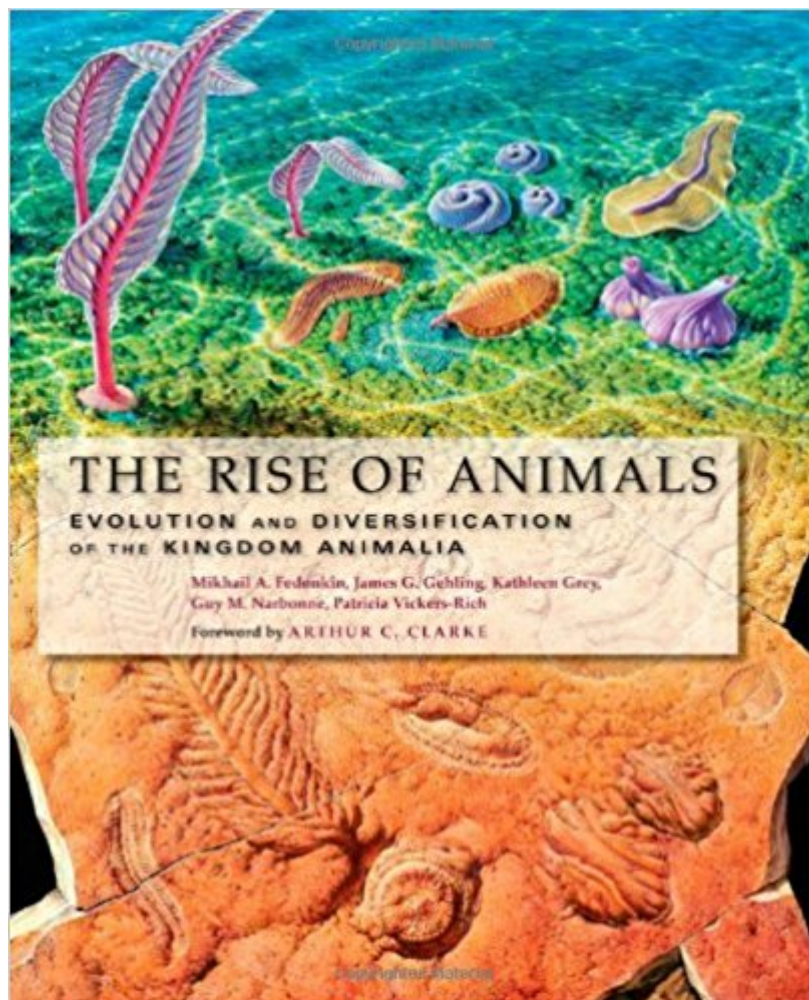




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The Rise Of Animals: Evolution And Diversification Of The Kingdom Animalia



Synopsis

Among the major events in evolutionary history, few rival in importance the appearance of animals. The Rise of Animals—a significant reference providing a comprehensive synthesis of the early radiation of the animal kingdom—fully captures this moment in geologic time. Five of the world's leading paleontologists take us on a journey to the most important fossil sites that serve as unique windows to the earliest animal life—including the Ediacara Hills of Australia, the Russian taiga and tundra, the deserts of southwest Africa, and the rugged coasts of Newfoundland. Each of these places holds a rich fossil record that reveals how the animal form came into existence and why some groups succeeded while others failed. The authors describe the diversification of the Kingdom Animalia into the familiar body plans of today: from simple animals such as sponges to complex groups like mollusks, arthropods, echinoderms, and chordates that appear explosively in the Cambrian. This exquisitely illustrated book reveals the early moments of an evolutionary process that eventually resulted in our own species. An essential resource for paleontologists, biologists, geologists, and teachers, The Rise of Animals is the best single reference on one of earth's most significant events.

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Customer Reviews

"It's a beautiful book and the definitive account of the period... I love it and expect it to become a classic." (Jeff Hecht New Scientist) "The Rise of Animals offers a much-needed avenue to communicate to the general public the past decade's exciting discoveries of Ediacaran fossils."

(Shuhai Xiao Science)"It's a magnificent book, not only because it is unique, but also because it has been produced in a wonderful way with so many text figures, many of them in good colors. This gives a good picture of the appearance of the animals as well as of the environment in which they must have occurred." (Rob Hengeveld, author of *The Dynamics of Biological Invasions*)"Recommended. Informed general readers; researchers/faculty; professionals/practitioners." (Choice)"A one-stop shop for up-to-date information about this puzzling meagerie... non-professionals will likewise find that it is a fine-looking book that captures the excitement of scientific discovery." (Gregory D. Edgecombe Bioscience)

Mikhail A. Fedonkin is the head of the Precambrian Laboratory at the Russian Academy of Sciences. James G. Gehling is the senior curator at the South Australian Museum. Kathleen Grey is the chief paleontologist at the Geological Survey of Western Australia. Guy M. Narbonne is a professor and Queen's Research Chair at Queens University, Canada. Patricia Vickers-Rich holds a personal chair of paleontology and is founding director of the Monash Science Centre at Monash University in Australia.

"The Rise of Animals" is a wonderful book. Much of the history of life on Earth was dominated by single-cell organisms and, until relatively recently, little was known of the origins of multi-cellular life before the "Cambrian Explosion" of life. This book describes those origins in what is now called the ediacaran fauna. More particularly, the most important fossil sites are very well described by leading palaeontologists. The authors show great respect for scientific rigor and academic balance - and dedication to their subject. They are also sufficiently humble to admit that much of what we know about the remote past is based on fragmentary evidence subject to different interpretations, and that new discoveries will almost certainly lead to revisions of matters currently considered to be settled. You won't find self-serving selection of facts and argument to serve partisan stances. Nor will you find chest-beating self-promotion. These are not light matters in an age where science is often trivialised and even distorted to serve partisan interests. One has only to follow the "intelligent design" controversy to see how pernicious such misrepresentation can be. Where there are competing explanations for certain events, the central arguments on both sides are fairly given. Where uncertainty exists it is acknowledged. Significant information is fully attributed and referenced. Such an approach fully informs the reader and provides valuable starting points for students to investigate particular matters more deeply. The reader is also impressed by the dedication of early ediacaran investigators, who worked under difficult field conditions and then may

have had to contend with professional opposition to their novel claims when back in the office! The progress of science owes much to such people, who, having the strength of their convictions, live to see their ideas embraced by their peers. But this book is also about people other than palaeontologists. Often important sites lie on private property, or in remote areas, that require the cooperation of local people to enable palaeontologists to carry out field work. There is a moving story of one such couple, Tatiana and Timofei, who endured great hardships in the Soviet era, but who also provided accommodation and help to scientists in the field. Such people often go unrecognised in the scientific literature and it is greatly to the credit of the writers of this book that their contributions are recorded in text and photos. There are also vivid descriptions of the difficulties (and pleasures) of doing fieldwork in remote locations such as the Arctic coast of Siberia. The book is crammed with wonderful photos, illustrations and diagrams. The latter in particular are models of clarity. They manage to make very clear the essential features of complex systems. Colour-coded text boxes are frequently used for definitions and to describe important topics (eg radiometric dating) without disturbing the flow of the narrative. Many of the fossil photos are breathtakingly beautiful. They are a tribute to the fossil discoverers, to those who revealed them from the host rock, and to those who prepared the illustrations for this book. This book requires a reasonable level of scientific literacy to enjoy fully. The authors do not shy away from correct scientific terminology, but they make an effort to define many terms and to explain important topics in the text boxes. Readers familiar with chemistry, biology and the earth sciences at senior high school or undergraduate level will have few problems. Anyone studying palaeontology or related earth sciences would be motivated by the book, and would yearn to visit the wonderful locations of important fossils. Science teachers looking to expand their horizons will also get much from the book, including insights into how science should be objectively studied and reported. Perhaps this is the most important duty of science teachers: to impart the moral and philosophical aspects of science, not only facts and techniques. There is a text box on page 221 that describes the problems of sample contamination and the proper use of controls. Such experimental techniques should be taught to all students early in their careers, because the acquisition of trustworthy data is the bedrock upon which all science is built. The book is not really suitable for general readers with no scientific knowledge at all - although such readers will certainly enjoy the illustrations and may be prompted to learn more about the origins of animals. The book is not amenable to skimming, as one reads a novel. Most non-specialist readers will have to engage with the text to take in the information. There is no Glossary, which is a pity. Specialist terms unfamiliar to the general reader like "rangeomorphs" and "taphonomy" are used a number of times before they are defined in passing in the text. It would also

have been helpful to include a classification diagram showing the major divisions of life (eg domain, kingdom, phylum, class, order, family, genus and species) and some of the key taxa mentioned in the text. Only specialists will know where, for example, "chordate" or "arthropods" fit on the tree of life when these terms arise in the text. Another small criticism is the rather jarring and self-serving Foreword written by Arthur C Clarke, whose promotion of his own science fiction books seems quite out of place after one has read the book. There is an extensive bibliography, as you would expect in a book of this quality. There is also an "atlas" describing all the key fossils. Internet references are also given in some places. The bottom line: I really enjoyed this book. It is well worth the money for general readers like myself, not only for its scientific content and descriptions of evocative places, but also for its insight into the professional activity of honourable people engaged in scientific work that they love and respect - in a field that unfortunately does not always generate the public acclaim or recognition enjoyed by high-profile fields such as space research and medicine. Books like this deserve a wider readership so that proper recognition may accrue to scientists who are unravelling the mysteries of life on our planet - surely one of the noblest scientific endeavours of all.

Without doubt, the best and most thorough and complete book on the fascinating and scientifically significant Ediacaran fossils or vendozoans. It might be mentioned that the title may be somewhat misleading as some of its authors consider Ediacaran Fossils to represent an extinct kingdom (or its equivalent) rather than ancestors of Cambrian animals such as trilobites. This interpretation of Ediacarans (or vendozoans) rather considers them to represent a sort of "evolutionary experiment" which went extinct prior to the Cambrian Radiation Event. In all cases however it's an excellent and informative book on a very interesting group of fossils.

If you are obsessed with the Ediacarans this book is for you. I spent hours poring over the pictures and drawings. I would love it if Fedonkin would do a second edition with all the recent discoveries. A wonderful book for all those who love paleontology and the history of animals.

I quite agree with the enthusiasm of the two reviewers. Yes, this is truly a fantastic book, very well illustrated, very balanced in presenting conflicting views etc. I also agree that the introduction by Arthur C. Clark could have been eliminated and replaced by a really good glossary. I would add that the book has an excellent Atlas of Precambrian Metazoans (Ediacaran animals) that I believe is the only one around. This gives a description of the organism and an illustration along with locality or localities where found, specific rock units, detailed description of fossil, type specimen location and

tentative classification. I have read other reports of Ediacarans but this is the first that brings together what is known and published by many authors and all the various names and synonyms found in the literature. Not only is animal life covered but important algal species such as the acritarchs used in time dating sediment layers discussed. Again a first for this excellent book. This is a volume that will be read and reread many times.

great

The title is Extremely Misleading. A much better title would be "Ediacaran Fossils and Their Localities". There's basically no discussion at all of the rise or evolution of animals, instead the book focuses on the major Ediacaran fossil localities. In fact, there's almost no discussion on what the individual Ediacaran critters are. What is the relation of Dickinsonia sp to any modern organism? (Yes, I KNOW there's no agreement, but what are the data and arguments?) Why should I have to read 3/4 of the book to discover that Dickinsonia sp is believed to have flopped onto microbial mats for lunch, over and over? The organization of the book is Strange: it is organized by the localities in which the fossils were discovered. I really can't think of anyone who would prefer this organization over any other; it would make much more sense to me to organize the book by the history of discovery and interpretation, or to organize it by the various genera of fossils, or in fact, just about any way but the way it's been done. The saving graces of the book are two. First, it is well illustrated. Second, there are several good anecdotes of the various geologists who performed the important field work. In contrast to the rest of the book the first two chapters are in desperate, desperate need of an editor. They're full of typographic problems, unclear sentences, and other issues.

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