

# River Book Reviews

Each year millions of people visit the Grand Canyon to appreciate its scenic beauty. Most of them probably wonder about how it came to be, and why it looks so different from the scenery closer to home, a topic that has entranced and challenged geologists for nearly a century and a half.

Until recently, details of the ongoing debate over the origin and evolution of the Grand Canyon were to be found scattered through dozens articles available only to those with access to a good academic library and the time to dig them out. Several recent publications have now put this debate, and contrasting views, with easy reach of anyone interested in the details.

Tom Vail's book, *Grand Canyon: A Different View*, is a colorful example of Creation Science: it explains the origin of the Grand Canyon from a perspective of biblical literalism. To say this book has provoked controversy is an understatement. Customer reviews on Amazon.com, for example, break down along religious lines. Tom's supporters, as well as detractors, seem to agree that some books (and ideas) deserve burning, or at least suppression, although they disagree on which ones merit this special attention. The various rants (pro and con) do little credit to either religious or scientific perspectives, but the attention and controversy may have served to sell more books. Controversy aside, Tom's book stands out in one respect: it's chock full of beautiful photographs, many of them by Charly Heavenrich. In addition, All contributions have been peer-reviewed to ensure a consistent and biblical perspective.

In the view of Creation Scientists (there are contributions by about two dozen different writers), geology is pretty simple: most rocks we see on Earth today would have been formed during two very short periods of time. The first was the six-day creation week, about 6,000 years ago when the entire planet was produced. The second was the one-year Flood when the planet was reshaped. By comparison, not much happened in the roughly 1,500-year period between Creation and the Flood, or in the roughly 4,500-year period since.

In this view, all the rocks from the Tapeats up to the Kaibab were laid down as the earth was inundated by

## REVIEWED

**Colorado River Origin and Evolution:** Proceedings of a Symposium Held at Grand Canyon National Park in June, 2000" Edited by Richard A. Young and Earle E. Spamer, 2001, Grand Canyon Association, P.O. Box 399, Grand Canyon, AZ 86023, 280 pages, Paper, \$25

**Grand Canyon: a Different View** by Tom Vail, 2003, Master Books, P.O. Box 726, Green Forest, AR 72638, 104 pages, Hardcover, \$16.99

**Carving Grand Canyon: Evidence, Theories, and Mystery** by Wayne Ranney, 2005, Grand Canyon Association, P.O. Box 399, Grand Canyon, AZ 86023, 120 pages, Paper, \$14.95

**Grand Canyon: Solving Earth's Grandest Puzzle** by James Lawrence Powell, 2005, Pi Press, New York, NY, 309 pages, Hardcover, \$27.95

**Colorado River Briefs For A Trip Through The Grand Canyon** Linda Lou Lindemann/Dan Lindemann - 154 pages - \$16.00

**Guide to the San Juan**, Duwain Whitis and Tom Martin 34 pages, waterprof, Vishnu Temple Press, \$22.95

**Spirit of the Canyon**, DVD, Charly Heavenrich, Box 1555 - Boulder, CO 80304, \$20+\$4.25 shipping

Noah's flood, and as the flood receded, the carving of the canyon would have taken place when the sedimentary layers were still soft, allowing the catastrophic erosion process to quickly, and easily, cut through the layers. All of these events happened in a single year.

If the flood was a catastrophic, global event, and the above explanation makes sense, non-creationists might well wonder why the unique scenery of the Grand Canyon is confined to a small section of the American Southwest

and why other parts of the world look so very different.

The titles discussed below explore some possible explanations for the unique features of the Grand Canyon, but invoke a universe a couple million times more extensive in time and space to do so; Noah's flood is not one of the contending ideas.

*Colorado River Origin and Evolution* (edited by Young and Spamer) contains 33 papers from a symposium at the South Rim in June of 2000 which was attended by more than 70 geologists. This is the classic collection of papers reflecting current thinking on how and why the Grand Canyon exists. Most of these papers may be opaque to readers with a only a general interest in geology, and they have not been edited with an eye towards a consistent...perspective.

Fortunately, two new books set out to explain the ideas - and controversies - surrounding the history of the river and the canyon to the general reader. Covering much of the same grounds and touching on the careers of some of America's greatest geologists, either would make an excellent addition to the ammo box or *(continued on next page)*

(continued from preceding page) bookshelf of any armchair geologist curious about the history of the Colorado River and the development of the amazing landscape called Grand Canyon.

James Lawrence Powell (no relation to JWP) - author of *Grand Canyon: Solving Earth's Grandest Puzzle* - is Executive Director of the National Physical Sciences Consortium, and former Director and President of the Los Angeles County Museum of Natural History. He also taught geology for twenty years at Oberlin College. Last year he entertained an enthusiastic audience at NAU Cline Library with his impersonation of John Wesley Powell reminiscing about his trip through the canyon in 1869, part of an impressive series of public lectures sponsored by the Grand Canyon Association.

*Grand Canyon: Solving Earth's Grandest Puzzle* has a broad focus, and traces the physical and intellectual exploration of the river - and its geologic puzzle - from the era of John Wesley Powell to the 21st century. Along the way, we meet many notable scientists, including Clarence Dutton, Grove Karl Gilbert, Eliot Blackwelder, Chester Longwell, Charlie Hunt, Edie McKee, and Ivo Lucchita (to mention a few) and we see how ideas about canyons, rivers, and landscapes have evolved over time. In addition, there's the story of Powell's river trip and subsequent career, and other historical details that provide the backdrop and context for the development of geological concepts about rivers and canyons and how they are formed. It's illustrated with a number of maps and diagrams, some familiar historic photographs, and a jacket design featuring the Panorama from Point Sublime by William Henry Holmes. Although there is no formal bibliography, chapter by chapter references to the geologic literature and other sources serve the same purpose.

Flagstaff author and guide Wayne Ranney - author of *Carving Grand Canyon: Evidence, Theories, and Mystery* - is an adjunct professor of geology at Yavapai College in Sedona, and leads field trips throughout the Southwest for a number of organizations including the Museum of Northern Arizona, Grand Canyon Field Institute, and Smithsonian Journeys. He's been a naturalist and lecturer on guided excursions to all seven continents, and has been interested in the geology of the Grand Canyon and the surrounding area for the past 30 years.

In *Carving Grand Canyon* Ranney covers much of the same ground as Powell, but with a much tighter focus on the geology. The illustrations are, in a word, spectacular, and

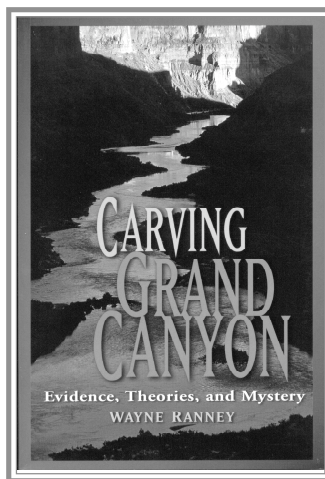
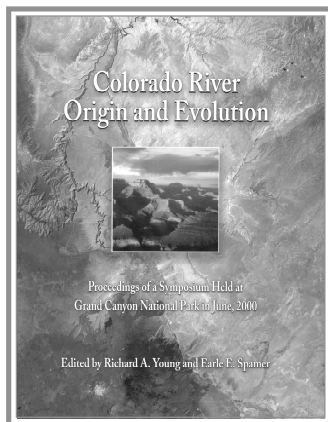
include some eye-grabbing scenic photography, Landstat images from the USGS, paintings by Bruce Aiken, and numerous maps and block diagrams which elucidate geologic features and ideas. Most of the illustrations are in color and, as typical of other recent publications of the Grand Canyon Association, careful attention has been paid to the details that make this a beautiful, as well as informative, addition to anyone's library.

There's an orderly progression of topics, from background on the Grand Canyon Enigma to physical setting, a discussion about how rivers carve canyons, and then a long chapter on the history of geologic ideas about the canyon. This is organized around the geologists who were the principal players during the 19th, 20th, and early 21st century.

As in Powell's book there are photos of most of the geologists, and a liberal assortment of quotations in which their ideas are expressed in their own words. But unlike Powell, the focus is almost exclusively on the geology - Powell's river trip and career, and other tangential topics, don't divert the readers attention.

It's easy to follow the progression of ideas from Newberry's recognition of the role of water, and the river, in cutting the canyon, to currently popular concepts like headward erosion, stream capture, the complex history of the river, etc. Some topics receive individual treatment, while others are covered in the sections about the geologists who came up with the ideas. Each chapter ends in a concise summary, and the book ends with a broader summary and overview of the various topics that were discussed. Ranney identifies the questions and issues that remain unresolved, and explains why these uncertainties still exist after 150 years of research: primarily undiscovered, missing, or ambiguous evidence.

Overall, both books are informative. Powell's approach shed more light on the history and background of the ongoing debate over the origin of the Colorado River and Grand Canyon, but Ranney, does a better job of explaining the geological issues, theories, and remaining uncertainties. In many ways, the two books compliment each other well, and anyone seriously interested in increasing their understanding how, and why, the Colorado River and Grand Canyon reached their current form would profit from reading both. Each author, on occasion, managed to mention, or explain, something in a way that grabbed my attention, and provided an insight that I missed in the other book.



Curiously, while the title of *Grand Canyon: Solving the Earth's Grandest Puzzle* suggests that there is a solution to the puzzle, it's easy for the reader to come away mystified about the nature of the solution. Powell mentions a new theory - he calls it the Lazarus theory - that seems to have gained in acceptance at the recent symposium, but I didn't find a clear cut explanation of what he was talking about. [Lazarus is a character from the New Testament, the man who was raised from the dead. Scientists also read the bible, although they generally don't mistake it for a geology textbook.]

Perhaps one reason Powell didn't go into much detail is that the basic idea has a number of distinctly different, and conflicting, applications in explaining how the Grand Canyon came to be. This idea - that rivers can die, only to come back to life again later - has been around for awhile, and takes different forms depending on who is describing their preferred version of events that are concealed behind the mists of time.

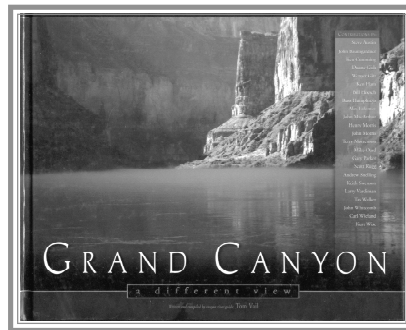
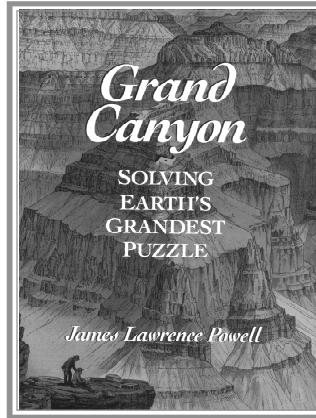
All of these applications of the Lazarus idea have one thing in common, the agreement that rivers can have complex histories, and an old landscape, developed under conditions that no longer exist, can be rejuvenated in a different form later. This is a point that Ivo Lucchitta has been emphasizing for many years: the Grand Canyon did not develop on a blank slate. Instead, there was an earlier landscape that set the stage for what we see today, and although it may be difficult to imagine exactly what it used to look like in detail, there's plenty of evidence to suggest the broader features and their implications.

A good example of the application of the Lazarus idea comes from Andre Potochnik's study of the history of the Salt River, where the evidence is well preserved. Long ago, drainage through the Salt River canyon was towards the NE, when that was the downhill direction. Later, as the drainage was disrupted by regional events, the canyon filled with gravels which preserved information about where they came from and which direction they were going. Then, for a time, through-going drainage ceased and the river died. Eventually, the downhill direction was reversed, water started flowing again, and the old canyon was utilized by a river running the other way, the modern Salt River.

In the same manner, an earlier river may have drained the area now occupied by the Grand Canyon, towards some (currently unknown) destination to the NE. When regional events disrupted the drainage pattern, the canyon may have become choked with sediments that the river couldn't carry

away. After a period of inactivity - and pretty recently in a geological sense - this old river valley may have been resurrected by a river running in the opposite direction.

As different parts of today's Colorado River - the Grand and the Green, the San Juan, and the Little Colorado River, each of which may have had independent lives until recent times - came together and eventually found an exit at or near sea level, the river gained water and strength. Rapid down-cutting over a large area followed, and carved the landscape we see today, but (at the same time) removed much of the evidence of what the landscape looked like before the integration of the various parts into today's whole.



Curiously, Andre's work - and a similar theory by Don Elson - aren't mentioned in *Solving the Earth's Grandest Puzzle*, but both get attention in *Carving Grand Canyon: Evidence, Theories, and Mystery*. As for the mystery, both authors make it clear that much of the critical evidence is currently missing, and that some critical questions may never be fully answered. So - to be honest about this - there's no magic or final solution, only some improved ideas that look promising for future investigations.

Overall, Ranney, I think, does a better job of explaining the elements likely to be combined into future theories, and pointing out why mysteries persist. Powell's book has a broader focus on the historical element that adds much to understanding why the Grand Canyon is of such special interest to geologists today, in spite of nearly a century and a half of intense scrutiny by some of the best minds in the history of the science. As I mentioned above, if this is a subject of interest to you, you'll probably want to take a look at both.

Readers who want the latest technical details will definitely want to consult *Colorado River Origin and Evolution*. But if you insist on a clear cut, definitive explanation - without the burden of uncertain or conflicting details, a universe older than 6,000 years, or the possibility of future revisions, there's always *Grand Canyon: A Different View*.

Regardless of your approach, if looking at the canyon makes you wonder Why?, there should be enough to think about to keep you entertained for years to come.

*Drifter Smith*

## COLORADO RIVER BRIEFS FOR A TRIP THROUGH THE GRAND CANYON

Linda Lou Lindemann/Dan Lindemann  
154 pages, 5.5" x 8.5" - \$16.00

*Colorado River Briefs For A Trip Through The Grand Canyon* is a popular but hard to find guidebook covering the Grand Canyon stretch of the Colorado from Lee's Ferry to Diamond Creek.

It's a different kind of guidebook with a much different attitude than the more familiar formats of the Stevens or Belknap river books, or the excellent Martin-Whitis *Guide to the Colorado River in the Grand Canyon* which focus is on campsites and USGS maps for reference on waterproof paper.

Instead, the Lindemann book takes a light hearted approach to the river experience with hand drawn maps and cartoons to spice up the what can be a somber experience for some, scouting the rapids. *River Briefs* provides unique hand drawn maps of the approximate routes through many of the major rapids, including my "faves" - House Rock, Hance, Bedrock, and all the other biggies and near biggies everyone loves so much,

With the implementation of the GC river management plan that doubles the number of private trips while at the same reduces a first trippers opportunity for experienced help these little maps can be very useful. The authors caution, "the routes shown on these maps are only recommendations." In other words, the book isn't gospel, when in doubt, scout, but it is great for giving one a good idea where to focus while scanning the waves of a "big one" looking for the best ride. As shown in the illustration above right, there are cautionary notes at rapids where things have changed.

I like the author's inclusion of a river etiquette page, once again as private travel increases, a "how to get along" reminder is a good thing. Author Linda Lou Lindemann reminds us, "Have a good attitude when encountering other parties on the river, As Confucius said 'one good greeting is worth a thousand rude comments.'"

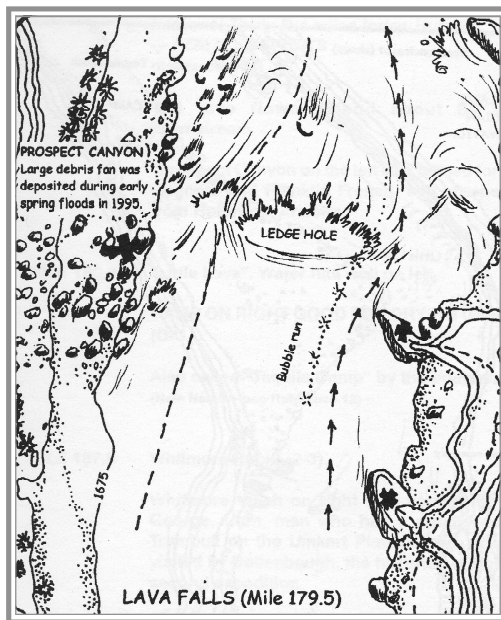
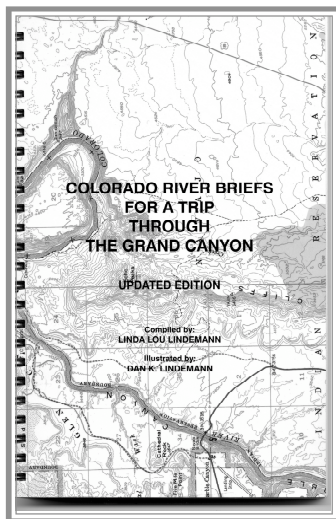
I was disappointed to note that this revised version no longer has the skull and cross bones warnings that were part

of the earlier editions illustrations of Granite Rapid/Forever Eddy and the nasty high water eddy on the right at mile 205 rapid. Those warnings brought back warm memories with a laugh of some rather tense moments in both places.

Speaking of warnings the Lindemann are right up front about telling you that the book is NOT water proof and via cartoon let you know to keep the compact, spiral bound book in a zip lock bag.

The Lindemann's little book is a treasure trove of good info with a refreshing fun attitude. It's a welcome addition to any Canyon river travelers' library.

*Colorado River Briefs For A Trip Through The Grand Canyon* can be purchased at various river sport stores including Four Corners River Sports, Cascade Equipment, Down River Trading Co, also at the Marble Canyon Lodge, the visitor center at Navajo Bridge, Glen Canyon Dam and at the South Rim. The price is \$16.00.



then described in the text on the facing page.

Included is a useful section on San Juan regulations describing the required equipment as well as how to get a hold of the managing agency and secure both river and camping permits.

Especially welcome is the information as to how to secure recreational permits from the Navajo who own and manage much of the south side of the river.

There are quick, but complete summaries of the geology and archeology along the river.

The map starts at Montezuma Creek, 19 miles east of the more popular launch at San Island (Bluff) with some notes and photos about the archeological highlights of that

## GUIDE TO THE SAN JUAN

Duwain Whitis and Tom Martin  
Vishnu Temple Press  
vishnutemplepress.com  
34 pages 8.5 x 14" \$22.95

Next we turn our attention to a new San Juan guidebook, *Guide to the San Juan*. This new book is identical in format to author's, Duwain Whitis and Tom Martin's now familiar *Guide to the Colorado River in the Grand Canyon*, so it has the same positive characteristics as the earlier book – it's easy to use, spiral bound with large USGS maps of the river and adjoining areas with campsites, rapids and features clearly marked and identified on the map and