

# The Origin of the World

By R. McMillan.

## THE BEASTS OF THE CARBONIFEROUS.

### CHAPTER XVII

WHAT a world of romance that quotation from Edward Clodd opens up! What a lot of things I want to tell you about. He mentions the despised cockroach as being abundant; and I laugh when I remember that, if long descent counts for anything, the cockroach is among the very oldest families in the world. I remember, too, that I once bred cockroaches. My mate and I used to get bottles full of them for selection; and one promising family of young cockroaches was roasted to death on a winter's morning through my mother's forgetfulness. My poor mother nearly broke her heart about it; but when she saw my account of it in the paper "Dreadful Tragedy in High Life," she was able to laugh at it.

I remember, also, my first meeting with the footprints of the labyrinthodont at Storeton Quarry, and my wild excitement over it; and I feel as if I ought to tell you about it. You see, I had heard all this story I am telling you now—as far as men had made it out then—and it was all new to me. I had only heard it in sections, as it were—a bit from the astronomer, a bit from the geologist, and a bit from the biologist, and so on; but I had not begun to fit all the pieces together for myself. Besides that, also, it seemed a bit incredible, and I thought it was a good deal of a fairy story. I do not remember being what you would call incredulous, but when I read the story for myself on the stone books as I heard it in class I was amazed; which shows that I had not expected to find such clear proofs for myself. But I found them!

I had been told that "once upon a time," in the old long ago, after the carbonic acid gas had been cleaned out of the air, living things began to creep out of the water and breathe the dense air on the land. They were a long time in learning to live on the land entirely, but they had all the time they needed for development. These amphibians, as they were called, lived part of the time on land and part in the water, as the frogs and the crocodiles do today. They grew to be very large. Great frog-like animals, nearly as big as bullocks, came up out of the water, and walked on the banks of the lagoons. Their footprints hardened in the sun, and when the tide rose again the marks were filled with clay and covered up with sand. By and by the loose earth was converted into solid rock by heat and pressure. Ages and ages passed away, and all the frog-like labyrinthodonts also; and men were born and developed, and the old sandbank was lifted high in a hill; and men made a quarry in it, to get sandstone to build their houses. One day, when a block of stone was being lifted by the crane, they found a thin, very thin, layer of clay, and the print of two big hands, with five fingers on each, or rather four fingers and a thumb. It was not really a thumb, but simply a big swollen finger. The men were ignorant, and said they were the footprints of the devil, and they were sore afraid. Nobody had ever seen such footprints, but the scientific men were greatly interested in them. All scientific men of the world were aflame with excitement, and the quarry was haunted by clever men who wanted to see if there were any more footprints. And there were! They found the big ones, larger than human hands, and they found the little ones, which were the front paws of the beast, and then they found the mark of the tail in the sandstone rock on the same level. As near as I remember now, it was an English biologist who named it a cheirotherium—from two Greek words signifying a beast with a hand. Afterwards they found a tooth in a German quarry, and

the biologist who examined the tooth explained what sort of a beast the tooth belonged to. He said it was an animal like a frog, but nearly the size of a cow, and he called it, from the labyrinthine marking of a tooth a labyrinthodont.

When I found the footprints of that ancient beast I was delighted, and had the big stone blocks mounted in oak frames, and they were finally presented to a great museum, where they abide even unto this day. I tell you this so that you may understand that I am not dealing entirely with things that I have read out of a book. I have seen many things with my own eyes, and have spent whole days and weeks digging and delving in the stone books among the unfailling records of the early life of our dear old earth.

During the Carboniferous Ages these immense animals, born in the water, took to creeping out on the land, and gradually developed lungs, so as to be able to live on land entirely. So arose a form of land life. But you see that life developed first in the water, and that accounts for human beings containing such a large amount of water in their make-up. It will also account for their salt tears, and the large proportion of salt in their composition, for life began in salt water. How wonderful it all seems, does it not?

Through the long ages there developed in the low-lying swamps a vast amount of vegetable life, chiefly ferns. They flourished so amazingly in the steamy, hot, choking atmosphere that all the world seems to have been covered with mighty ferns. They drank the carbon generated in the sun, and that carbon, once a gas, is now diamond and graphite (lead pencil) and coal and oil, and many other wonderful things we use today. Carbon and oxygen are the chief components of the earth, and in the Carboniferous Age they were stored up to form—along with the ferns—what we call "coal" today. The curious thing about it is the number of coal seams existing today, which show the enormous number of epochs or eras, or times of deposition. Let me quote Samuel Laing in his *Modern Science and Modern Thought*:—

"The best idea of the enormous intervals of time required for geological changes will be derived from the coal measures. These consist of part only of one geological formation known as the Carboniferous. They are made up of sheets, or seams, of condensed vegetable matter, varying in thickness from less than an inch to as much as thirty feet, and lying one above the other, separated by beds of rock of various composition. As a rule every seam of coal rests upon a bed of clay, known as the 'under-clay,' and is covered by a bed of sandstone or shale. These alternations of clay, coal, and rock are often repeated a great many times, and in some sections in South Wales and Nova Scotia there are as many as eighty or one hundred seams of coal, each with its own underclay below, and sandstone or shale above. Some of the coal seams are as much as thirty feet thick, and the total thickness of the coal measures is, in some cases, as much as 14,000 feet."

That means that every "under-clay" was once a surface soil, and every foot of coal represents at least fifty generations of ferns—sigillaria—and that means that these seams of coal each represent a long period of time:—

"Starting on the foregoing assumption that one foot of coal represents fifty generations of coal plants, and that each generation of coal plants took ten years to come to maturity, an assumption which is certainly very moderate; and taking the actually measured thickness of the coal measures in some localities at 12,000 feet, Professor Huxley calculates that the time represented by the coal formation alone would be six millions of years. Such a figure is, of course, only a rough approximation, but it is

sufficient to show that, when we come to deal with the geological time, the standard by which we must measure is one of which the unit is a million of years."

You see, then, great scientific people all assume that the law never alters; that birth, growth, and decay were always the same; that cause and effect were always bound together, and that the uniformity of law is beyond all question. I believe that, and you may also, if your mind allows you; but I can only give you the facts on which to base your judgment.

Let me tell you of one of the beautiful forms which began in the Carboniferous Age and developed into wondrously ornamental forms and tremendous sizes in later ages. I mean the ammonite. I have seen tiny ones, as small as waistcoat buttons, and I have seen giant ones as big as a cart wheel; but they have all disappeared from off the face of the earth as living forms. We find only their fossils in the stone books today!

Next Lesson: BIRDS AND BEASTS.

## Education in Filmland

THERE was recently shown in Rochester, N.Y., a picture illustrating the process by which modern manufacturers turn out soap. The picture shows a vast mass of machinery that performs every process from the mixing of the formula in the great vats to the final packing of the finished product. Seven people are employed, three of whom are women, from the chemist in the laboratory who makes the tests to the men who finally handle the packed product. Twenty-five years ago the same volume of production would have furnished employment for thousands of men.

Here in our town, where the old Erie canal is being converted into a subway, the bridges are lined with idle men watching the automatic diggers and shovels doing the work, which, when the canal was originally dug, employed thousands of men with picks and shovels.

Capitalist development has reached a stage where practically automatic machinery has displaced labor in most of the productive processes but which at the same time turns out commodities in a volume for which the purchasing power of the workers limited by their wages, and the purchasing power of the capitalists limited by their powers of consumption, fails to furnish sufficient markets. As a result industrial crises ensue. These crises, increasing in frequency, involving greater numbers and extending over larger territories present a problem of unemployment which has become not only national but international.

The development of machinery and the consequent education of the workers have been two of the great historical functions of capitalism. During the period of development masses of skilled labor were absorbed but now that machinery is approaching its automatic stage the highly skilled labor that was formerly necessary is being rapidly replaced by cheaper unskilled labor and that largely of women and children.

The whole trend of capitalist production today is to crowd the skilled mechanic into the class of the unskilled, and the unskilled into the class of the unemployed. The report of Dr. Micheli, Italian commissioner of emigration, is a good illustration of the unemployment problem in the various countries of the world.

For any political group to assume that they can control these economic conditions through legislation is simply taking advantage of them to play politics to the detriment of the workers.

KATHERINE SMITH.