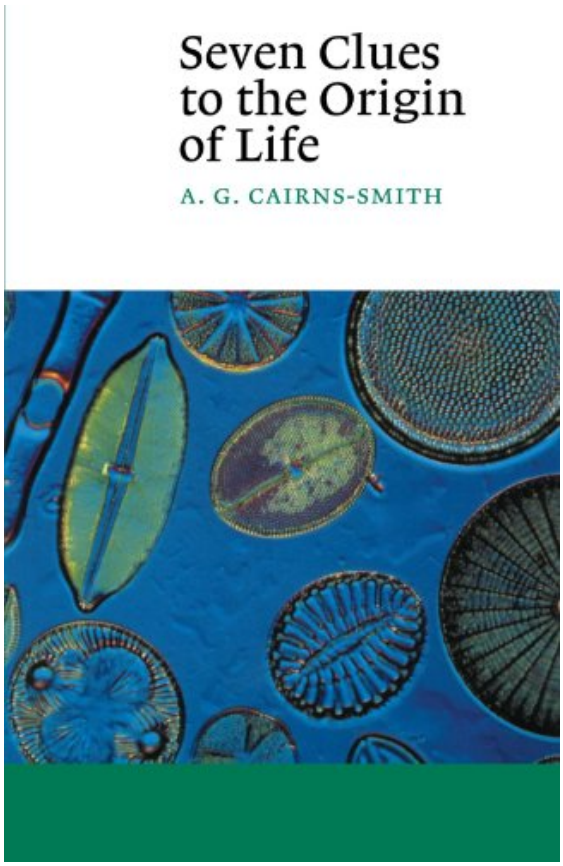

Seven Clues to the Origin of Life: A Scientific Detective Story (Canto)

Seven Clues to the Origin of Life: A Scientific Detective Story (Canto)

This book addresses the question of how life may have arisen on earth, in the spirit of an intriguing detective story. It relies on the methods of Sherlock Holmes, in particular his principle that one should use the most paradoxical features of a case to crack it. This approach to the essential biological problems is not merely light-hearted, but a fascinating scrutiny of some very fundamental questions. 'I know of no other book that succeeds as well as this one in maintaining the central question in focus throughout. It is a summary of the best evolutionary thinking as applied to the origins of life in which the important issues are addressed pertinently, economically and with a happy rec

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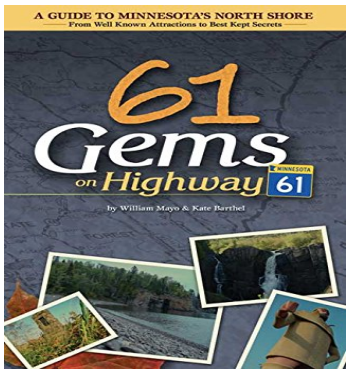
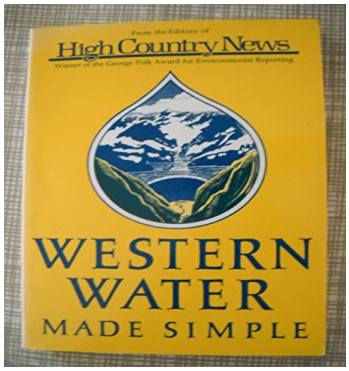


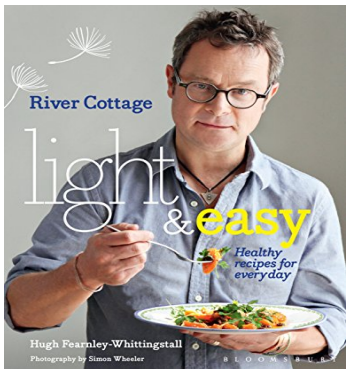
61 Gems on Highway 61: A Guide to Minnesota's North Shore-from Well Known Attractions to Best Kept Secrets

Highway 61, from Duluth to the Canadian border, is peppered with tourist hotspots that Minnesotans love. But even the most devout North Shore traveler doesn't know Lake Superior like Kathryn and William Mayo do. These explorers and residents of the region outline the best sites you may not know abo



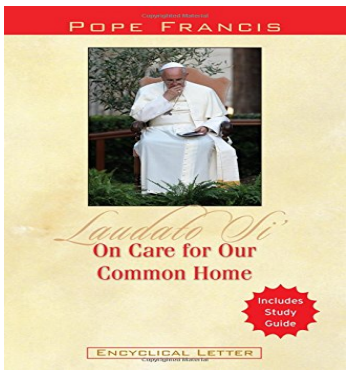
Western Water Made Simple

Book by High Country News



River Cottage Light & Easy: Healthy Recipes for Every Day

'Eating more healthily isn't about denial. For example, reducing one's dependence on wheat flour and dairy ingredients, which don't appear at all in this book, turns out to be a delicious voyage of discovery. New grains, new oils, new tastes, new combinations: it all adds up to a new zest for life.



On Care for Our Common Home (Laudato Si')

Study Guide Included for Reflection and Discussion. Addressed not only to Catholics but to every person living on this planet, Pope Francis second encyclical is a challenging call for a bold cultural revolution in how we think about technological progress and economic growth. The degradation of our

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What others say about this ebook:

Review 1:
One of the great problems for understanding how the origin of life could have occurred comes from what we know of life at present: all living organisms depend on proteins for everything they do, but proteins can only be made with the use of nucleic acids, proteins could not exist without a coding system. So if we suppose that proteins -- and hence metabolism -- came first, then how were they replicated? If nucleic acids came first then where did specific catalysis come from? The discovery that RNA had some catalytic activity suggested what is now called the RNA World, a word in which all the coding and all the catalysis were done by RNA, with proteins coming later. The difficulty with this is that although RNA can fulfil some of the functions of proteins it is a very feeble alternative, and it is hard to imagine how all of the tasks carried out by proteins could ever been done by RNA, even in organisms far simpler than any we know today.

Graham Cairns-Smith proposes a way out the conundrum: coding and replication came first, but they were done not by nucleic acids but by an inorganic support, specifically clay, because some forms of clay have the properties necessary for laying down sequences of slightly different layers and then replicating them. It would be difficult to say that he has found the right solution to the problem, but it is certainly a suggestion that has more likelihood of being right than many others that have been proposed. The book is small, and intended for the general reader, so it is not highly technical and is easy to read, with many quotations from Shelock Holmes. It begins by setting out the reasons why the problem is difficult, and then gradually builds up to the author?s solution. It is very well worth reading even if finally you are not convinced.

Review 2:
Modern genetic components are too complex to have appeared by chance on the primordial Earth. DNA and RNA, and even their more elementary building blocks, require the assistance of an agent at least as complex as themselves for their synthesis. This is the famous Catch-22 of the origin of organic replicators. Cairns-Smith begins by clearly stating this problem, and then embarks on an innovative and imaginative journey to find its solution.

It is no shortcoming of this endeavor that a solution is not presented. Cairns-Smith traces the outline of a proposal: 'low-tech', inorganic replicators -- crystal genes in solution -- with the ability to carry information and reproduce, to 'mutate' and evolve, proliferated over long periods of time near the surface of the primordial earth. Clay is identified as a likely source for this crystallization, being stable and ubiquitous in this environment. The regime change from inorganic to organic information carriers arrives in the form of a "genetic takeover", in which organic molecules come to supplant their mineral forefathers. Cairns-Smith describes an intricate dance of the inorganic and organic, as the molecular keys to life -- amino acids and nucleic acids -- were built up amongst the crystalline scaffolding in environments primed for their creation. From here Cairns-Smith speculates on how this major transition to organic information carriers might have completed...

This book is clear, concise, and packed with courageous ideas about a time shrouded in mystery. Although current research favors alternative ideas over Cairns-Smith's crystal genes, aspects of his development remain relevant to today's thinking, and this book is an important and especially accessible early contribution to the understanding of abiogenesis.

Review 3:
I am impressed that this paperback is still commanding a price of $20 on Amazon. It just shows

how remarkable this little book is. I still maintain that the best literature and the best scientific thought comes out of Britain. This is another example. With nothing more than reflecting on how life began and asking the right questions, separating the VITAL from the INSIGNIFICANT, Cairns has provided an interesting suggestion, and lays out the thesis so well, you can't help but follow along easily. My only complaint: once he reaches the end, I wish he had added a chapter or two to suggest what the next step was in evolution of the first organism. It's a short book; you can read it in two or three days at a very leisurely pace. I first read it some years ago, and re-read it occasionally, and always find something new.

Review 4:
I found this book while doing some research in the aftermath of an online discussion of just how unlikely the formation of the first replicators (the first things that could undergo evolution) was.

In that discussion someone had remarked (after reading some creationist stuff) that it was just fantastically impossible for the first cell, or even the first nucleotide, to come together more or less by accident. I replied that of course no one serious thinks that the first replicator was a whole cell, or even a modern sort of nucleotide; it was presumably some very low-tech and inefficient thing, just barely able to reproduce itself imperfectly once in a blue moon. After I said that I realized that while it seemed perfectly obvious to me, and that all right-thinking people must agree, I didn't specifically recall any of the right-thinking people in question. So I went and did some research, and (among other things) I found this book.

In "Seven Clues to the Origin of Life", A. G. Cairns-Smith, a molecular biologist and so on at the University of Glasgow, lays out in an amusing and chatty way (including numerous Sherlock Holmes quotations) his argument that yes the first replicator really couldn't have been any of the replicators that we have today, or even anything very much like them. And he presents his own theory as to what they in fact were: inorganic clay crystals of a certain type that seem to have (or seem capable of having) both the requisite ability to do a kind of very low-tech replication, and the potential to have eventually provided the platform on which our current much higher-tech replicators (DNA and all that) got their start.

The writing is extremely clear and readable, aimed at a general non-technical audience, and the book is both fun and short (131 pages including glossary, index, etc). I'm not convinced by his argument that these particular clay crystals were the first replicators, but I'm very convinced that something at least vaguely like them could have been, and that therefore there's no really puzzling problem about how replication got started in the first place. Which is nice, because it's pretty clear that it did. *8)

Highly recommended to one and all. And if you really like the subject, there's apparently a longer and weightier and more technical book, "Genetic Takeover", in which he treats the same subject in more detail (and perhaps without the Sherlock Homes).

Review 5:
First, I have to preface my review by saying that I haven't yet read other books about the origin of life, so I have nothing to compare this book to...anyway
This short book is absolutely fascinating. The thrust of the author's argument is this:
Life as we know it is too complex to have originated in its present form. Nucleic acids and proteins and most organic molecules necessary for life are too complex to have originated in the primitive atmosphere even if the conditions were favorable. We need to find something that is capable of growing, replicating (not perfectly), and providing a substrate for the formation of

molecules necessary for life as we know it today. What could possibly do that? Ah yes, crystals of clay! Clay is abundant. It grows and replicates but not perfectly thus allowing for irregularities to accumulate. These crystals with irregularities could then provide a surface that brought molecules together in close proximity so that they could interact and produce the organic molecules needed for life. Eventually, the secondary organisms that resulted from this process achieved a certain complexity that gave rise to life as we know it.
Interesting argument. Is it true? Is it even plausible? I actually don't know the answer to either question, and I have a feeling that there are no definite answers.
I found this book thought-provoking, and it presented an interesting solution to the mystery of the origin of life.

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