

Diggers in the Earth

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THE INDUSTRIAL READERS Book II DIGGERS IN THE

EARTH BY EVA MARCH TAPPAN, Ph.D.

Author of "England's Story," "American Hero Stories,"

"Old World Hero Stories," "Story of the Greek People,"

"Story of the Roman People," etc. Editor of

"The Children's Hour."

THE INDUSTRIAL READERS

By Eva March Tappan

I. THE FARMER AND HIS FRIENDS.

II. DIGGERS IN THE EARTH.

III. MAKERS OF MANY THINGS.

IV. TRAVELERS AND TRAVELING.

PREFACE

The four books of this series have been written not merely to provide agreeable reading matter for children, but to give them information. When a child can look at a steel pen not simply as an article furnished by the city for his use, but rather as the result of many interesting processes, he has made a distinct growth in intelligence. When he has begun to apprehend the fruitfulness of the earth, both above ground and below, and the best way in which its products may be utilized and carried to the places where they are needed, he has not only acquired a knowledge of many kinds of industrial life which may help him to choose his life-work wisely from among them; but he has learned the dependence of one person upon other persons, of one part of the world upon other parts, and the necessity of peaceful intercourse. Best of all, he has learned to see. Wordsworth's familiar lines say of a man whose eyes had not been opened,— "A primrose by a river's brim

A yellow primrose was to him,

And it was nothing more."

These books are planned to show the children that there is "something more"; to broaden their horizon; to reveal to them what invention has accomplished and what wide room for invention still remains; to teach them that reward comes to the man who improves his output beyond the task of the moment; and that success is waiting not for him who works because he must, but him who works because he may.

Acknowledgment is due to the Lehigh Valley Railroad, Jones Brothers Company, Alpha Portland Cement Company, Dwight W. Woodbridge, the Utah Copper Company, the Aluminum Company of America, the Diamond Crystal Salt Company, T. W. Rickard, and others, whose advice and criticism have been of most valuable aid in the preparation of this volume.

Eva March Tappan.

A STRUCTURAL STEEL APARTMENT BUILDING

Courtesy American Bridge Co.

First the steel frame, then the floors, then the stone or brick shell, then the interior finishing—this is how the building is made. THE INDUSTRIAL READERS BOOK II DIGGERS IN THE EARTH I IN A COAL MINE

Did you ever wonder how beds of coal happened to be in the earth? This is their story.

Centuries ago, so many thousand centuries that even the most learned men can only guess at their number, strange things were coming to pass. The air was so moist and cloudy that the sun's rays had hard work to get through. It was warm, nevertheless, for the crust of the earth was not nearly so thick as it is now, and much heat came from the earth itself. Many plants and trees grow best in warm, moist air; and such plants flourished in those days. Some of their descendants are living now, but they are dwarfs, while their ancestors were giants. There is a little "horse-tail" growing in our meadows, and there are ferns and club mosses almost everywhere. These are some of the descendants; but many of their ancestors were forty or fifty feet high. They grew very fast, especially in swamps; and when they died, there was no lack of others to take their places. Dead leaves fell and heaped up around them. Stumps stood and decayed, just as they do in our forests to-day. Every year the soft, black, decaying mass grew deeper. As the crust of the earth was so thin, it bent and wrinkled easily. It often sank in one place and rose in another. When these low, swampy places sank, water rushed over them, pressing down upon them with a great weight and sweeping in sand and clay. Now, if you burn a heap of wood in the open air, the carbon in the wood burns and only a pile of ashes remains. "Burning" means that the carbon in the wood unites with the oxygen gas in the air. If you cover the wood before you light it, so that only a little oxygen reaches it, much of the carbon is left, in the form of charcoal.

When wood decays, its carbon unites with the oxygen of the air; and so decay is really a sort of burning. In the forests of to-day the leaves, and at length the trees themselves, fall and decay in the open air; but at the time when our coal was forming, the water kept the air away, and much carbon was left. This is the way coal was made. Some of the layers, or strata, are fifty or sixty feet thick, and some are hardly thicker than paper. On top of each one is a stratum of sandstone or dark-gray shale. This was made by the sand and mud which were brought in by the water. These

shaly rocks split easily into sheets and show beautiful fossil impressions of ferns. There are also impressions of the bark and fruit of trees, together with shells, crinoids, corals, remains of fishes and flying lizards, and some few trilobites,—crablike animals with a shell somewhat like the back of a lobster, but marked into three divisions or lobes, from which its name comes. *

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Diggers, Dumpers, and Demolition - Ace Plant and Tipper Hire has access to a wide range of earth moving 5T diggers — you can open an account with us and book a hire over the phone, Diggers Song - Sea Green Singers - Far from Chelsea: diggers during the regeneration of Elephant & Castle the digger has to go so deep into the London earth that it is unable to Ed Smith's latest book is — Luck: a Fresh Look at Fortune — (Bloomsbury, £8.99). Diggers Love the Earth Week 13 - Watershed Charlotte - are branded idealists, and informed that they are ignorant of the true nature of.. 20 In his book Cromwell and Communism, Bernstein, as Marxists are wont

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