

The Origin of the World

By R. McMillan.

IN THE DAYS WHEN THE WORLD WAS YOUNG

Let us sit down and think how far we have gone. We have now reached the point at which we have a central fire, all blazing and flaming, a mass of fiery gas in a state of white hot combustion, so big, so wide, so vast, so terrible, that you can scarcely conceive it. Millions of miles away from that central mass there are tiny masses of solid, gaseous matter. It sounds absurd to talk about "solid, gaseous" things; but we may just as well leave it at that, for all the words that I use belong to the days of our childish ignorance, when we thought that the sun "rose" and "set," and the stars were "up," and the bad place was "down." But I must use words that all of us understand, and the best I can do is to ask you to try and remember the sense in which I use the words. I used to think that words were real, and explained the things they were attached to; but they do not. Words do not explain anything. All the explanations must reach your brain, and sometimes a look will explain more than a volume of words.

We have got to a central fiery mass, which we will call the sun; and around it are circling small fiery masses, at different distances. The third in order from the sun we call the earth. But when the worlds were very young there may have been more than there are now. I do not know, and if anybody contradicts this he will have to prove his case. You may take my word for it that there are now, say, eight worlds moving round the sun. The nearest to the sun is Mercury, and the next is Venus, and the third is this world, the earth. And that is how it originated, as far as I know. But that is not all you want to know. You want to know how the grass and trees and rivers and beasts and people originated. That is to say, how did the world come, from a mass of flaming gas, to be the lovely cool (sometimes) place that we live in now? You want to know all that, and I want to tell you.

This world, with its attendant moon, went on circling round the sun for ages, growing gradually cooler; but it did not appear to go any slower, as we see some things doing after a time. If you stir the tea in your cup, you will see it goes as fast as ever you wish it almost; but as soon as you stop stirring it the speed begins to go out of it, and very soon the tea appears to be as still as a green meadow or a solid mountain. Why did it stop? Simply because of the friction of the tea against the cup and against the air. I must try and tell you about the air later on; but in the meantime you may take it that the friction against the cup tends to bring the whirling tea to a standstill.

The law of the universe is that all bodies moving through space will go on and on in a straight line, at the rate that was first imposed upon them, until another force interferes with them. There is no cup to interfere with the motion; there is no air to stop them. There is nothing that we know of in space to stop a flying body. The sun drove the earth out, and the pull of gravitation held it back; and the combination of the two forces kept the world from going round in a circle, where it must keep going until some other power stops it. As I told you, it is slowing down; but it would take millions of years before any great change would be noticed. But gas cools! Even if the mass of the world kept going at the same rate, the gas would be getting colder all the time, and giving off its heat just as a log fire does in the bush. Fire is just the same everywhere, it is combustion. That is all. No more, no less. But the sun is a flaming fire of blazing gas, giving out a fearful heat; and if you were asked how much heat the sun gives out in a day, some mathematician would be able to give you the answer.

Samuel Laing, in his *Modern Science and Modern Thought*, gives you one answer which is interesting. He says: "The sun in each second of time parts with as much heat as would be given out by

the burning of 16,436 millions of millions of tons of the best anthracite coal." So you see my statements are very mild compared with those of a great scholar. The earth, then, when it was of the same fiery nature as the sun, gave off enormous heat, and so did the moon. But the moon, being very much smaller than the earth, came earlier to the time when life and vegetation were possible on her little sphere, and I expect that "once upon a time" there was life on the moon. There may have even been men and women, as we are; but I hardly think so. However, you are free to exercise your fancy as to the nature of the inhabitants of the moon. All I know is that there was probably a great deal of volcanic activity in the moon at one time, but it died out. You can see the dead craters of the volcanoes if you look at the moon through a telescope. All things die—men and women, worlds and suns, and systems. Nothing endures. What a wonderful, wonderful thought! Even the world dies, and the sun, and the vast constellations, and all things pass away; and as the poet says:—

We are part

Of every rock and bird and beast and hill,

One with the things that prey on us, and one
with what we kill.

When the moon had dried up, and air, and water and life and sound had all disappeared, the earth mass was also cooling down, under the same laws that make your tea and your dinner grow cool. The fiery gases were entering into new combinations as they cooled, and—most important of all—the oxygen and hydrogen combined and formed water. As I told you before, water is composed of two gases, and these two gases abounded in the flaming earth mass, so that when the opportunity came to combine they did so, and fell on the red hot crust, hissing and roaring and filling the atmosphere with steam. The red-hot earth drank up the newly-formed water, and new water formed and was absorbed again; and so it went on through the long, long ages.

The laws that governed matter were the same then as now. For the weight of hydrogen was 2, and that combines with a weight of oxygen equal to 16, to form a watery vapour equal to 18. Those laws never vary, neither in time nor in space. The uniformity of law never fails. In Neptune, the farthest-off brother world of ours, 3,000 million miles from the earth, the same laws prevail. In the remotest star, billions and billions of miles from us, the same laws operate without the slightest deviation. The law is the only enduring thing.

The earth mass cooled slowly through the ages, and the gases entered into ever new combinations, and solids were formed by the lowering of the temperature, and a solid crust at last formed on the world. But the inside was as hot as ever. The inside was a blazing, burning, fiery mass, and when it burst through the crust, with a wild volcanic roar, it covered all the land with lava—which is another name for melted rock. The volcanic activities of the earth must have been terrific, and the rush and roar of the boiling floods must have moulded the plastic earth into all sorts of weird shapes.

Still, all the time it was growing more solid, it was cooling, and condensing, and growing ever more stable. But life as we know it must then have been utterly impossible. Yet, when the world cooled sufficiently to allow of warm, quiet seas, there must have been new chemical combinations, forming jellies, and weird, quivering, shapeless, unnameable things, which had only the promise of life in them. When the boiling floods swept over the seas and the lands they must all have disappeared again, only to recommence at a new opportunity. And how long did this go on? Ah, who can say? Words fail to tell; years fail to measure. The human mind falters before the problem. For long ages the crust of the earth was solidifying, till there must have been at least twenty-five miles of earth-crust, and

there came a sort of stability. What a miraculous time it all was; What a world we live in, to be sure!

Next Lesson:

THE SOLIDIFICATION OF THE ELEMENTS.

PRECAUTIONARY.

THAT the capitalists are keenly sensitive to the revolutionary possibilities of the tense situation prevailing, in their present relation to labor and the precautionary measures they are adopting, is indicated by the order just issued for the redistribution of the regular army of the United States in what is called the interests of "economy" and "efficiency."

In commenting on the order the Rochester "Times Union" (May 11th) says: "Practically the entire army is needed to prepare and conduct the citizen's training camps this summer." But the "Times Union" is too discreet to tell us why there is such great necessity for the military training of so numerous a body of citizens, in these piping times of peace, as to involve the services of the whole army for their training, nor does it explain what class comprises the citizens.

The drive for the open shop, conducted with all the brutality of which the capitalists are capable, is alienating the labor groups which have previously supported the capitalists in their wars, especially in their war on the unskilled workers; it has precipitated a condition of guerilla warfare in various parts of the country. That the contagion will spread to such proportions as to need armed suppression and that they have become fearful that the slaves can not be depended upon to do their masters bidding is the reason for the elaborate preparations for the training of the citizen's army, to be used in case their program meets with open rebellion. The example of Russia has put the fear of the proletariat in their hearts, and they are concentrating all their forces for the fray, in preserving their law and their order.

And their precautions do not rely entirely on the military aspects of the situation. They are making strenuous efforts to relieve the poverty which their system engenders by socializing the dispensation of charity by means of Community Charts, and are making drives for funds, expecting to kill two birds with one stone i. e., to dull the keen edge of that poverty sufficiently to remove it as a danger, and at the same time impress the workers with the loving kindness of their masters by permitting themselves to be further exploited. That the thumb-screwing process of economic pressure placed on the workers to make them cough up a stated amount of their meagre wages will result in the lowering of the standard of living of those workers does not disturb the smugness and hypocrisy of the capitalists. All they are able to see is that the methods previously used in the Liberty Bond and War Chest drives were successful, but what the reflex in the minds of the workers in the way of working class education has been they have no comprehension.

But that working class education has made and is making progress is revealed by the action of the bankers of the United States in establishing courses of "understanding," to be conducted by radio, by speeches, in schools, teachers' institutes, labor meetings and conventions, and farmers' institutes. This program was given out by Pohn H. Puelicher, vice-president of the American Bankers' Association, in a speech before the Maryland Bankers' Association at Atlantic City, N. J., May 17, 1922.

He said: "The banker has the practical knowledge of fundamental economics which make for stability of life. He can bring to his people the economic intelligence which will make them vigilant and give them means of detecting economic wrong. He deals with fundamental elements, knowledge of which dispels the paradoxes in the radical mind, and builds strong characters and successful lives."

That the class struggle, consciously and unconsciously, is being accentuated is evidenced by this strengthening of the defences of our enemy. To underestimate them is foolish; to prepare for their demolition is wisdom.

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