

**AN ANALYTICAL KEY TO
THE FOSSILS
OF THE VICINITY
OF RICHMOND, IND.**

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An Analytical Key to the Fossils of the Vicinity of Richmond, Ind. by D. W. Dennis

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D. W. DENNIS

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62

J. C. Branner
AN

ANALYTICAL KEY

TO THE

FOSSILS OF THE VICINITY

— OF —

RICHMOND, IND.

By D. W. DENNIS,

Teacher of Natural Science in the City High School.

THE UNIVERSE IS NOT DEAD AND DEMONICAL, A CHARNEL HOUSE
WITH SPECTRES, BUT GOD-LIKE AND MY FATHER'S.—*Carlyle.*

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"He prayeth best who loveth best
All things both great and small;
For the dear God who loveth us,
He made and loveth all."

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PREFACE.

The following pages have been prepared for the student. Such terms, and only such, have been introduced as are necessary to furnish a natural basis for classification, and these are all defined as here used.

The scientific names have been used because the specimens have no other names; the definitions are, however, appended, and it is to be sincerely hoped that no one will be deterred from the study of our fossils by these. It has been very truly, if not scientifically, said:

The shell with lines of beauty marked you'll find on every hill,
Is christened streptorhynchus for the twist upon its bill;
And though you cannot find the twist, the shell is pretty still.

The great good derived from the study of our fossils lies in what we may learn of the events of the long ages during which the pleasant site of our city has been under the preparing hand of the Creator.

But nature pleases while she instructs; there lies many a cabinet ornament within half an hour's walk of our homes, and there is much pleasure in the task of gathering them and learning their story.

The work of preparing this pamphlet has been its own reward. It was suggested by the needs of the classroom. If it shall make the way more easy for the student, I shall be over-paid.

To all my friends who have loaned me specimens for examination, I desire to return my thanks.

I am under obligations to President Moore for the use

of the Earlham College Cabinet, from which I obtained valuable assistance; to S. A. Miller, of Cincinnati, for the assistance derived from his excellent Dictionary of the Palæozoic Fossils; to Mr. Nordyke for the use of his starfish, and especially to Mrs. M. P. Haines, who has kindly given me the constant use of her beautiful and complete private collection. The use of her classified and labeled specimens has enabled me to do in a few months what would otherwise have required years.

RICHMOND, June, 1878.

D. W. D.

NOTE.

The student will bear in mind that these tables have been prepared for our home fossils only, and that they may or may not serve as a guide to the same genera as represented by other species in other localities.

The specific distinctions have been made out on the same plan. Those features and only those have been given, which are necessary to distinguish a given species from others found here. The student is referred, however, under each description, to a work in which a full description and a cut are given. This makes the Key a dictionary of reference also.

The descriptions here given are true descriptions of the fossils found; they have all been made from nature. There is sometimes doubt about the names, and especially of the casts of Lamellibranchs. Another trouble arises from the multiplicity of synonyms. One of our shells, the *Strophomena rhomboidalis*, has been described since 1769, and it has been called since that time by *thirteen* different names, and still its freshness and beauty are unimpaired.

I have given the names as given in Miller's Dictionary, and as the Ohio Reports are so extensively circulated, I have given the synonyms which occur in that work. The present work is as complete as our present knowledge will permit. It has been truly said that a work on Geology is out of date as soon as published. This has been verified here, within the last few months at least, for hardly a week

has passed without the discovery of one or more new species; and, again, there are at least a dozen species here with which I am acquainted, and concerning which there are conflicting opinions. To decide where they belong will require much time and labor. As soon as a sufficient number of new species are determined to justify it, a supplementary sheet will be issued.

REMARKS ON STRATA, Etc.

Our rocks chiefly belong to the upper part of the Cincinnati epoch, which is itself the upper epoch of the Lower Silurian; but the Niagara period of the Upper Silurian is also represented at various places in the vicinity. At Elkhorn Falls the succession of epochs may easily be noted. The stones quarried at that place belong to the Cincinnati epoch. This is shown by the presence in them of many of our commonest fossils. Just above these is a stratum of blue clay, and above this the "cliff rocks" of that neighborhood, which belong to the Niagara period of the Upper Silurian. These rocks may be known by their general aspect, or by the coral, *Favosites gothlandicus*. To this stratum of blue clay Elkhorn Falls owes its existence. Being much softer than the Niagara rocks above, it easily washes out, and the projecting shelf rock furnishes the support for the falls; replace the blue clay by cliff rocks and we should have rapids. The rocks at Middleboro are also Upper Silurian. The same is true of the rocks at Eaton, Ohio, and at a point just north of the New Paris pike in the neighborhood of Hill's mills. The nearest approach of this formation is the one on the Earham farm, on the east side of the west grove, where many pieces of chain coral and other characteristic specimens have been found; but as this is surrounded by Lower Silurian rocks on all sides, at distances varying from a few hundred feet to less than a half mile, I judge