

**A MONOGRAPH OF
THE TRILOBITES OF
NORTH AMERICA**

Published @ 2017 Trieste Publishing Pty Ltd

ISBN 9780649496105

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Edited by Trieste Publishing Pty Ltd.
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JACOB GREEN

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NORTH AMERICA**

TO JOHN GEORGE CHILDREN, Esquire,

F. R. S. L. & E.

THE kindness which a traveller receives when in a distant land, must ever be among his most pleasing recollections—your attentions therefore to me, during my short residence in London a few years since, cannot easily be forgotten. Suffer me, then, to inscribe this little work to you as a token of my gratitude.

Our pursuits in the Natural and Physical Sciences have been congenial. Your interesting researches with your original and magnificent Galvanic Battery, first drew my attention to the calorific effects of that mysterious agent; and your works on Natural History have stimulated my exertions in the same fascinating pursuit.

A large portion of your time and fortune have been devoted to the patronage or the cultivation of Natural Science—so that the dedication of this work to you, if it were infinitely more worthy of your acceptance, would be due from me, both as a tribute of high respect, as well as of grateful acknowledgment.

Philadelphia, October 1st, 1832.

EXPLANATION OF THE PLATE.

Figure 1. *Trimerus Delphinocephalus.*

2. *Calymene Diops.*
3. *Asaphus Micrurus.*
4. *Cryptolithus Tessellatus.*
5. *Paradoxides Boltoni.*
6. *Triarthrus Beckii.*
7. *Isotelus Cyclops.*
8. *Dipleura Dekayi.*
9. Head of *D. Dekayi.*
10. *Ceraurus Pleurexanthemus.*

The above figures represented on the Frontispiece to this volume, were first published in the Monthly Journal of Geology, &c. for June, 1832, and I am indebted to C. A. Poulson, Esq., for the use of them in this Monograph.

INTRODUCTION.

SOME geologists imagine that the order of creation is registered in the rocks which compose the external crust of the earth, and that they can there clearly read a progressive development of organic life; in other words, that a succession of more perfect animals may be traced in ascending from the lower strata to the upper or more recent formations; that there is a gradual approach to the present system of things, and a succession of destructions and creations; worlds of living beings alternating with worlds of desolation and death, antecedent to the existence of man.

Others, again, contend that there is often a wide and palpable discrepancy between the nature of the rock, and the fossils which it contains, and, therefore, that such inquiries afford no clue, whatever, to the order of creation.* We propose not to enter the field

* Nothing can be more opposed to true science, than to pronounce on the priority of formation, or the comparative age of rocks, from either their structure, or the organic remains they present. M. Alexandre Brongniart thus propounds his opinion: "In those cases where characters derived from the nature of the rocks are opposed to those which we derive from organic remains, I should give the preponderance to the latter." This seems to us to imply an admission, that nothing definite can be inferred from the *nature of the rocks*; moreover, that between

of controversy. Fossils are undoubtedly historic medallions of remote periods in the natural history of our earth, and our design is, merely to illustrate with them a neglected department of ancient zoology, by describing a few which have recently fallen under our own observation.

In some varieties of rocks there is often found the fossil remains of an animal which bears some resemblance to certain species of the crab. The back of this organic relic is commonly divided by two deep grooves or furrows, into three longitudinal lobes, and from this circumstance, the term *Trilobite* has been applied as a family name to distinguish this whole race of beings. This general appellation, however, though in most of the species, highly appropriate, is by no means applicable to all.

The individuals which compose the family of the trilobites resemble each other in many important par-

the nature of the rock, and the organic remains, there may be a palpable discrepancy; and that these may be even at complete antipodes with each other. The event has proved, from what we have already mentioned, that no evidence as to priority can be obtained from the nature of the fossil remains displayed in particular strata. In addition to what has been said on this subject, we may further state, that *encrinites*, *entrochites*, and *pentacrinites* are found in clay slate, grauwacke, transition limestone, alpine limestone, lias, muschelkalk, and chalk. It may be reasonably asked how these three species of fossils could indicate any particular formation, when they are found in so many types and structures of rocks altogether different? If they would go to prove any thing at all, it would be that of a *contemporaneous* formation; but certainly not distinct epochas.—See *Eclectic Review*, July, 1832.

ticulars, and form together an exceedingly natural group. The body, with but few exceptions, is divided transversely into three parts. The anterior portion or head often resembles the buckler of the *horse foot* or *king crab* (*limulus polyphemus*), so common on our sea coast. The middle portion is the *abdomen*, and is always separated transversely into a number of segments or articulations, generally diminishing in breadth as they recede from the head. The posterior end is the *tail*, which, though in some species, a mere prolongation of the abdomen, that can scarcely be distinguished from it, yet in others it assumes a genuine caudal appendage.

The head of the trilobite is also generally divided into three parts: the middle is called the *front*, or forehead; and the lateral portions the *cheeks*. In most cases, a projecting tubercle, or knob, is observable on the anterior surface of each cheek, which has much the appearance of an eye. Its reticulated structure is in many instances so analogous to that of the eyes of some crustaceous animals, and also of some species of insects, that there can be but little doubt that these tubercular projections, were true organs of vision.

Some of the genera which belong to this remarkable race of fossil animals, possessed the power of rolling or coiling themselves up into a kind of ball, like certain species of insects, or like the armadillo; and they are always found embedded in the rocks in this attitude.

Such are the general characters by which these

petrifications may be known, and they will be found illustrated in a manner more or less striking, in most of the species. The exceptions, which rarely occur, will be distinctly marked, when the species are described.

The superior covering, or upper shell of the trilobite is the only part of the animal, concerning which we have any satisfactory knowledge. It is conjectured that it was furnished with articulated feet, but no traces of any organs of progressive motion have hitherto been fairly discovered.* Hence, it may be reasonably supposed, that the structure of the lower portions of the animal were so soft and delicate, as to render them incapable of sustaining the process of mineralization, which the hard crustaceous covering of the back so successfully undergoes.

That these petrifications were once marine animals there can be little doubt, for they are always found associated in the same rocks with shells, and other productions peculiar to the sea.

The Trilobite is supposed by many naturalists to

* Mr. Parkinson states, that in a trilobite which he possessed he thought he perceived the points of the feet; but on endeavouring to detach the piece of rock in which it was embedded, the specimen was entirely shivered, though he worked at it with the utmost care. A portion of the underside of a trilobite (*Isotelus gigas*) near the anterior edge of the head, was distinctly ascertained, by Dr. Dekay, but only enough to convince him of its analogy in this part with that of the *limulus polyphemus*—no organs of locomotion could be seen. Mr. Stokes, the distinguished fossilist of London, has confirmed the observation of Dr. Dekay, by some dissections of his own.

be one of the first animated beings of our earth called into existence by the great Author of nature.* It was first noticed more than two centuries ago, among the petrifications which abound in a calcareous rock, at Dudley, in England, and was from this circumstance, called for a long time, the *Dudley fossil*. Linné gave it the name of the *Paradoxical insect*; but whether an insect, a crustaceous animal, or a shell, is still considered by many as problematical.

Notwithstanding the high antiquity of the family of the Trilobites, and the remarkable characters the different individuals which compose it, sustain in the animal kingdom; till within a very few years, the whole race has been almost entirely neglected by naturalists. The first attempt at any systematic arrangement of the genera and species, was made in 1815, by Alexander Brongniart, Professor of Mineralogy, &c. &c., in Paris.† Until that period, the term

* It is obvious, that if most of the gelatinous animals which now inhabit our seas, were to become extinct, few or no traces of them could be found in any succeeding depositions of earthy matter. Whatever kind of animal life, therefore, may have been the first which appeared in our planet, must be entirely hypothetical. All that we can with certainty say of it, is, that it was best adapted to the circumstances; in which it was to exist, and that it was consistent with the wisdom and design which we see every where pervading the universe.

† I cannot let this opportunity pass, without acknowledging my obligations to Professor Brongniart, for his civilities, when on a late visit to Paris. Every one whose curiosity leads him to examine the royal manufactory of porcelain, a Sevres, of