost stony place? The fox, the hare, the rabbit, etc., use their legs, but the worm has no such "agricultural implements."

Respectfully yours,

CURIOUS.

There are only two creatures in this part of the world which make such small mounds as that described by our correspondent. One is the ant and the other is the earthworm, or angleworm, as it is called. The mound of the ant is so well known that we presume it is not that to which our correspondent refers, although he speaks of "little mounds of sand"—the mound made by the ant being of sand, while that of the earthworm is of earth. Some day we shall have something to say about the ant-hill; at present we are concerned solely with the worm.

It is indeed singular, as our correspondent remarks, that an animal with so soft a body as a worm can penetrate the hard soil of stony fields and well trodden grass plots. But our wonder is increased when we learn how it does it. Each little mound, such as that referred to above, represents a quantity of earth which has passed through the body of a worm. Every one knows that worms burrow in the ground, but until that diligent and observant naturalist, Charles Darwin, patiently studied these creatures, no one knew that they ate the earth they lived in. In burrowing their way through the ground they eat as they go, and this eating is both for the purpose of progress and for food.

In structure the earthworm is a straight tube, with an opening at either end—the outer covering of which is a series of from one to two hundred muscular rings, which aid in the expansion and contraction of the body by means of which it progresses. At one end of the body is the mouth, provided with a little lip whereby the creature is enabled to take hold of things, and which can also be used as a sucker when he wishes to anchor himself. The gullet leads from the mouth to the crop, which is an enlargement of the tube behind which is another enlargement called the gizzard. The gizzard always contains grains of sand or very small pebbles which serve the same purpose that

they do in a fowl's crop, that is, to grind the food. The gizzard opens directly into the intestine, where digestion takes place, and which is a straight tube leading to the vent at the other end of the body.

The earthworm swallows an enormous quantity of earth, out of which it extracts any digestible matter which it may contain. What remains of the earth after the digestible matter is taken from it is expelled from the body at the vent. At first this is soft, being mixed with secretions from the intestine, but it "sets" and becomes hard when it dries. It is these ejections (called "castings") which our correspondent has seen in the grass and by the roadside.

The earthworm not only burrows in the earth for food, but it constructs its home there. Earthworms make their burrows in two ways. If the earth is soft they simply insert the head, and by wriggling crowd their way down, pushing aside the earth as they go. If the earth is hard they eat their way down. Probably some of the secretions of the body soften the earth in front of the mouth so that they can swallow it. As they work their way downward, the castings are deposited behind them on the surface of the ground. The burrows run down either perpendicularly, or more often, somewhat obliquely, from three to six or more feet.

The worm, however, is not content with a simple hole in the ground for a home. For a part of its distance the hole is lined with leaves or small sticks, the remainder is cemented with a kind of earth cement produced by secretions from the body. The worm pulls the leaves into its burrow with its mouth, the hinder part of the body being kept in the hole. When no leaves are to be had the creature tries to hide the mouth of its burrow by a little heap of stones. These may frequently be seen on gravel walks.

Darwin's observations showed that earthworms are most useful in fertilizing the soil. Not only do they penetrate the earth and thus facilitate the drainage and ventilation of the soil, but by digesting the leaves and roots in the soil they convert them into a sort of vegetable manure which is of the greatest advantage to the land. That this operation is carried on on a far more extensive scale than we are likely to imagine may be inferred from the numbers of these small agriculturists. Darwin estimates that in England there are nearly 27,000 earthworms to an acre and that in some parts of England for every acre of ground more than ten tons of dry earth pass through their bodies, and thus come to the surface, every year.

ADDITIONS to rented premises, when made by the tenant, should never be fastened by nails, but with screws. Should he wish to move away and take with him the lumber composing the improvements he has made, he can simply draw out the screws and take the planks. If he fastens them with nails, the improvements become the landlord's property.

## Facts and Figures.

THE Merrimac River, in New England, moves more machinery than any other stream in the world.

OVER 40,000,000 trees have been planted in Switzerland in seven years in the effort to "reforest" the country.

THERE are forty-eight distinct diseases of the eye; no other organ of the human body is subject to so many.

IN the Northwestern part of Colorado there is a region several hundred square miles in extent which is a vast deposit of petrified fish.

IT is strange, though true, that in parts of Africa, where grass will not grow, the most beautiful flowers and shrubs flourish to perfection.

THE railways of France already employ 24,080 women, the majority of whom, however, receive a small sum merely for opening and shutting gates where roads cross the track.

CONSUMPTION kills one-fifth of all the people who die in California. This is due chiefly to the large influx of patients in the last stages of the disease who go there hoping to be cured by the climate.

OATS originated in North Africa; onions in Egypt; parsley in Sardinia; peaches in Persia; peas in Egypt; potatoes in America; rye in Siberia; spinach in Arabia; sunflower in Peru; tobacco in America; and walnuts in Persia.

THE Empress Frederick of Germany possesses a unique tea-service. The tea-tray has been beaten out of an old Prussian halfpenny. The teapot is made out of a German farthing, and the tiny cups are made from coins of different German principalities.

#### HOW WE ADVANCE.

In the last forty years, the average of human life has increased from twenty-seven to thirty-four years. This is a remarkable fact. Seven years added to the average of human life in forty! It took over eighteen hundred years to increase the average of life eight years which shows how much more rapidly we advance in these days. From the days of Caesar to the present, fifteen years have been added to the average of life, seven of which of this desirable addition are to be accounted to the advancement made in sanitary science during the last forty years. We live in better houses; we wear better clothes; we care more rationally for our children and we are not enslaved by superstitious fears.

This lengthening of life has been made in spite of the many bad habits yet indulged in by the people. The use of intoxicants and tobacco, late hours, unsuitable dressing, the hurry and worry of the age, still tend to shorten our days of life upon the

earth. If those causes could be removed, another fifteen years could be added to the length of life. Men and women should live to be one hundred years old, and there should be notable exceptions to the rule who would live to be one hundred and twenty-five or thirty. The average animal or bird lives, on an average, five times as long as it takes them to mature physically. Some live much longer than this proportion. Man should do at least as well as the animals, and with his ability to care for himself he should surpass the animals. We need a more rational mode of life. We believe we are gradually learning it.

#### BOOK-LEARNING NOT EVERYTHING.

The trial of the anarchist, Henry, just executed in Paris for throwing a dynamite bomb lasted two days and closed with a long, well delivered address by Henry to the jury. The cable despatch says: "This defence of his conduct, which he had written while in prison and had learned by heart, is perhaps the most terribly crushing answer that has yet been made to those believers in moral progress by means of enlarged educational facilities who have produced a generation of men that cannot live by their brains, and yet are too proud, too rebellious or too self-indulgent to live by their hands."

#### CARDINAL NEWMAN'S IDEA OF A GENTLEMAN.

"He has eyes on all his company. He is tender toward the bashful, gentle toward the distant and merciful toward the absurd. In his conversation the gentleman will remember to whom he is speaking, have thought for all the company and avoid allusions that would give pain to any of them, steering away also from topics that irritate. When he does a favor to another—and he does many—the gentleman will somehow make it appear that he is receiving the benefit instead of conferring it. He is never mean or little in his disputes. Moreover he shows that he has an intellect far above the average, in the fact that he never mistakes personalities and sharp sayings for arguments. Most of mankind do. When grief, illness, or losses come to him he submits to pain because it is inevitable. Bereavement he takes with heroic philosophy because it is irreparable. He goes to death without a murmur because it is his destiny."

FLOSSIE was watching the masons lay bricks, and the process interested her greatly: "O mamma!" she exclaimed, as she saw the man putting on the mortar, "they're buttering the bricks, ain't they?"

ALL honor bestowed on Mary Washington comes from her son, and reverts to him. All honor paid to the Blessed Virgin comes from Jesus Christ and returns to him.

WHEN a girl burns her hand on a curling-iron, she tells the young men she did it frying potatoes.