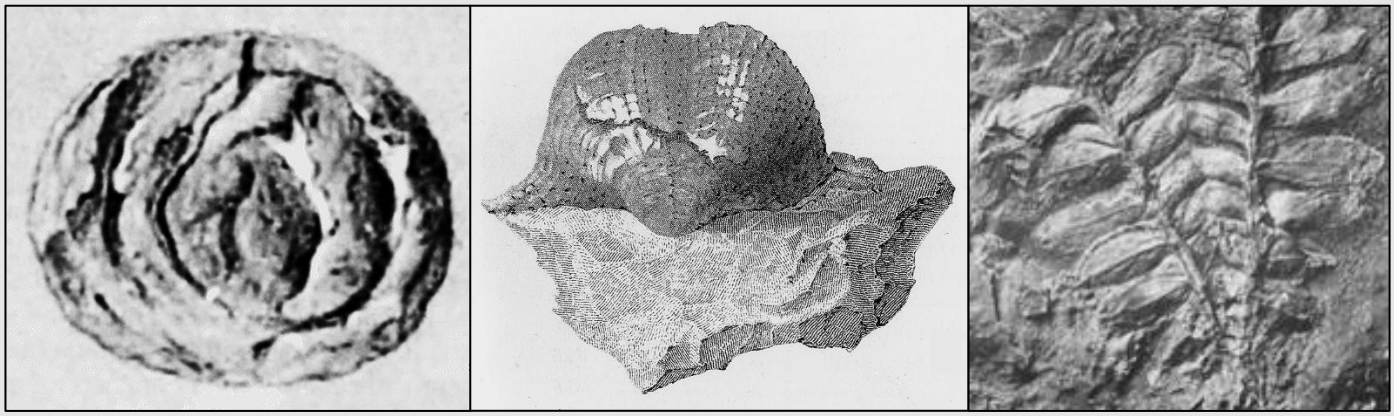
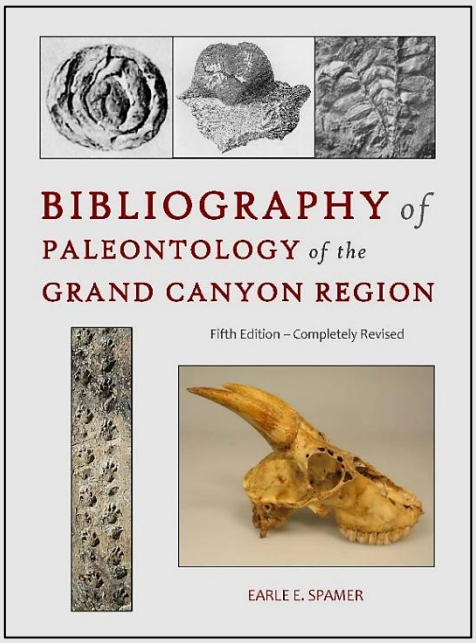


BIBLIOGRAPHY *of* PALEONTOLOGY *of the* GRAND CANYON REGION

Fifth Edition – Completely Revised

EARLE E. SPAMER



COVER ILLUSTRATIONS — Lessons from the Precambrian to the Ice Age *(see also Frontispiece)*

Top left — Lithograph of *Chuaria circularis* Walcott 1899, new genus and new species of Precambrian acritarch (*from* Walcott, 1899, Plate 27, figure 12) described by Walcott (p. 234) as "a small discinoid shell . . . 2 to 5 millimeters in diameter"; type locality later determined to be in the upper part of the Neoproterozoic Awatubi Member of the Kwagunt Formation (Chuar Group), on the east side of Nankoweap Butte, Grand Canyon (Ford and Breed, 1972). Collected by Charles D. Walcott during the winter of 1882–1883. *Chuaria* is globally distributed in Neoproterozoic strata.

Top center — Engraving of *Productus ivesi* Newberry 1861, new species of brachiopod (*from* Newberry, 1861, Paleontology Plate 2, figure 4), from the "Middle Carboniferous limestone, banks of the Colorado, near mouth of Diamond river"; later defined as *Peniculauris ivesi* (Newberry) from the Permian Kaibab and Toroweap formations. Newberry's specimens were collected April 1858 in the vicinity of Peach Springs Wash and Diamond Creek north and northeast of Peach Springs, on the present-day Hualapai Indian Reservation; refer to the Ives Expedition map by F. W. von Egloffstein accompanying Newberry (1861), which depicts the expedition's routes. The specimens are part of the first palentological collection from the Grand Canyon.

Top right — *Brongniartites*? *aliena* D. White 1928, new species, a plant from the Early Permian Hermit Formation of the Grand Canyon (*from* David White, 1928, Plate 27, figure 2). More recent paleobotanical research notes that *Brongniartites* Zalessky 1927, to which White provisionally assigned this new species, is of ambiguous taxonomic position and nomenclature, described based on material from the Urals and the name either invalidly published or preoccupied by *Brongniartites* Unger 1845.

Lower left — A tetrapod trackway, *Ichniotherium sphaerodactylum* (Pabst 1895), in a fallen block of Permian Coconino Sandstone, Dripping Springs Trail, Grand Canyon *(National Park Service/Cassi Knight; detail of cover photo from Santucci and Tweet, 2020, National Park Service Natural Resource Report NPS/GRCA/NRR-2020/2103)*.

Lower right — Skull of the extinct Late Pleistocene mountain goat, *Oreamnos harringtoni* Stock 1936, from a Grand Canyon cave *(Grand Canyon National Park Museum Collection)*.

THE DIGITAL (PDF) VERSION OF THIS VOLUME IS DESIGNED IN BOOK FORMAT, BEST VIEWED AS OPPOSING PAGES ON LARGE SCREENS, THOUGH SINGLE-PAGE VIEWING IS SATISFACTORY. THE ENTIRE VOLUME IS DIGITALLY SEARCHABLE.

BIBLIOGRAPHY OF PALEONTOLOGY OF THE GRAND CANYON REGION

FRONTISPIECE — Mummified sub-fossil specimen of Big Brown Bat, *Eptesicus fuscus* (Palisot de Beauvois 1796), an extant species, collected 11 October 2022 from Leandras Cave, Grand Canyon, radiocarbon-dated at 2420 ± 20 yr BP (Grand Canyon National Park Museum Collection, no. 123308). Other exceptionally well-preserved bats and other animals have been found in Grand Canyon caves, including remarkable individuals whose ages exceed the capabilities of carbon dating. *(Photo by the author, August 2025; permission received from GRCA to cite cave collection data, 30 March 2026.)*

BIBLIOGRAPHY *of*

PALEONTOLOGY

of the

GRAND CANYON REGION

ARIZONA

FROM 1861

Including the Stratigraphic Continuity of Grand Canyon Formations

FIFTH EDITION, COMPLETELY REVISED

Earle E. Spamer

RAVEN'S PERCH MEDIA • 2026

A Raven's Perch Digital Production

RAVEN'S PERCH MEDIA

BIBLIOGRAPHICAL AND HISTORICAL RESOURCES ON THE GRAND CANYON AND LOWER COLORADO RIVER REGIONS

BIBLIOGRAPHY OF PALEONTOLOGY OF THE GRAND CANYON REGION

by Earle E. Spamer

Raven's Perch Media
Philadelphia, Pennsylvania, USA

Spamer, Earle Edward (1952–) [Spamer pronounced *spah*-mer]

Bibliography of paleontology of the Grand Canyon Region, Arizona, from 1861 : including the stratigraphic continuity of Grand Canyon formations

FIFTH EDITION, COMPLETELY REVISED (APRIL 2026)

iv, 222 p. : Portable Document Format (PDF); electronic resource, https://ravensperch.org

PDF document is fully searchable

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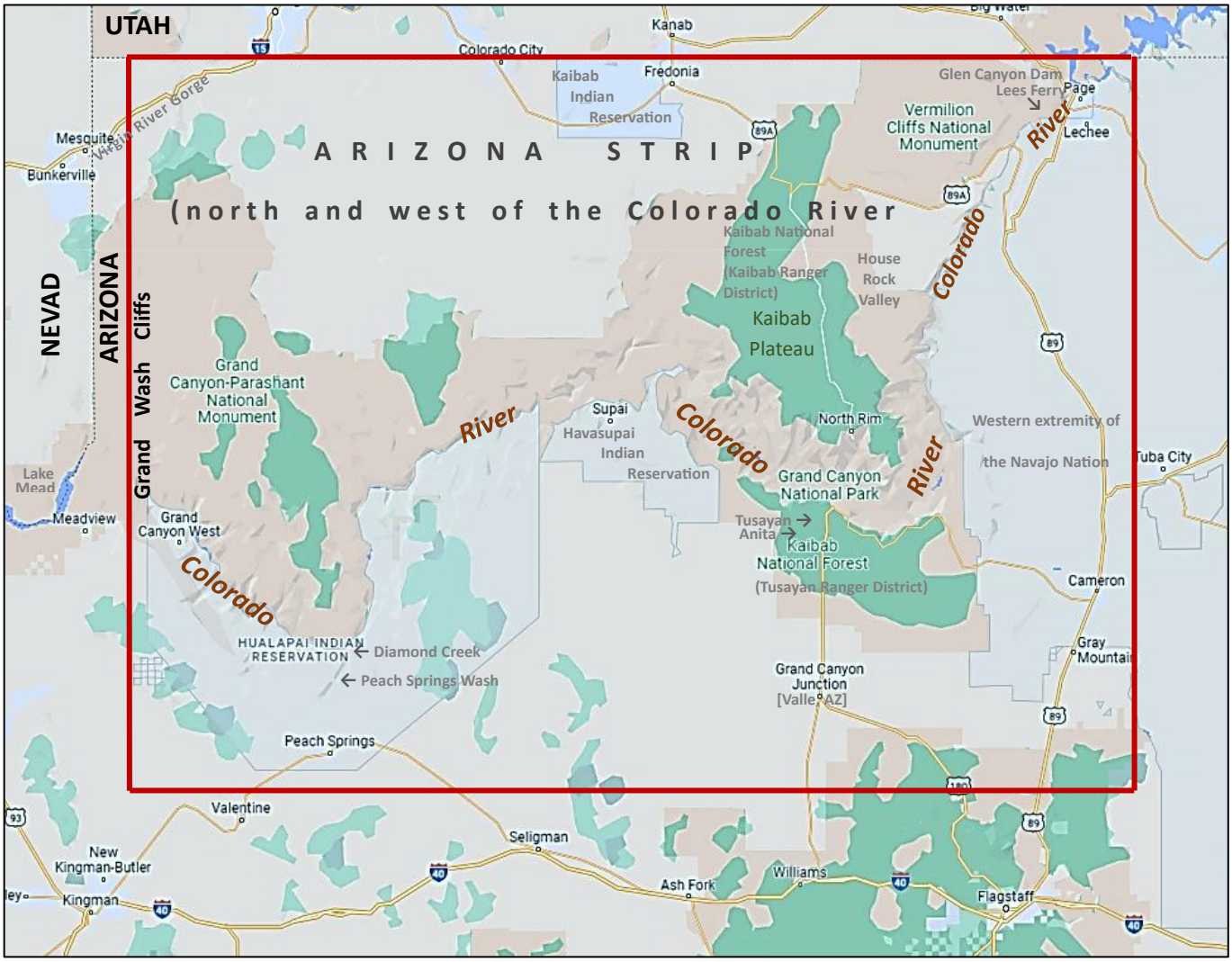
No new acts of taxonomic nomenclature or systematic revision appear in this volume.

CONTENTS

IN THE PDF DOCUMENT ALL LINES BELOW ARE HYPERLINKS TO THOSE SECTIONS

MAP OF APPROXIMATE AREA OF COVERAGE

(excludes the continuity of Grand Canyon formations exposed beyond the map area)



Base map from Google, emended

INTRODUCTION

THE PALEONTOLOGICAL RECORD of the Grand Canyon and vicinity is temporally long and taxonomically diverse, reaching from early Mesoproterozoic time (>1200 Ma) virtually to the present, uncovering invertebrates, vertebrates, plants, trace fossils, and interesting, less-conventional organisms; with occasional, puzzling dubious forms and pseudofossils bringing up the learning curve. An especially rich late Pleistocene and early Holocene fauna and flora is found in caves and sequestered middens. The rim rock of the canyon is Permian in age, thus although occurrences of Mesozoic and Cenozoic fossils in the vicinity are less relatable to this bibliography, Triassic-age fossils can be found even within the boundary of Grand Canyon National Park, at Cedar Mountain on the east. To the north of the canyon, fossiliferous Mesozoic strata are found in other federally administrated jurisdictions in the Vermilion Cliffs area. Numerous, sometimes very lengthy, gaps of time are skipped over where the lithological record does not exist in this region, but the paleontologically productive span of time remains an impressive one. (For convenience, a table of stratigraphic nomenclature* for this region follows the Introduction.)

Geographically, this bibliography covers the physiographical Grand Canyon as well as the region directly around it (see map on p. iv). In so doing, it embraces the Arizona Strip (that part of the state of Arizona north of the Colorado River), the westernmost Navajo Nation, and a streamer of country just to the south of the canyon. On the west a less arbitrary boundary is demarcated by the Grand Wash Cliffs, which comprise strata of the Colorado Plateau geological province, where the (hidden) Grand Wash fault—a displacement of more than 3300 m (10,800 ft)—separates them from the Basin and Range province to the west. In terms of political units, the entirety of Grand Canyon National Park is covered, as well as the adjacent Grand Canyon–Parashant National Monument off the northwestern boundary of the park. Minor portions of other federally- and indigenously-administered lands nearby will also be noted in some citations.

This bibliography is a historical record. It documents paleontological field work in, and studies of specimens collected in, the Grand Canyon and vicinity beginning in 1858 and as published since 1861. It does not comprise a discussion of Grand Canyon stratigraphy, lithologies, or evolutionary perspectives, although the user will discern aspects of these

* Throughout the text of the bibliography, users of the digital (PDF) version can follow embedded hyperlinks to go directly to those respective parts of the volume. Web-directed URLs will likewise redirect to those web pages.

subjects in the publications cited throughout. Whereas previous editions of this bibliography were contiguously arranged by author names alone, this completely revised fifth edition, further updated, subdivides citations according to principal taxonomic groups and ages, with additional sections on a variety of topical perspectives (as arranged in the Table of Contents).[1]

The paleontology bibliography has been culled from citations that appear in the more comprehensive bibliography of the Grand Canyon and Lower Colorado River regions, THE GRAND CANON, Volume 1 (currently in 5th edition, 2025, and now with a separate *Cumulative Supplement*), accessible through Raven's Perch Media.[2] All of the earth-science citations embrace studies and remarks about Grand Canyon rock units *and* in some measure their stratigraphic continuity beyond the canyon-proper. The extralimital references are important for their focus on correlative stratigraphic and paleoecological analyses that, in turn, reflect upon studies in the Grand Canyon. The bibliography is not significantly enlarged by this practice.

Culling these paleontology citations from THE GRAND CANON was an opportunistic effort, not originally a part of the main bibliography. (A paleontological bibliography for material that confines itself only to the Grand Canyon National Park political unit would be a labor-intensive effort requiring page-by-page examinations of many of the citations here—and more.) The publications listed here are those that have obvious reference to paleontology. There are many more citations that might have been added, particularly those that are broad stratigraphic, sedimentological, and paleogeological studies, which may also contain references to fossils; and similarly, texts that embrace the general geology of the Grand Canyon that should include detailed or superficial commentaries on fossils.[3] However, without a wholesale revisit to all of these publications it is not clear which among such titles

---

[1] This specialized bibliography was first compiled to commemorate the 2019 centennial of Grand Canyon National Park and National Fossil Day 2019: *Bibliography of Paleontology of the Grand Canyon Region and in the Stratigraphic Continuity of Grand Canyon Formations* (Raven's Perch Media, 2019), 120 pp. This 1st edition was posted in PDF format at https://ravensperch.org/bibliography-of-paleontology-of-the-grand-canyon-region/. This URL is persistent, pointing to a landing webpage dedicated to the paleontology bibliography; there only the then-current edition can be downloaded. The present 5th edition (2026) is completely revised and wholly supersedes the earlier editions.

[2] Citations are compiled from **Part 21** (Geology and Paleontology) of THE GRAND CANON, which part can be acquired separately at: https://ravensperch.org/part-21-geology-and-paleontology-of-the-grand-canyon-region/. (Otherwise access the *VERY LARGE* whole bibliography, which is archived through the Internet Archive online, https://archive.org/details/tgc-vol-1-pt-b-bibliography-5th-ed [PDF, 13,774 pp., 93 MB], or through the Raven's Perch Media website, https://ravensperch.org, where also the Cumulative Supplement is available.)

[3] One example of such a publication, which was judiciously included in this bibliography, is the significant, biostratigraphically supported revision to the Grand Canyon Cambrian Tonto Group by Dehler *et al.* (2025).

do contain strewn paleontological data. In any case, Part 21 of THE GRAND CANON contains all citations that relate to the earth sciences for the greater Grand Canyon region.

Each citation here includes an ITEM NUMBER (for example, 21.6265; the prefix "21." indicates that it is from Part 21 [Geology and Paleontology] of the much larger bibliography, THE GRAND CANON; the suffix [6265 in this example] is a sequentially assigned number within Part 21). They serve only to uniquely identify citations throughout THE GRAND CANON and are also used to cross-reference citations within the bibliography, to unambiguously point to the correct citation among potentially many by the same author and date. Item numbers do not appear sequentially enumerated in the bibliography because they are assigned when a citation is added, a process of now more than 25 years.

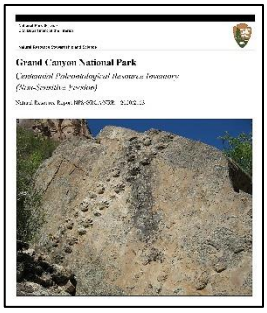
Publications that relate to creationist and young-earth perspectives of Grand Canyon paleontology are included in this bibliography with the understanding that this is an ongoing, sometimes turbulent, field of study that contrasts ideas of faith with the tenets and methodologies of empirical and falsifiable science. Accordingly, some users of this bibliography may object to including creationist research among science-based works of earth science. However, these are *topically* identical so they are not excluded, though consigned to their own informative section, "Publications With Creationist Perspectives".

REGARDING ESSENTIAL SUMMARY WORK

The compiler hesitates to expressly promote any specific work as one that "must" be examined, if not acquired, by a serious student of Grand Canyon paleontology. A recent title is an exception—authoritative and robust in coverage, color illustration, and data, and at such length that it is not likely to be an effort repeated for a long time. Many publications are essential additions to a library of Grand Canyon paleontology, but only this one is as comprehensive for the entirety of the subject. Naturally, it contains hundreds of pages of fossil surveys and photos of specimens *in situ* and collected, but it further incorporates biostratigraphic and paleoenvironmental analyses, detailed taxonomic lists, and registers of important museum specimens. It is a paleontological resource inventory edited by two leading National Park Service paleontologists, calling upon a roster of contributing researchers; and it is available digitally and in print. The report first appeared in 2020 as a "gray literature" item in the NPS's *Natural Resource Report* series, commemorating the 2019 centennial of Grand Canyon National Park. Then in 2021 it was typographically reset, released as *Utah Geological Association Special Publication 1* in digital format and also printed on glossy paper (to accommodate the profuse color photography), with very appealing commissioned cover art. Annotated citations for the different formats are as follows:

Santucci, Vincent L., AND Tweet, Justin S.

2020 21.8027

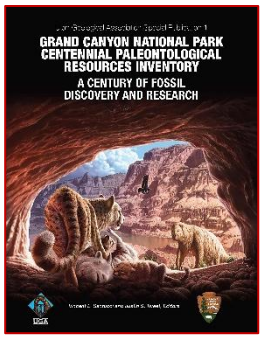


(EDS.) *Grand Canyon National Park : centennial paleontological resource inventory (non-sensitive version).* Fort Collins, Colorado: U.S. National Park Service, Natural Resource Stewardship and Science, 603 pp. (Natural Resource Report NPS/GRCA/NRR-2020/2103.) (Download NRR: https://npshistory.com/publications/grca/nrr-2020-2103-nsv.pdf.)

► Individually authored chapters (listed separately in this bibliography), plus appendices to volume without authors as follows: "Appendix A. Fossil Taxa Named From GRCA" (pp. 505-520), "Appendix B. Fossil Taxa Potentially Named From GRCA" (pp. 521-523), "Appendix C. Stratigraphic Tables of GRCA Paleozoic Taxa" (pp. 525-589), "Appendix D. Outside Repositories of GRCA Fossils" (pp. 591-594), "Appendix E. Paleontological Resource Law and Policy" (pp. 595-601), "Appendix F. Geologic Time Scale", "Modified from 1999 Geological Society of America Timescale" and "Dates and additional information from International Commission on Stratigraphy update 2019/05 . . . and USGS Fact Sheet 2007-3015" (p. 603). [The appendices are rearranged in the 2021 reprinting, appended there to individual papers.]

NOTE: The "sensitive version", not publicly available, is Natural Resource Report NPS/GRCA/NRR-2020/2095.

2021 21.8249



(EDS.) *Grand Canyon National Park centennial paleontological resource inventory : a century of fossil discovery and research.* Utah Geological Association, Special Publication 1, 343 pp. + interleaved separately paginated appendices [466 pp. total].

► Published by the Utah Geological Association, Salt Lake City, in cooperation with U.S. National Park Service, Washington, D.C. Reset reprinting of Santucci and Tweet (2020, ITEM NO. 21.8027). Individually authored chapters (listed separately in this bibliography) and appendices, with original cover art by Julius Csotonyi. This is State 1, available as an electronic-only document (PDF).[4] It also can be distinguished from State 2 by its uncorrected text in the foreword (p. v), which is mistitled, "Forward", and which mentions "Earl Spammer" [*sic*]. The PDF version was officially released on Earth Day 2021 (April 22).

2021 21.8275

(EDS.) *Grand Canyon National Park centennial paleontological resource inventory : a century of fossil discovery and research.* Utah Geological Association, Special Publication 1, 343 pp. + interleaved separately paginated appendices [466 pp. total].

► Published by the Utah Geological Association, Salt Lake City, in cooperation with U.S. National Park Service, Washington, D.C.) Reset reprinting of Santucci and Tweet (2020, ITEM NO. 21.8027). Individually authored chapters (listed separately in this bibliography) and appendices, with original cover art by Julius Csotonyi. This is State 2, in print format only, which was produced as a one-off job by the U.S. Government Printing Office as arranged by the U.S. National Park Service (but not so indicated anywhere in the publication); 200 copies. State 2 can also be distinguished from State 1 by the corrected title of the "Foreword" (p. v), which there mentions "Earle Spamer" (correctly spelled). The print version was first mailed on May 18, 2021.

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[4] https://www.utahgeology.org/publications/special-publications. Published with copyright notice: "Copyright © 2021 by the Utah Geological Association; all rights reserved." The volume online is now posted with a "Public Domain Mark 1.0 Universal" link (https://creativecommons.org/publicdomain/mark/1.0/) and the notice: "Because the authors and editors are employees of the U.S. National Park Service, this work (Grand Canyon National Park Centennial Paleontological Resources Inventory, by Vincent L. Santucci, Justin S. Tweet), identified by Utah Geological Association, is free of known copyright restrictions." [*All URLs on this page valid as of 2 April 2026.*]

The contents of Santucci and Tweet's centennial paleontological resource inventory are shown below. Some papers in the 2021 printing incorporate extended tables accounting for taxa and specimens that are in other papers presented as separate appendices, which also are separately paginated; those with discrete appendices are individually noted here.

Equivalent sections of the present bibliography are denoted in boxes in the right column, which in the PDF document are live hyperlinks to those sections. For most chapters in Santucci and Sweet refer also in the present bibliography to section 10, "Stratigraphically or Geographically Comprehensive Publications."

Cover illustration. "A Pleistocene open woodland scene from Rampart Cave in the western portion of the Grand Canyon. The painting by Julius Csotonyi features American cheetahs (*Miracinonyx trumani*), Harrington's mountain goat (*Oreamnos harrington*), Shasta ground sloth (*Nothrotheriops shastensis*), Stock's vampire bats (*Desmodus stocki*), California condor (*Gymnogyps californianus*), and a woodrat *(Neotoma*). Fossils of all of these prehistoric animals have been found in Rampart Cave."

[The artist's depictions are intriguing. The Harrington's mountain goat is shown as a prey item of the American cheetahs (an adult and two cubs, the adult and one cub seeming to warn away a ground sloth that approaches the cave mouth). The bats are neatly obscure, hanging from the darkened ceiling; a woodrat hides discreetly in the corner. The floor of the cave is covered with dung, and beyond the soaring condor monsoon clouds loom in the west.]

equivalent sections of this bibliography ▼

[1] The Paleontological Heritage of Grand Canyon National Park — 11
Vincent L. Santucci

[2] History of Paleontological Work at Grand Canyon National Park—Up and Down the Long Federal and NGO Trails of Paleontology in Grand Canyon National Park, 1858–2019 — 11
Earle E. Spamer

[3] Stratigraphy of Grand Canyon National Park — [5]
Timothy B. Connors, Justin S. Tweet, and Vincent L. Santucci

[4] Precambrian Paleontology of Grand Canyon National Park — 1
Justin S. Tweet

[with Appendix A, Precambrian Taxa from GRCA; Appendix B, Precambrian Taxa Named From GRCA] [6]

[5] A detailed and highly informative poster, "Grand Canyon Stratigraphy" by Bob Leighty (2021) is accessible online through the Arizona Geological Survey, https://data.azgs.arizona.edu/api/v1/collections/AGCR-1674072912873-854/leighty_grandcanyonstratigraphy14a1-sept3-pm-reduced.pdf (last accessed 27 March 2026).

[6] "GRCA" is the National Park Service's four-letter designation of Grand Canyon National Park. All NPS units are so designated; the letters compose (with a few exceptions) the first four letters of single-worded units or the first two letters of the first two words of the unit name (in this case, GR CA). (One of the exceptions is Lake Mead National

equivalent sections of this bibliography ▼

[5] Paleozoic Invertebrate Paleontology of Grand Canyon National Park — 2 6
Linda Sue Lassiter, Justin S. Tweet, Frederick A. Sundberg, John R. Foster, and P. J. Bergman
[with Appendix A, Grand Canyon (GRCA) Paleozoic Invertebrate Specimens List; Appendix B, Paleozoic Invertebrate Body Fossils From GRCA From the Literature; Appendix C, Paleozoic Invertebrate Body Fossil Taxa Named From GRCA; Appendix D, Paleozoic Invertebrate Body Fossil Taxa Potentially Named From GRCA]

[6] Paleozoic Vertebrate Paleontology of Grand Canyon National Park—Research History, Resources, and Potential — 3 6
John-Paul Michael Hodnett and David Kenneth Elliott

[7] Paleozoic Paleobotany of Grand Canyon National Park — 4 6
Cassi Knight
[with Appendix A, Paleobotanical Type Specimens]

[8] Paleozoic Invertebrate Ichnology of Grand Canyon National Park — 5 6
Anne E. Miller, Lorenzo Marchetti, Heitor Francischini, and Spencer G. Lucas

[9] Paleozoic Vertebrate Ichnology of Grand Canyon National Park — 5 6
Lorenzo Marchetti, Heitor Francischini, Spencer G. Lucas, Sebastian Voigt, Adrian P. Hunt, and Vincent L. Santucci

[10] Mesozoic Paleontology of Grand Canyon National Park—Trace Fossils, Stratigraphy, and Regional Correlations — 7
Adam D. Marsh, William G. Parker, and Anne E. Miller

[11] Pleistocene/Holocene Cave Fossils from Grand Canyon National Park—Ice Age (Pleistocene) Flora, Fauna, Environments, and Climate of the Grand Canyon, Arizona — 9
Jim I Mead, Justin S. Tweet, Vincent L. Santucci, Benjamin Tobin, Carol L. Chambers, Shawn C. Thomas, and Marcy C. Carpenter
[with Appendix A, GRCA Ice Age Taxa]

[12] Grand Canyon National Park Paleontological Resources Management and Protection — 11
Diana Boudreau, Vincent Santucci, Klara Widrig, Mark Nebel, Anne Miller, Ronnie Colvin, Kim Besom, and Colleen Hyde
[with Appendix A, GRCA Paleontology Research Permits 1999–2019; Appendix B, GRCA Photogrammetry 3D Models]

Recreation Area, LAKE, partly adjacent to GRCA, which was reformatted from the less-preferable former acronym, LAME.)

[13] Grand Canyon National Park Paleontological Supplemental Information

Part A, Fossil Taxa Named From GRCA (compiled by Justin S. Tweet)

Part B, Fossil Taxa Potentially Named From GRCA (compiled by Justin S. Tweet)

Part C, Stratigraphic Tables of GRCA Paleozoic Taxa (compiled by Justin S. Tweet)

Part D, Paleontological Resource Law and Policy (compiled by Vincent L. Santucci and Justin S. Tweet)

In addition to Spamer's historical contribution to this volume (the second chapter in the content list above), there is also a lot of "business" that was in hand earlier, which served as ample summaries prior to the publication of Santucci and Tweet's volume. That body of work still stands as a fairly reliable history of research to the early 1980s.[7]

Also consider a comprehensive data record (to 1992), comprising a bibliography of Grand Canyon paleontogy, with detailed indexes to taxa, stratigraphic records, localities, and repositories of type, figured, and cited specimens, some data of which is not in Santucci and Tweet.[8]

For those so interested, there are also corresponding general-audience overviews from the perspective of the geologists in Grand Canyon.[9] And for a complete bibliography of geology of the Grand Canyon and vicinity, consult Part 21 of THE GRAND CANON (5th ed., 2025, and the "Cumulative Supplement" beginning in 2026).[10]

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[7] Earle E. Spamer, "Paleontology in the Grand Canyon of Arizona: 125 Years of Lessons and Enigmas from the Late Precambrian to the Present," *The Mosasaur*, Vol. 2 (1984), pp. 45-128 (https://ravensperch.org/wp-content/uploads/2026/04/EES_GCpaleo125.pdf).

[8] Earle E. Spamer, *The Grand Canyon Fossil Record : a Source Book on Paleontology of the Grand Canyon and Vicinity, Northwestern Arizona and Southeastern Nevada. Bibliography; indexes to taxa, stratigraphic records, localities, and repositories of type, figured, and cited specimens* (Geological Society of America, Microform Publication 24, 1992), 1,008 pp. on eleven 98-frame fiche. (In 2019, Geological Society of America Microform Publications were made available commercially as PDFs online through https://pubs.geoscienceworld.org/books/.)

[9] Earle E. Spamer, "Sublime Stone: Grand Canyon Geology After Powell," *Canyon Legacy*, Vol. 24 (1995), pp. 16-26, back cover (https://www.academia.edu/36871333/);

Wayne Ranney, "Geologists Through Time in the Grand Canyon: From Newberry to a New Century," pp. 113-118 *in* Richard D. Quartaroli (comp., ed.). *A Rendezvous of Grand Canyon Historians: Ideas, Arguments, and First-Person Accounts: Proceedings of the Third Grand Canyon History Symposium, January 2012* (Grand Canyon Historical Society, Flagstaff, Arizona, 2013) (https://www.grandcanyonhistory.org/wp-content/uploads/2025/12/2012_GCHS_Symposium_Chapter_17.pdf);

Wayne Ranney, "A Pre-21st Century History of Ideas On the Origin of the Grand Canyon," *Geosphere*, Vol. 10, no. 2 (2014), pp. 233-242 (Open Access, https://pubs.geoscienceworld.org/gsa/geosphere/article/10/2/233/132117/A-pre-21st-century-history-of-ideas-on-the-origin).

[10] See citations with *note 2* above.

Stratigraphic Nomenclature of the Immediate Grand Canyon Region

This is a simplified reference table for the stratigraphic sequence of the immediate Grand Canyon region. Not all units are fossiliferous. Some units listed here are not represented in the publications cited in this bibliography. Informally named subdivisions of formations are omitted. Ages and stratigraphic assignments are as of 2025.[1]

CENOZOIC

Principally **LATE PLEISTOCENE–HOLOCENE** cave and midden deposits and randomly distributed subfossil shell occurrences.

The Anita local fauna **(PLIOCENE)** in fissure deposits south of Grand Canyon at the one-time mining area of Anita.

The **LATE MIOCENE HUALAPAI LIMESTONE MEMBER OF THE MUDDY CREEK FORMATION** lies athwart the course of the Colorado River to the west of the Grand Wash Cliffs at the western end of the Grand Canyon. This unit is a key element in establishing the age of the Colorado River's presence here, providing a minimum age for this part of the canyon. However, its age is established by radiometric dating of intercalated basalts since the formation contains only undiagnostic ichnofossils, plant molds, ostracodes, diatoms, and algal structures. The unit's paleoecology also figures in the study of late Tertiary tectonic history of the area and marine influences in the integration of the Colorado River into the proto-Gulf of California, wherein some fossiliferous materials indicate near-marine environments. This paleoecological research is a subject most rigorously studied in the past couple of decades in the Lower Colorado River corridor and is ongoing. Numerous references will be found in Part 11/Section 2 of the more comprehensive bibliography for the Grand Canyon and Lower Colorado River regions, THE GRAND CANON (Raven's Perch Media, 5th ed., 2025, https://ravensperch.org). Most citations for Hualapai Limestone research are omitted from the present bibliography insofar as none of them are specifically paleontological in nature, commenting on fossiliferous material as a matter of paleoecology.

UPPER PALEOCENE–EOCENE fossiliferous units in the greater Grand Canyon region have aided in dating the so-called "Rim Gravels" that have direct bearing on analyses of regional drainage patterns during the early evolution of the Colorado River. Specific paleontological studies do not have direct bearing on studies of Grand Canyon paleontology. However, see in Part 21 of THE GRAND CANON for numerous publications that pertain to the "Rim Gravels" and related studies.

[1] A detailed and informative poster, "Grand Canyon Stratigraphy" by Bob Leighty (2021), is also accessible online through the Arizona Geological Survey, https://data.azgs.arizona.edu/api/v1/collections/AGCR-1674072912873-854/leighty_grandcanyonstratigraphy14a1-sept3-pm-reduced.pdf (last accessed 27 March 2026).

MESOZOIC

JURASSIC

GLEN CANYON GROUP [Triassic–Jurassic]

- NAVAJO SANDSTONE
- KAYENTA FORMATION

TRIASSIC

- MOENAVE FORMATION
- CHINLE FORMATION
  - SHINARUMP MEMBER

MOENKOPI FORMATION

PALEOZOIC

PERMIAN

KAIBAB FORMATION

- HARRISBURG MEMBER
- FOSSIL MOUNTAIN MEMBER

TOROWEAP FORMATION

- WOODS RANCH MEMBER
- BRADY CANYON MEMBER
- SELIGMAN MEMBER

COCONINO SANDSTONE

SCHNEBLY HILL FORMATION [in this vicinity only thinly represented in Little Colorado River gorge]

HERMIT FORMATION

SUPAI GROUP [Pennsylvanian–Permian]

- ESPLANADE FORMATION [PAKOON LIMESTONE interfingers in western Grand Canyon]

PENNSYLVANIAN

- WESCOGAME FORMATION
- MANAKACHA FORMATION
- WATAHOMIGI FORMATION

MISSISSIPPIAN

SURPRISE CANYON FORMATION

REDWALL LIMESTONE

- HORSESHOE MESA MEMBER
- MOONEY FALLS MEMBER
- THUNDER SPRINGS MEMBER
- WHITMORE WASH MEMBER

DEVONIAN

TEMPLE BUTTE FORMATION

CAMBRIAN

TONTO GROUP

- FRENCHMAN MOUNTAIN DOLOSTONE
- MUAV FORMATION
  - HAVASU MEMBER
  - GATEWAY CANYON MEMBER
  - KANAB CANYON MEMBER
  - PEACH SPRINGS MEMBER
  - unnamed shale
  - SPENCER CANYON MEMBER
  - unnamed shale
  - SANUP PLATEAU MEMBER
  - unnamed shale
  - RAMPART CAVE MEMBER
- BRIGHT ANGEL FORMATION
  - FLOUR SACK MEMBER
  - MERIWITICA MEMBER
  - unnamed shale
  - TINCANEBITS MEMBER
  - unnamed shale
  - "red-brown sandstone"
  - unnamed shale
- TAPEATS SANDSTONE
- SIXTYMILE FORMATION

T H E G R E A T U N C O N F O R M I T Y

(continued)

NEOPROTEROZOIC

CHUAR GROUP

- KWAGUNT FORMATION
  - WALCOTT MEMBER
  - AWATUBI MEMBER
  - CARBON BUTTE MEMBER
- GALEROS FORMATION
  - DUPPA MEMBER
  - CARBON CANYON MEMBER
  - JUPITER MEMBER
  - TANNER MEMBER
- NANKOWEAP FORMATION

MESOPROTEROZOIC

UNKAR GROUP

- CARDENAS BASALT
- DOX FORMATION
  - OCHOA POINT MEMBER
  - COMANCHE POINT MEMBER
  - SOLOMON TEMPLE MEMBER
  - ESCALANTE CREEK MEMBER
- SHINUMO SANDSTONE
- HAKATAI FORMATION
- BASS LIMESTONE
  - HOTAUTA CONGLOMERATE

GRAND CANYON SUPERGROUP

MESOPROTEROZOIC and PALEOPROTEROZOIC

Basement complex comprising metamorphic and plutonic rocks and post-orogenic granites

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G

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1934 21.8554 La durée des temps géologiques [*transl.* 'The duration of geological time']. *Société Vaudoise des Sciences Naturelles, Bulletin* (Lausanne), 58(234): 125-146. ("Leçon inaugurale du cours de géologie stratigraphique, prononcée le 16 mai 1933 à l'Université de Lausanne. Communiquée à la Société vaudoise des Sciences naturelles dans la séance du 8 novembre 1933.") [In French.]

► See under section 6, "Durée de l'évolution des êtres vivants" [*transl.* 'Duration of the evolution of living things'], p. 138, brief remarks on fossils reported from the Precambrian strata of Grand Canyon.

Garde, G.

1899 21.4976 La faune anté-primordiale [*transl.* 'The pre-primordial fauna']. *Le Naturaliste* (Paris), Series 2, (310) (February 1): 31-32. [In French.]

► See p. 32.

Glaessner, Martin F.

1962 21.1198 Pre-Cambrian fossils. *Biological Reviews*, 37: 467-494.

1966 21.1199 Precambrian palaeontology. *Earth-Science Reviews*, 1: 29-50.

1969 21.1200 Trace fossils from the Precambrian and basal Cambrian. *Lethaia*, 2: 369-393.

1972 21.1201 Precambrian paleozoology [ABSTRACT]. *24th International Geological Congress, Montreal, Abstracts*, p. 10.

1972 21.1202 Precambrian paleozoology. *24th International Geological Congress, Montreal, Section 1*, p. 19.

Gregory, W. K.; Merrill, E. D.; Vaughan, T. W.; White, David; AND Howell, W. H.

1933 21.4899 Marsh Fund. *In: Report of the National Academy of Sciences : Fiscal Year 1931-1932.* Washington, D.C.: U.S. Government Printing Office, pp. 17-18.

► Includes item of payment of $100 to Edwin D. McKee "for a study of palaeozoic and precambrian faunas in the Grand Canyon", completing payment of a $150 grant to Glen E. Sturdevant in 1926; and note that McKee "proposes to make a systematic study of the Devonian rocks of northern Arizona and the sedimentation and fossil features of Kaibab limestone." (p. 17)

Gussow, William Carruthers

1973 21.1271 *Chuaria* sp. cf. *C. circularis* Walcott from the Precambrian Hector Formation, Banff National Park, Alberta, Canada. *Journal of Paleontology*, 47: 1108-1112.

► Includes notes of Chuar Group, Grand Canyon.

Gutschick, Raymond C., AND Rodriguez, Joaquin

1991 21.1279 Comment on: "Medusoid" salt pseudomorphs. *Journal of Paleontology*, 65: 331.

► This is a comment on the paper by A. Seilacher, 1991, "Medusoid" salt pseudomorphs, *Journal of Paleontology*, 65: 330. Gutschick and Rodriguez mention the Precambrian Hakatai Shale of Grand Canyon. (*Note*: There is no mention of Grand Canyon in Seilacher's paper.)

H

Halpern, Yvonne

1988 21.1290 The effect of lithology, diagenesis, and low-grade metamorphism of the ultrastructure and surface sculpture of acritarchs from the late Proterozoic Chuar Group, Grand Canyon, Arizona [ABSTRACT]. *Geological Society of America, Abstracts with Programs*, 20(7): A226.

1988 21.1291 *The effect of lithology, diagenesis and low-grade metamorphism on the ultrastructure and surface sculpture of acritarchs from the late Proterozoic Chuar Group, Grand Canyon, Arizona.* Master's thesis, Tulane University, 133 pp.

Haug, Émile

1903 21.4979 Walcott, Charles D.—"Sur les formations pré-cambriennes fossilifères." Congr. Géol. Intern., C. R. de la VIII^{e} Session, pp. 299-312, 1901." [ABSTRACT]. *Geologisches Centralblatt*, 3(13) (July 1): 682-683. [In French.]

► Summary of Walcott (1901, ITEM NO. 21.3970).

Hayes, Dawn S.

2009 21.4711 Sequence stratigraphic, microfossil, and geochemical analysis of the Neoproterozoic Red Pine Shale, Uinta Mountain Group, Utah: evidence of biotic change driven by

eutrophication? *In:* Ward, Colin R., TSOP Spackman Awards, 2009. *Society for Organic Petrology Newsletter*, 26(4) (December): 14-17.

► Includes Grand Canyon.

Hayes, Dawn S., AND Dehler, Carol

2010 21.5348 Stratigraphic, microfossil, and geochemical analysis of the Neoproterozoic Uinta Mountain Group, Utah: Evidence of biotic change driving by eutrophication? *Geological Society of America, Abstracts with Programs*, 42(5): 297.

► Includes Chuar Group of Grand Canyon.

Hinds, Norman E. A.

1938 21.1438 An Algonkian jellyfish from the Grand Canyon of the Colorado. *Science*, New Series, 88: 186-187.

► (Later named *Brooksella canyonensis* Bassler.)

Hofmann, Hans J.

1992 21.7593 Proterozoic biostratigraphy: Problems and perspectives. *From:* Hofmann, Hans J., Bengtson, Stefan, Hayes, J. M., Lipps, Jere H., Schopf, J. William, Strauss, Harald, Summons, Roger E., and Walter, Malcolm R., Biostratigraphy and paleobiogeography of the Proterozoic. *In:* Schopf, J. William, and Kline, Cornelis (eds.), *The Proterozoic biosphere : a multidisciplinary study.* Cambridge (United Kingdom), New York, and Melbourne: Cambridge University Press, pp. 491-496.

► Includes Chuar Group.

1992 21.7597 Proterozoic and selected Cambrian megascopic carbonaceous films. *From:* Towe, Kenneth M., Bengtson, Stefan, Fedonkin, Mikhail A., Hofmann, Hans J., Mankiewicz, Carol, and Runnegar, Bruce N., Described taxa of Proterozoic and selected earliest Cambrian carbonaceous remains, trace and body fossils. *In:* Schopf, J. William, and Kline, Cornelis (eds.), *The Proterozoic biosphere : a multidisciplinary study.* Cambridge (United Kingdom), New York, and Melbourne: Cambridge University Press, pp. 957-980.

► Includes Chuar Group.

Holland, H. D.

2006 21.8217 The geologic history of seawater. *In:* Elderfield, H. (ed.), *The oceans and marine geochemistry.* Amsterdam, Boston, Heidelberg, London, New York, Oxford, Paris, San Diego, San Francisco, Singapore, Sydney, Tokyo: Elsevier, pp. 583-625. (Volume series: *Treatise on geochemistry, Volume 6* [H. D. Holland and K. K. Turekian, executive eds.].)

► See p. 603, comments on microfossils of the Chuar Group, Grand Canyon.

Horodyski, Robert J.

1986 21.1477 Paleontology of the late Precambrian Chuar Group, Grand Canyon, Arizona [ABSTRACT]. *Geological Society of America, Abstracts with Programs*, 18(5): 362.

1988 21.1478 Late Proterozoic fossils from the western U.S.: Could they represent the oldest skeletal metaphytes and the oldest meiofunal traces? *Geological Society of America, Abstracts with Programs*, 20(7): A256.

1989 21.1479 Paleontology of the Middle Proterozoic Belt Supergroup. *In:* Middle Proterozoic Belt Supergroup, western Montana (Don Winston, Robert J. Horodyski, and James W. Whipple, leaders). *28th International Geological Congress, Field Trip Guidebook T334.* Washington, D.C.: American Geophysical Union, pp. 7-26.

1993 21.1480 Precambrian paleontology of the western conterminous United States and northern Mexico. *From:* Link, Paul Karl (ed.), Middle and Late Cenozoic stratified rocks of the western U.S. Cordillera, Colorado Plateau, and Basin and Range province. *In:* Reed, John C., Jr., Bickford, Marion E., Houston, R. S., Link, Paul Karl, Rankin, D. W., Sims, Paul K., and Van Schmus, W. Randall (eds.), Precambrian: Conterminous U.S. *Geological Society of America, Geology of North America, Volume C-2*, pp. 558-565 [references cited for chapter on pp. 575-594].

1993 21.1481 Paleontology of Proterozoic shales and mudstones: examples from the Belt Supergroup, Chuar Group and Pahrump Group, western USA. *In:* Nagy, Bartholomew, Leventhal, Joel S., and Grauch, Richard I. (eds.), Metalliferous black shales and related ore deposits. *Precambrian Research*, 61(3/4) (March): 241-278.

Horodyski, Robert J., AND Bloeser, Bonnie

1983 21.1482 Possible eukaryotic algal filaments from the late Proterozoic Chuar Group, Grand Canyon, Arizona. *Journal of Paleontology*, 57: 321-326.

Horodyski, Robert J.; Bauld, John; Lipps, Jere H.; AND Mendelson, Carl V.

1992 21.7591 Preservation of prokaryotes and organic-walled and calcareous and siliceous protists. *From:* Mendelson, Carl V., Bauld, John, Horodyski, Robert J., Lipps, Jere H., Moore, Toby B., and Schopf, J. William, Proterozoic and selected Early Cambrian microfossils: Prokaryotes and protists. *In:* Schopf, J. William, and Kline, Cornelis (eds.), *The Proterozoic biosphere : a multidisciplinary study.* Cambridge (United Kingdom), New York, and Melbourne: Cambridge University Press, pp. 185-194.

► Includes Chuar Group.

Hoshino, Yosuke; Poshibaeva, Aleksandra; Meredith, William; Snape, Colin; Poshibaev, Vladimir; Versteegh, Gerard J. M.; Kuznetsov, Nikolay; Leider, Arne; Maldegem, Lennart van; Neumann, Mareike; Naeher, Sebastian; Moczydłowska, Małgorzata; Brocks, Jochen J.; Jarrett, Amber J. M.; Tang, Qing; Xiao, Shuhai; McKirdy, David; Das, Supriyo Kumar; Alvaro, José Javier; Sansjofre, Pierre; AND Hallmann, Christian

2017 21.7336 Cryogenian evolution of stigmasteroid biosynthesis. *Science Advances* (American Association for the Advancement of Science), 2: e1700887, 7 pp. + Supplementary Materials accessible at http://advances.sciencemag.org/content/suppl/2017/09/18/3.9.e1700887.DC1, 28 pp.

► Includes Chuar Group.

Howell, Benjamin F.

1956 21.1491 Evidence from fossils of the age of the Vindhyan system. *Palaeontological Society of India, Journal*, 1: 108-112.

Hutton, F. W.

1898 21.6903 Presidential address. Early life on the earth. *In:* [Proceedings of] Section C.—Geology and Mineralogy. *Australasian Association for the Advancement of Science, Report of the Seventh Meeting* (Sydney), pp. 340-356. [Grand Canyon, see p. 346.]

I

Irvine, Spencer, AND Strauss, Justin V.

2014 21.6487 Taphonomy of vase shaped microfossils from the Late Tonian Callison Lake Dolostone, Yukon [ABSTRACT]. *Geological Society of America, Abstracts with Programs*, 46(6): 542.

► Noted as "roughly coeval with diverse VSM assemblages from the Chuar Group of Grand Canyon, Arizona."

Irvine, Spencer; Strauss, Justin V.; AND Cohen, Phoebe

2015 21.6831 Abundance and morphological variation of vase shaped microfossils from the Late Tonian Callison Lake Formation, Yukon [ABSTRACT]. *Geological Society of America, Abstracts with Programs*, 47(7), Session 123, Paper 123-2.

► Notes comparable taxa of Chuar Group of Grand Canyon.

J

Javaux, Emmanuelle J.

2025 21.8718 A diverse Palaeoproterozoic microbial ecosystem implies early eukaryogenesis. *Royal Society, Philosophical Transactions*, B, 380: 20240092, https://doi.org/10.1098/rstb.2024.0092, 28 pp.

► Includes notes on Chuar Group microfossils, p. 14.

Javaux, Emmanuelle J., AND Lepot, Kevin

2018 21.7374 The Paleoproterozoic fossil record: Implications for the evolution of the biosphere during Earth's middle-age. *Earth-Science Reviews*, 176: 68-86.

Johnson, G. A. L.; Sutton, I. D.; Taylor, F. M.; AND Thomas, G.

1967 21.4653 Invertebrata. Chapter 10. Coelenterata. *In:* Harland, W. B., Holland, C. H., House, M. R., Hughes, N. F., Reynolds, A. B., Rudwick, M. J. S., Satterthwaite, G. E., Tarlo, L. B. H., and Willey, E. C. (eds.), *The fossil record : a symposium with documentation*

jointly sponsored by the Geological Society of London and the Palaeontological Association. London: Geological Society of London, Vol. 2, pp. 347-378.

► Includes Precambrian pseudofossils of Grand Canyon.

Judd, John W.

1896 21.5608 (ED.) *The student's Lyell : a manual of elementary geology.* London: John Murray, 635 pp.

► See p. 438: ". . . fossils doubtfully referred by [Charles D.] Walcott to Lingula, Discina, Hyolithes, and Stromatopora, with traces of Trilobites, have been found in pre-Cambrian strata of the Grand Cañon of the Colorado." (ENTIRE NOTE) (No other mention of Grand Canyon in volume.)

Junium, Christopher K., AND Bohacs, Kevin M.

2005 21.7361 Sedimentary, petrographic, and geochemical evidence for benthic microbial mats and a refined mudstone stratigraphy for the Neoproterozoic Kwagunt Formation, Chuar Group, Grand Canyon [ABSTRACT]. *In:* [*Pennsylvania State University*], *37th Annual Graduate Student Colloquium : sponsored by the Department of Geosciences, April 25-29, 2005*. [State College, Pennsylvania]: [Pennsylvania State University, Department of Geosciences], p. [42] [pagination includes cover sheet].

2005 21.4314 Sedimentary, petrographic, and geochemical evidence for benthic microbial mats and a refined mudstone stratigraphy for the Neoproterozoic Kwagunt Formation, Chuar Group, Grand Canyon [ABSTRACT]. *In:* Geological Society of America, *Earth System Processes 2 (8-11 August 2005, Calgary, Alberta, Canada)*. Paper no. 8-1.

Jux, Ulrich

1977 21.1634 Über die wandstrukturen Sphaeromorpher Acritarchen: *Tasmanites* Newton, *Tapajonites* Sommer & Van Boekel, *Chuaria* Walcott [*transl.* 'On the wall structures of sphaeromorphic acritarchs . . . .']. *Palaeontographica*, 160 (Abteilung B, Paläophytologie): 1-16. [In German.]

K

Kauffman, Erle G., AND Fursich, Franz

1983 21.1643 *Brooksella canyonensis*: a billion year old complex metazoan trace fossil from the Grand Canyon [ABSTRACT]. *Geological Society of America, Abstracts with Programs*, 15(6): 608.

Kauffman, Erle G., AND Steidtmann, James R.

1981 21.1644 Are these the oldest metazoan trace fossils? *Journal of Paleontology*, 55: 923-947.

► See pp. 924-925.

1983 21.1645 Reply. No, they are still dubiofossils! *In:* Comment and reply on "Are these the oldest metazoan trace fossils?" *Geology*, 11: 619-621.

► Reply to: "Comment. Are the Medicine Peak Quartzite 'dubiofossils' fluid-evasion tracks?", by Preston Cloud (pp. 618-619). *NOTE*: The Reply takes note of

Grand Canyon occurrences. Cloud's comment does not mention anything pertaining to the Grand Canyon, so it is not separately cited in this bibliography; it was initially in response to Kauffman and Steidtmann (1981, ITEM NO. 21.1644).

Kim, Bong-Kyun [강봉균]

1992 21.8212 牛物多條件의 地史學的 變邊史. / Diversity patterns in the fossil record. 자연보존 [Chayŏn pojon yŏn'gu pogosŏ] / *Nature Conservation* (Korean Association for Conservation of Nature, Seoul), (78) (June): 8-11. [In Korean, with bilingual item and serial titles (from English-language contents page).]

► See p. 8, brief note of microfossils of the Kwagunt Formation, Grand Canyon.

Knauth, L. Paul

1982 21.1752 Isotopic analyses of upper Proterozoic cherts with possible implications for upper Precambrian climates and the Phanerozoic explosion of life [ABSTRACT]. *Geological Society of America, Abstracts with Programs*, 14: 532.

2005 21.4734 Temperature and salinity history of the Precambrian ocean: implications for the course of microbial evolution. *Palaeogeography, Palaeoclimatology, Palaeoecology*, 219: 53-69.

Knauth, L. Paul, AND Epstein, S.

1976 21.1753 Hydrogen and oxygen isotope ratios in nodular and bedded cherts. *Geochimica et Cosmochimica Acta*, 40: 1095-1108.

Knauth, L. Paul, AND Horodyski, Robert J.

1993 21.1754 Evidence for and implications of life on land in the Proterozoic [ABSTRACT]. *Geological Society of America, Abstracts with Programs*, 25(6): A80-A81.

Knoll, Andrew H.

1983 21.1755 Biological interactions and Precambrian eukaryotes. *In:* Tevesz, Michael J. S., and McCall, Peter L. (eds.), *Biotic interactions in Recent and fossil benthic communities.* New York and London: Plenum Press, pp. 251-283.

► See pp. 271-273.

2003 21.4621 *Life on a young planet: The first three billion years of evolution on earth.* Princeton, New Jersey: Princeton University Press, 277 pp.

Knoll, Andrew H.; Javaux, E. J.; Hewitt, D.; AND Cohen, P.

2006 21.4654 Eukaryotic organisms in Proterozoic oceans. *Philosophical Transactions* (Royal Society of London), B (Biological Sciences), 361: 1023-1038.

► See pp. 1027, 1029-1031, 1034.

Kornicker, Louis S., AND Conover, John T.

1960 21.6409 Effect of high storm tide levels on beach burial of jellyfish (Scyphozoa) and other organisms. *Internationale Revue Gesamten Hydrobiologie*, 45(2): 203-214.

► Introduction and cited work notes fossil jellyfish reported from Grand Canyon by Van Gundy (1951), but erreoneously notes as from Cambrian strata. No further discussion.

Krylov, I. N., AND Vasuna, R. A. [Крылов И.Н.; Васуна Р.А.]

1975 21.4757 Ревнейший следы жизни на Земли [Drevneishiy sledy zhizni na Zemly] [*transl.* 'The oldest traces of life on earth']. *Стратиграфия Палеонтология* [*Stratigrafiya Paleontologiya*] ['Stratigraphic Paleontology'], 6: 60-92. [In Russian.]

Kull, Ulrich

1977 21.6404 Die Fossilien des Präkambriums [*transl.* 'The fossils of the Precambrian']. *Naturwissenschaftliche Rundschau*, 30(6): 209-215. [In German.]

► Chuar Group, Grand Canyon, pp. 213-214.

L

Labrot, Philippe

2006 21.4708 *Microscopie à force atomique de microfossiles précambriens* [*transl.* 'Atomic force microscopy of Precambrian microfossils']. Doctoral dissertation, Université d'Orleans, 261 pp. [In French.]

► See p. 12.

Lahr, Daniel J. G.; Bosak, Tanja; Lara, Enrique; AND Mitchell, Edward A. D.

2015 21.6810 The Phanerozoic diversification of silica-cycling testate amoebae and its possible links to changes in terrestrial ecosystems. *PeerJ*, 3: e1234, doi:10.7717/peerj.1234, 19 pp.

► Includes notes of Chuar Group of Grand Canyon.

Lenton, Timothy M.; Boyle, Richard A.; Poulton, Simon W.; Schields-Zhou, Graham A.; AND Butterfield, Nicholas J.

2014 21.6805 Co-evolution of eukaryotes and ocean oxygenation in the Neoproterozoic era. *Nature Geoscience*, 7 (April): 257-265.

► Includes Chuar Group of Grand Canyon.

Ley, Willy

1953 21.8595 For Your Information [COLUMN]. *Galaxy Science Fiction* (New York), 7(2) (November): 35-43.

► See the "Any Questions?" section, which includes (pp. 41-42) the inquiry from Rita Eleftheriades of New York City, "What are the oldest known fossils and how

old are they?", with Ley's reply that includes the comments, "From the Proterozoic Era, a few doubtful fossils are known, one from Australia (*Protaledadia*) and one from the Grand Canyon (*Beltina danae*), both believed to be early arthropods." and "Spicules of sponges from the Proterozoic of Grand Canyon are less doubtful than the supposed arthropods . . ." (no further details pertaining to the Grand Canyon occurrences).

Li, Chao; Peng, Ping'an; Sheng, Guoying; AND Fu, Jiamo

2000 21.4810 Precambrian organic matter. *Chinese Science Bulletin*, 45(4) (February): 295-304.

► Includes notice of Chuar Group.

Love, Gordon D.; Frosjean, Emmanuelle; Stalvies, Charlotte; Fike, David A.; Grotzinger, John P.; Bradley, Alexander S.; Kelly, Amy E.; Bhatia, Maya; Meredith, William; Snape, Colin E.; Bowring, Samuel A.; Condon, Daniel J.; AND Summons, Roger E.

2009 21.4809 Fossil steroids record the apperance of Demospongiae during the Cryogenian period. *Nature* (London), 457 (February 5): 718-721, and Supplementary Information doi:10.1038/nature07673, www.nature.com/nature, 50 pp.

M

Maithy, P. K., AND Babu, Rupendra

1988 21.2014 Chitinozoa-like remains from Vindhyan Supergroup of Son Valley. *Palaeobotanist*, 37(1): 77-80. [With abstract also in Hindi.]

► Includes Chuar Group of Grand Canyon.

Maruyama, Kho [丸山 晃]

2018 21.7756 原生生物の世界Ⅱ： その成立と構造 [gensei seibutsu no sekai II: Sono seiritsu to kōzō]. / *The protist world II : its formation and structure.* [No place]: オープンアクセスアーカイブ [ōpun'akusesuākaibu] Open-Access Archive, 642 pp. [In Japanese, with bilingual title.]

► This is an abstract of the paper by Porter *et al.* (2006, ITEM NO. 21.3872). See p. 117, " つぼ形 微化石、新原生代 Chuar 群、Grand Canyon: modern testate amoeba による分類ガイド " [tsu bo katachi bi kaseki, shingenseidai Chuar-gun, gurandokyanion: Modern testate amoeba ni yoru bunrui gaido] [*transl.* 'Vase-shaped microfossil, Neoproterozoic Chuar group, Grand Canyon: classification guide by modern testate amoeba']. [Section title in mixed Japanese and English orthography, thus.]

McCall, G. J. H.

2006 21.7283 The Vendian (Ediacaran) in the geological record: Enigmas in geology's prelude to the Cambrian explosion. *Earth-Science Reviews*, 77: 1-229.

► Grand Canyon, *in passing*, p. 174; *Chuaria* and *C. circularis*, *passim*.

McGill College and University

1893 21.8314 *Annual calendar of McGill College and University, Montreal. Session 1893-1894.* Montreal: Printed for the University by John Lovell and Son.

► *In* "Donations to Library and Museum from May, 1892, to April, 1893", see "To the Peter Redpath Museum", p. 242 (exactly): "From Dr. Wolcott, Washington, D.C.—Stromatopora from the Lower Cambrian, Grand Canon, Colorado." (ENTIRE NOTE) [Possibly actually from Precambrian strata.]

McIntosh, Jennifer; Drake, Henrik; Osburn, Magdalena; Reiners, Peter; Fischer, Mark; Austin, Sarah; Martini, Anna; Kim, Ji-Hyun; Stevenson, Bradley; Roberts, Nick M. W.; Hiett, Coleman; Tikoff, Basil; AND Ferguson, Grant

2024 21.8578 Ancient to modern geologic and hydrologic forcings drive deep biosphere across Colorado Plateau [ABSTRACT]. *Geological Society of America, Abstracts with Programs*, 56(5), abstract 56-11 (https://doi.org/10.1130/abs/2024AM-403291).

► Regarding "deep subsurface (>500 m) microbe, rock, and fluid systems". Includes note of the effect of "[r]apid denudation (<3-4 Ma), related to rapid incision of the Colorado River, decreased in-situ temperatures and dramatically increased hydraulic gradients, activating deep meteoric circulation, flushing of saline fluids, and possibly transport of microorganisms."

Mendelson, Carl V., AND Schopf, J. William

1992 21.7592 Proterozoic and Early Cambrian acritarchs. *From:* Mendelson, Carl V., Bauld, John, Horodyski, Robert J., Lipps, Jere H., Moore, Toby B., and Schopf, J. William, Proterozoic and selected Early Cambrian microfossils: Prokaryotes and protists. *In:* Schopf, J. William, and Kline, Cornelis (eds.), *The Proterozoic biosphere : a multidisciplinary study.* Cambridge (United Kingdom), New York, and Melbourne: Cambridge University Press, pp. 219-232.

► Includes Chuar Group.

1992 21.7596 Proterozoic and selected Early Cambrian microfossils and microfossil-like objects. *In:* Schopf, J. William, and Kline, Cornelis (eds.), *The Proterozoic biosphere : a multidisciplinary study.* Cambridge (United Kingdom), New York, and Melbourne: Cambridge University Press, pp. 865-952.

► Includes Chuar Group.

Moczydłowska, Małgorzata

2008 21.6375 The Ediacaran microbiota and the survival of Snowball Earth conditions. *Precambrian Research*, 167: 1-15.

► Includes taxa from Chuar Group, Grand Canyon.

Morais, Luana; Fairchild, Thomas Rich; Lahr, Daniel J. G.; Rudnitzki, Isaac D.; Schopf, J. William; Garcia, Amanda K.; Kudryavtsev, Anatoliy B.; AND Romero, Guilherme R.

2017 21.7282 Carbonaceous and siliceous Neoproterozoic vase-shaped microfossils (Urucum Formation, Brazil) and the question of early protistan biomineralization. *Journal of Paleontology*, 91(3): 393-406.

► Includes Chuar Group of Grand Canyon throughout.

Morais, Luana; Lahr, Daniel J. G.; Rudnitzki, Isaac D.; Freitas, Bernardo T.; Romero, Guilherme R.; Porter, Susannah M.; Knoll, Andrew H.; AND Fairchild, Thomas R.

2019 21.7793 Insights into vase-shaped microfossil diversity and Neoproterozoic biostratigraphy in light of recent Brazilian discoveries. *Journal of Paleontology*, 93(4) (July): 612-627.

► Includes discussion of occurrences in Grand Canyon.

N

Nagy, Robin Marie

2008 21.4439 *Microfossils from the Neoproterozoic Chuar Group, Grand Canyon, Arizona : taxonomy, paleoecological analysis and implications for life during the onset of Neoproterozoic glaciation.* Master's thesis, University of California at Santa Barbara, 74 pp.

Nagy, Robin M.; Porter, Susannah M.; Dehler, Carol M.; AND Shen, Yanan

2008 21.4296 Evidence for eutrophication in the >742+/-6 Ma Chuar Group, Grand Canyon, and possible implications for Neoproterozoic glaciation [ABSTRACT]. *Geological Society of America, Abstracts with Programs*, 40(6): abstract no. 125-3.

2009 21.4715 Biotic turnover driven by eutrophication before the Sturtian low-latitude glaciation. *Nature Geoscience*, 2: 415-418; and Supplementary Information available online www.nature.com/ngeo/journal/v2/n6/extref/ngeo525-s1.pdf, 10 pp.

► Also a "Backstory" online, *Nature Geoscience*, 2: E10, doi:10.1038/ngeo535.

Nathorst, A. G. [Nathorst, Alfred Gabriel]

1885 21.5077 Några ord om slipsandstenen i Dalarne [*transl.* 'A few words about the *slipsandstenen* [grindstone] in Dalarne']. *Geologiska Föreningens i Stockholm, Förhandlingar*, 7(9) (93): 537-560. [In Swedish.]

► See pp. 554-555; note of *Chuaria* in Grand Canyon.

1885 21.5078 Några ord om slipsandstenen i Dalarne [*transl.* 'A few words about the *slipsandstenen* [grindstone] in Dalarne']. *Sveriges Geologiska Undersökning, Afhandlingar och Uppsatser*, Series C, no. 71, 26 pp. [In Swedish.]

► Reprinted from *Geologiska Föreningens i Stockholm, Förhandlingar*. See pp. 20-21; note of *Chuaria* in Grand Canyon.

1896 21.2438 *Jordens historia : efter M. Neumayrs "Erdgeschichte" och andra källor utarbetad med särskild hänsyn till Nordens urvärld* [*transl.* 'The history of the earth: based on M. Neumayr's "Erdgeschichte" and other sources, prepared with special regard to the primeval world of the North']. Stockholm: F. & G. Beijers, *Godtköpsupplaga*, 2 volumes, pp. 1-584, 585-1128. [In Swedish.]

► See *Förra Delen* [Volume 1], pp. 279, 380-384; note of *Chuaria* in Grand Canyon. [*NOTE*: *Godtköpsupplaga* is in an older form of Swedish and has been translated for the compiler as meaning the "Good-buy edition" (*i.e.*, the economical edition). In earlier versions of the source bibliography (Grand Canyon Natural History Association Monograph 8) of the present one it had been mistakenly considered to be a part of the subtitle.]

Nitecki, Matthew H.

1971 21.2484 Pseudo-organic structures from the Precambrian Bass Limestone in Arizona. *Fieldiana—Geology*, 23(1): 1-9.

Niu, Changtai; Li, Guangjin; Tang, Qing; Wang, Xiaopeng; Huang, Rui; Qu, Hanzhi; Qiu, Mingyang; Wan, Bin; Chen, Zhe; Zhou, Chuanming; Pang, Ke; AND Yuan, Xunlai

2024 21.8723 *Chuaria* and *Tawuia* fossils from ~1.0 Ga rocks in North China: Implications for a polyphyletic origin of *Chuaria* and a potential biological link between these two widespread Proterozoic taxa. *Palaeogeography, Palaeoclimatology, Palaeoecology*, 636 (February 15), (111966) (doi:10.1016/j.palaeo.2023.111966).

► Includes remarks on comparisons to type material of *Chuaria circularis* from the Chuar Group.

P

Pierce, David, AND Cloud, Preston

1979 21.4617 New microbial fossils from ~1.3 billion-year-old rocks of eastern California. *Geomicrobiology Journal*, 1(3): 295-309.

► Includes notes of Chuar Group of Grand Canyon.

Porter, Susannah M. [Porter, Susannah Malia McGuire]

2002 21.3844 *Windows on early eukaryotic and early animal life.* Doctoral dissertation, Harvard University, 293 pp.

2004 21.4308 Precambrian protozoa [ABSTRACT]. *Geological Society of America, Abstracts with Programs*, 36(5): 399.

2006 21.6443 The Proterozoic fossil record of heterotrophic eukaryotes. *In:* Xiao, Shuhai, and Kaufman, Alan J. (eds.), *Neoproterozoic geobiology and paleobiology.* Dordrecht, The Netherlands: Springer, pp. 1-21. (Volume: *Topics in Geobiology*, Volume 27.)

► Grand Canyon, pp. 6-8.

2011 21.5489 The rise of predators. *Geology*, 39(6) (June): 607-609.

► References include earlier work in the Chuar Group.

2012 21.5886 Diversity and ecological complexity in organic-walled microfossil assemblages from the mid-Neoproterozoic Chuar Group, Grand Canyon, Arizona [ABSTRACT]. *Geological Society of America, Abstracts with Programs*, 44(7): 400.

2015 21.6833 Tiny vampires in ancient seas: Evidence for predation via perforation in Neoproterozoic microfossils [ABSTRACT]. *Geological Society of America, Abstracts with Programs*, 47(7): 211.

► Includes Chuar Group of Grand Canyon.

2016 21.6947 Tiny vampires in ancient seas: Evidence for predation via perforation in microfossils from the 740-780 Ma Chuar Group, Grand Canyon, Arizona [ABSTRACT]. *Geological Society of America, Abstracts with Programs*, 48(4), doi:10.1130/abs/2016CD-274705.

2017 21.7310 A view of microbial ecosystems and oxygen from the mid-Neoproterozoic (780-730 Ma) Chuar Group, Grand Canyon Supergroup, Arizona [ABSTRACT]. *Geological Society of America, Abstracts with Programs*, 49(6), Session 11, doi:10.1130/abs/2017AM-301876.

Porter, Susannah M., AND Knoll, Andrew H.

2000 21.3638 Testate amoebae in the Neoproterozoic Era: Evidence from vase-shaped microfossils of the Chuar Group, Grand Canyon. *Paleobiology*, 26(3): 360-385.

Porter, Susannah M., AND Riedman, Leigh Anne

2016 21.7114 Systematics of organic-walled microfossils from the ca. 780-740 Ma Chuar Group, Grand Canyon, Arizona. *Journal of Paleontology*, 90(5): 815-853.

► Includes new genera *Galerosphaera*, *Kaibabia*, *Lanulatisphaera*, *Microlepidopalla*, *Volleyballia*; new species *Kaibabia gemmulella*, *Microlepidopalla mira*, *Volleyballia dehlerae*; and new combinations *Galerosphaera walcottii* (Vidal and Ford, 1985); *Lanulatisphaera laufeldii* (Vidal, 1976).

2023 21.8465 Frameworks for interpreting the early fossil record of eukaryotes. *Annual Review of Microbiology*, 77: 173-191.

► See p. 180, fig. 3 ("A selection of key fossils"): fig. 3e, *aleria lophostriata*, specimen from late Tonian Chuar Group; fig. 3n, *Caelatimurus foveolatus*, from late Tonian Chuar Group.

Porter, Susannah M.; Dehler, Carol M.; Moore, John L.; Riedman, Leigh Anne; AND Wang, Steve C.

2013 21.6176 Possible scale-bearing protists in the mid-Neoproterozoic Chuar Group, Grand Canyon, and Uinta Mountain Group, Utah [ABSTRACT]. *Geological Society of America, Abstracts with Programs*, 45(7): 693.

Porter, Susannah M.; Meisterfeld, Ralf; AND Knoll, Andrew H.

2003 21.3872 Vase-shaped microfossils from the Neoproterozoic Chuar Group, Grand Canyon: A classification guided by modern testate amoebae. *Journal of Paleontology*, 77(3): 409-429.

► Includes new species.

Porter, Susannah M.; Tydings, Aidan; Mantelzak, Dean; AND Tingle, Kelly E.

2023 21.8528 A new Tonian Konservat-Lagerstätte? Diverse, organically preserved vase-shaped microfossils from the <770-730 Ma Chuar Group, Grand Canyon, USA [ABSTRACT]. *In: The Palaeontological Association, 67th Annual Meeting, 11th-15th September 2023, University of Cambridge, UK : Programme and abstracts*, pp. 126-127.

► Shales of the Awatubi and Walcott Members. "Eighteen species have been provisionally identified, ten of them new."

Pothe de Baldis, Elba D.; Baldis, Bruno A.; AND Cuomo, Jorge

1983 21.4887 Los fósiles Precámbricos de la Formación Sierras Bayas (Olavarría) y su importancia intercontinental [*transl.* 'Precambrian fossils of the Sierras Bayas Formation (Olavarría) and their intercontinental importance']. *Asociación Geológica Argentina, Revista*, 38(1) (January/March): 73-83. [In Spanish.]

► Includes Grand Canyon.

Pratt, Lisa M.; Summons, Roger E.; AND Hieshima, Glenn B.

1991 21.2652 Sterane and triterpane biomarkers in the Precambrian Nonesuch Formation, North American Midcontinent Rift. *Geochimica et Cosmochimica Acta*, 55: 911-916.

► See p. 914.

R

Raymond, Percy E.

1935 21.2701 Pre-Cambrian life. *Geological Society of America, Bulletin,* 46: 375-392. (Address as retiring President of the Paleontological Society, December 28, 1934.)

Reitz, Erhard, AND Höll, Rudolf

1988 21.6403 Jungsproterozoische Mikrofossilien aus der Habachformation in den mittleren Hohen Tauern und em nordostbayerischen Grundgebirge [*transl.* 'Late Proterozoic microfossils from the Habach Formation in the central Hohe Tauern and the northeast Bavarian basement']. *Geologischen Bundesanstalt, Jahrbuch* (Wien), 131(2) (August): 329-340. [In German.]

► Chuar Group, Grand Canyon, pp. 334, 336.

Reidman, Leigh Anne

2016 21.7073 Vase-shaped microfossils of the Togari Group, Tasmania and implications for biostratigraphic subdivision of the Tonian Period [ABSTRACT]. *Geological Society of America, Abstracts with Programs*, 48(7): Paper 104-1, doi:10.1130/abs/2016AM-286079.

► Includes Chuar Group of Grand Canyon.

Riedman, Leigh Anne; Porter, Susannah M.; AND Czaja, Andrew D.

2018 21.7636 Globally widespread apatitic scale microfossils of the mid-Tonian [ABSTRACT]. *Geological Society of America, Abstracts with Programs*, 50(6): doi:10.1130/abs/2018AM-324964.

► Includes note of Chuar Group of Grand Canyon.

2021 21.8366 Phosphatic scales in vase-shaped microfossil assemblages form Death Valley, Grand Canyon, Tasmania, and Svalbard. *Geobiology*, 19(4) (July): 364-375 + Supporting Information online (table and figures).

Riedman, Leigh Anne; Porter, Susannah M.; Lechte, Maxwell A.; Santos, Angelo dos; AND Halverson, Galen P.

2023 21.8559 Early eukaryotic microfossils of the late Palaeoproterozoic Limbunya Group, Birrindudu Basin, northern Australia. *Papers in Palaeontology* (Palaeontological Association), 2023, e1538 (doi:10.1002/spp2.1538), 52 pp. + Supplementary Information online.

► Includes occurrences and comparisons to Chuar Group of Grand Canyon, throughout.

Rothpletz, August

1915 21.7962 Über die systematische Deutung und die stratigraphische Stellung der ältesten Versteinerungen Europas und Nordamerikas mit besonderer Berücksichtigung der Cryptozoen und Oolithe. I. Teil: Die Fauna der Beltformation bei Helena in Montana. [*transl.* 'On the systematic interpretation and stratigraphic [osition of the oldest fossils of Europe and North America, with special reference to cryptozoa and polites. Part I: The fauna of the Belt Formation near Helena, Montana.'] *Königlich Bayerischen Akademie der Wissenschaften* (Mathematisch-physikalische Klasse) (München), 18(1), 46 pp., 2 plates. [In German.]

► See "Vorbemerkung zum I. Teil" ['Preliminary note to Part I'] (pp. 3-4), which relates to the author's participation in the 1913 International Geological Congress and his intent to do field studies that included mounting an expedition to study the paleontology of the Chuar Group of Grand Canyon, following the footsteps of Charles D. Walcott. He intended to use the Grandview Hotel as a base of operation, but he discovered that there was no boat to ferry him to the north side of the Colorado River. Instead he focused on the Unkar Group on the south side of Grand Canyon, realizing that any expedition to the Chuar would require bringing pack animals in from the north.

S

Schlegel, Martin, AND Mesiterfeld, Ralf

2003 21.6367 The species problem in protozoa revisited. *European Journal of Protistology*, 39: 349-355.

► See p. 353, note of Chuar Group testate amoebae morphotypes.

Schopf, J. William

1973 21.2873 Evolutionary status of the late Precambrian biota; new evidence from South Australia and the Grand Canyon. *National Science Foundation, Symposium on Environmental Biogeochemistry, Utah State University, Logan, Utah, Abstracts with Programs*, pp. 2-3.

1975 21.2874 Precambrian paleobiology: Problems and perspectives. *In:* Donath, Fred A., Stehli, Francis G., and Wetherill, George W. (eds.), *Annual review of earth and planetary sciences. Volume 3. 1975.* Palo Alto, California: Annual Reviews, Inc., pp. 213-249.

1977 21.2875 Biostratigraphic usefulness of stromatolitic microbiotas: A preliminary analysis. *Precambrian Research*, 5: 143-173.

1978 21.2876 The evolution of the earliest cells. *Scientific American*, 239(3) (September): 110-112, 114, 116-120, 126, 128-134, 137-138.

1978 21.7227 L'évolution des premières cellules. *Pour la Science* (Paris), 13 (November): 64-82. [In French.]

► Translation of Schopf (1978, ITEM NO. 21.2876).

1992 21.7594 Evolution of the Proterozoic biosphere: Benchmarks, tempo, and mode. *In:* Schopf, J. William, and Kline, Cornelis (eds.), *The Proterozoic biosphere : a multidisciplinary*

study. Cambridge (United Kingdom), New York, and Melbourne: Cambridge University Press, pp. 583-602.

► Includes Chuar Group.

2000 21.3948 Solution to Darwin's dilemma: Discovery of the missing Precambrian record of life. *U.S. National Academy of Sciences, Proceedings*, 97(13) (June 20): 6947-6953.

► See p. 6948.

Schopf, J. William, AND Kline, Cornelis

1992 21.7589 *The Proterozoic biosphere : a multidisciplinary study.* Cambridge (United Kingdom), New York, and Melbourne: Cambridge University Press, 1348 pp. [The cover misspells Kline's given name as "Cornelius".]

► Pertinent chapters and sections are cited separately in this bibliography.

Schopf, J. William; Ford, Trevor D.; AND Breed, William J.

1973 21.2877 Microorganisms from the late Precambrian of the Grand Canyon, Arizona. *Science*, 179: 1319-1321.

Schopf, J. William; Horodyski, Robert J.; Fairchild, T. R.; AND Donaldson, J. A.

1974 21.2878 Late Precambrian microfossils: Discovery of four new stromatolitic biotas [ABSTRACT]. *American Journal of Botany*, 61 (5, Supplement): 19.

Serezhnikova, Ye. A. [Сережникова, Е. А.]

2014 21.7032 Скелетные образования проблематичных низших многоклеточных вендского (эдиакарского) периода [Skeletnyye obrazovaniya problematichnykh nizshikh mnogokletochnykh vendskogo (ediakarskogo) perioda]. / Skeletal structures of the problematical metazoa from the Vendian (Ediacaran). *In: Становление скелета у различных групп организмов и биоминерализация в истории Земли : Гео-биологические системы в прошлом : Программа Президиума РАН : «Проблемы происхождения жизни и становления биосферы» : Научно-образовательный центр ПИН РАН : Научно-образовательный центр ИНМИ РАН* [*Stanovleniye skeleta u razlichnykh grupp organizmov i biomineralizatsiya v istorii Zemli : Geo-biologicheskiye sistemy v proshlom : Programma Prezidiuma RAN : «Problemy proiskhozhdeniya zhizni i stanovleniya biosfery» : Nauchno-obrazovatel'nyy tsentr PIN RAN : Nauchno-obrazovatel'nyy tsentr INMI RAN*] [*transl.* 'The formation of the skeleton in different groups of organisms and biomineralization in Earth's history : Geo-biological systems in the past : program of the Presidium of Russian Academy of Sciences : "The origin of life and the formation of the biosphere" : Research and Education Center PIN RAS : Research and Education Center INMI RAS']. Москва: ПИН РАН [Moskva: PIN RAN (Палеонтологический институт, России академия наук (Paleontologicheskiy institut, Rossii akademiya nauk)] [Moscow: Paleontological Institute, Russian Academy of Sciences], pp. 14-43, Plate 1. [In Russian; article with bilingual title and abstract.]

► *Brooksella canyonensis* Bassler, from Grand Canyon, noted pp. 17-18.

Shields, Graham A.; Strachan, Robin A.; Porter, Susannah M.; Halverson, Galen P.; Macdonald, Francis A.; Plumb, Kenneth A.; Alvarenga, Carlos J. de; Banerjee, Dhiraj M.; Bekker, Andrey; Blecker, Wouter; Brasier, Alexander; Chakraborty, Partha P.; Collins, Alan S.; Condie, Kent; Das, Kaushik; Evans, David A. D.; Ernst, Richard; Fallick, Anthony E.; Frimmel, Hartwig; Fuck, Reinhardt; Hoffman, Paul F.; Kamber, Balz S.; Kuznetsov, Anton B.; Mitchell, Ross N.; Poiré, Daniel G.; Poulton, Simon W.; Riding, Robert; Sharma, Mukund; Storey, Craig; Stueeken, Eva; Tostevin, Rosalie; Turner, Elizabeth; Xiao, Shuhai; Zhang, Shuanhong; Zhou, Ying, Zhou; AND Zhu, Maoyan

2022 21.8621 A template for an improved rock-based subdivision of the pre-Cryogenian timescale. *Geological Society* (London), *Journal*, 179: https://doi.org/10.1144/jgs2020-222, 22 pp.

► See "Paleontological Constraints" (p. 8), which cites the Grand Canyon–based findings of Porter (2016, ITEM NO. 21.6833), Porter and Knoll (2000, ITEM NO. 21.3638), and Porter, Meisterfeld, and Knoll (2003, ITEM NO. 21.3872).

Sirantoine, Eva, AND Brocks, Jochen J.

2015 21.8100 Emerging picture of a pre-Cryogenian eukaryotic community based on immature molecular fossils [ABSTRACT]. *In: 2015 Goldschmidt Conference, Prague, CZ, August 16-21, 2015 : abstracts*, p. 2910.

► Includes Chuar Group of Grand Canyon.

Smith, A. R.

1969 21.2976 Precambrian fossils from the Bass Limestone of the Grand Canyon Series [ABSTRACT]. *Geological Society of America, Abstracts for 1968*, p. 639.

Spamer, Earle E.

1979 21.3000 A jellyfish in the Canyon. *Grand Canyon Guide*, 3(1) (March 25): 1, 4.

► General article about the Proterozoic pseudofossil(?) *Brooksella canyonensis* Bassler.

1982 21.3001 Enigmatic fossils of the Grand Canyon Supergroup (Precambrian) of northern Arizona. *Delaware Valley Paleontological Society, Newsletter*, 4(8): 3-5.

► Summary article.

1988 21.3008 Geology of the Grand Canyon: An annotated bibliography, with an annotated catalogue of Grand Canyon type fossils. Volume 3. Second supplement (to 1987) with an annotated bibliography of the world literature on the Grand Canyon type fossil *Chuaria circularis* Walcott, 1899, an index fossil for the late Proterozoic. *Geological Society of America, Microform Publication 17*, 343 [355] pp. on four 98-frame fiche.

1989 21.3010 Late Proterozoic index fossil *Chuaria circularis* Walcott, 1899: Understanding an enigma [ABSTRACT]. *28th International Geological Congress, Abstracts*, 3: 159-160.

1990 21.3011 Geology of the Grand Canyon: An annotated bibliography, with an annotated catalogue of Grand Canyon type fossils. Volume 4. Third supplement (to 1989), with supplement to the annotated bibliography of the world literature on the Grand Canyon type fossil *Chuaria circularis* Walcott, 1899. *Geological Society of America, Microform Publication 20*, 178 pp. on two 98-frame fiche.

1992 21.3015 Geology of the Grand Canyon: An annotated bibliography, with an annotated catalogue of Grand Canyon type fossils. Volume 5. Fourth supplement (to 1991) with second supplement to the annotated bibliography of the world literature on the Grand Canyon type fossil *Chuaria circularis* Walcott, 1899. *Geological Society of America, Microform Publication 23*, 234 pp. on three 98-frame fiche.

Strauss, Justin V.; Knoll, Andrew H.; Cohen, Phoebe; AND Macdonald, Francis A.

2012 21.5889 Diverse vase-shaped microfossils in the Neoproterozoic Callison Lake Dolostone, Coal Creek inlier, Yukon Territory, Canada [ABSTRACT]. *Geological Society of America, Abstracts with Programs*, 44(7): 603.

► Includes note of Chuar Group microfossils, Grand Canyon.

Strauss, Justin V.; Rooney, Alan D.; Macdonald, Francis A.; Brandon, Alan D.; AND Knoll, Andrew H.

2014 21.8635 740 Ma vase-shaped microfossils from Yukon, Canada: Implications for Neoproterozoic chronology and biostratigraphy. *Geology*, 42(8) (August): 659-662 + Data Repository item 2014244 (doi:10.1130/G35736.1).

► See Figure 4, correlative stratigraphic diagrams that include Grand Canyon, displaying distributions of vase-shaped microfossil horizons.

Sturdevant, Glen E.

1928 21.7202 [David White studying fossils of the "lower part of Grand Canyon".] *Grand Canyon Nature Notes*, 2(12) (May 31): 4.

Summons, Roger E.

1992 21.7590 Abundance and composition of exractable organic matter. *From:* Hayes, J. M., Des Marais, David J., Lambert, Ian, Strauss, Harald, and Summons, Roger E., Proterozoic biogeochemistry. *In:* Schopf, J. William, and Kline, Cornelis (eds.), *The Proterozoic biosphere : a multidisciplinary study.* Cambridge (United Kingdom), New York, and Melbourne: Cambridge University Press, pp. 101-116.

► Includes Chuar Group.

Summons, Roger E., AND Walter, Malcolm R.

1990 21.3117 Molecular fossils and microfossils of prokaryotes and protists from Proterozoic sediments. *American Journal of Science*, 290-A: 212-244.

Summons, Roger E.; Brassell, Simon C.; Eglinton, Geoffrey; Evans, Evan; Horodyski, Robert J.; Robinson, Neil; AND Ward, David M.

1988 21.3118 Distinctive hydrocarbon biomarkers from fossiliferous sediment of the Late Proterozoic Walcott Member, Chuar Group, Grand Canyon, Arizona. *Geochimica et Cosmochimica Acta*, 52(11) (November): 2625-2637.

Sun, Weiguo

1985 21.7578 *Contributions to palaeontology and stratigraphic correlation of the late Precambrian in China and Australia.* Doctoral dissertation, University of Adelaide, 291 pp. [including 21 plates].

► See Chapter 3, "Palaeontology and Biostratigraphy of Late Precambrian Macroscopic Colonial Algae: *Chuaria* Walcott and *Tawuia* Hofmann", pp. 88-173, which includes Grand Canyon.

T

Talyzina, N. M.

2000 21.4480 Ultrastructure and morphology of *Chuaria circularis* (Walcott, 1899) Vidal and Ford (1985) from the Neoproterozoic Visingso Group, Sweden. *Precambrian Research*, 102(1) (July): 123-134.

Teyssèdre, Bernard

2006 21.4709 Les algues vertes (phylum Viridiplantae), sont-selles vieilles de deux milliards d'années? [*transl.* 'Are green algae (phylum Viridiplantae) two billion years old?'] *Carnets de Géologie* (Brest), Livre 2006/01, 162 pp. [In French.]

► See pp. 7, 45, 52, 66, 86; Precambrian microfossils in Grand Canyon.

Tingle, Kelly E.; Porter, Susannah M.; Raven, Morgan R.; Czaja, Andrew D.; Webb, Samuel M.; AND Bloeser, Bonnie

2023 21.8466 Organic preservation of vase-shaped microfossils from the late Tonian Chuar Group, Grand Canyon, Arizona, USA. *Geobiology*, 21: 290-309 + Supporting Information online (figs. S1-S13), accesible through web page https://doi.org/10.1111/gbi.12544.

Tingle, Kelly E.; Porter, Susannah M.; Teeter, Elizabeth C.; AND Darroch, Simon A. F.

2023 21.8529 Taphonomic variation in vase-shaped microfossils from carbonate nodules of the late Tonian Chuar Group, Grand Canyon, Arizona, USA [ABSTRACT]. *In: The Palaeontological Association, 67th Annual Meeting, 11th-15th September 2023, University of Cambridge, UK : Programme and abstracts*, p. 138.

Tweet, Justin S.

2020 21.8031 Chapter 4. Precambrian paleontology of Grand Canyon National Park. *In:* Santucci, Vincent L., and Tweet, Justin S. (eds.), *Grand Canyon National Park : centennial paleontological resource inventory (non-sensitive version).* Fort Collins, Colorado: U.S. National Park Service, Natural Resource Stewardship and Science, pp. 75-107. (Volume: *Natural Resource Report NPS/GRCA/NRR—2020/2103*.)

2021 21.8256 Precambrian paleontology of Grand Canyon National Park. *In:* Santucci, Vincent L., and Tweet, Justin S. (eds.), Grand Canyon National Park centennial paleontological resource inventory; a century of fossil discovery and research. *Utah Geological Association, Special Publication 1*, pp. 55-72, A1-A7, B1-B2 (pagination is contiguous).

► Reset reprinting of Tweet (2020, ITEM NO. 21.8031).

Tydings, Aidan C., AND Porter, Susannah M.

2024 21.8535 A new highly diverse assemblage of organically preserved vase-shaped microfossils [ABSTRACT]. *In:* Wilson, Jeffrey A. Mantilla, and Friedman, Matt (eds.), 12th North American Paleontological Convention, University of Michigan, 17-21 June 2024; Program with abstracts. *University of Michigan, Papers on Paleontology*, (39): 419-420.

► Lower Walcott Member of the <770-730 Ma Chuar Group, Grand Canyon. Authors note they have "identified at least 19 species in this assemblage, nine of which are new."

V

Van Gundy, C. E. [Van Gundy, Clarence Edgar]

1937 21.3273 Jellyfish from the Grand Canyon Algonkian. *Science*, New Series, 85: 314.

► Later named as *Brooksella canyonensis* Bassler, 1941. (Van Gundy was the original discoverer of the specimen.)

Venkatachala, B. S.; Shukla, Manoj; Bansal, Rajendra; AND Acharyya, S. K.

1989 21.3290 Upper Proterozoic microfossils from the Infra Krol sediments, Nainital synform, Kumaon Himalaya, India. *In:* Jain, K. P., and Tiwari, R. S. (eds.), Proceedings on the symposium on Vistas in Indian Palaeobotany. *Palaeobotanist*, 38: 29-38.

► See p. 35.

Ventura, Gregory T.; Kenig, Fabien; Grosjean, Emmanuelle; AND Summons, Roger E.

2004 21.4605 Biomarker analysis of solvent extractable organic matter from the late Neoproterozoic Kwagunt Formation, Chuar Group (~800-742 Ma), Grand Canyon [ABSTRACT]. *Geological Society of America, Abstracts with Programs*, 36(5): 170.

Vidal, Gonzalo

1974 21.3296 Late Precambrian microfossils from the basal sandstone unit of the Vissingsö beds, South Sweden. *Geologica et Palaeontologica*, 8: 1-13.

1983 21.3297 The oldest eukaryotic cells. *Scientific American*, 250(2): 48-57.

► See p. 56.

1986 21.3298 Acritarch-based biostratigraphic correlations and the upper Proterozoic in Scandinavia, Greenland, and North America [ABSTRACT]. *Geological Society of America, Abstracts with Programs*, 18(5): 420.

1990 21.3299 The late Proterozoic acritarch *Chuaria circularis* (Walcott) Vidal and Ford. *Journal of Paleontology*, 64(3): 488.

Vidal, Gonzalo, AND Ford, Trevor D.

1985 21.3300 Microbiotas from the late Proterozoic Chuar Group (northern Arizona) and Uinta Mountain Group (Utah) and their chronostratigraphic implications. *Precambrian Research*, 28: 349-389.

Vidal, Gonzalo, AND Knoll, Andrew H.

1983 21.6410 Proterozoic plankton. *In:* Medaris, L. G., Jr., Byers, C. W., Mickelson, D. M., and Shanks, W. C. (eds.), Proterozoic geology: Selected papers from an international Proterozoic symposium. *Geological Society of America, Memoir 161*, pp. 265-278.

Vidal, Gonzalo; Moczydlowska, Malgorzata; AND Rudavskaya, Valeria A.

1993 21.3301 Biostratigraphical implications of a *Chuaria-Tawuia* assemblage and associated acritarchs from the Neoproterozoic of Yakutia. *Palaeontology*, 36(Part 2) (July): 387-402.

Vogel, Marilyn B.; Moldowan, J. Michael; AND Zinniker, David

2005 21.6840 Biomarkers from units in the Uinta Mountain and Chuar Groups. *In:* Dehler, Carol M., Pederson, Joel L., Sprinkel, Douglas A., and Kowallis, Bart J. (eds.), Uinta Mountain geology. *Utah Geologcial Association, Publication 33*, pp. 75-96.

W

Walcott, Charles D.

1884 21.5503 Note on Paleozoic rocks of central Texas. *American Journal of Science*, Series 3, 28(168) (December): 431-433.

► See p. 432, *note* ‡: "Since the paper on the Pre-Carboniferous strata of the Grand Cañon was published (this Journal, vol. xxvi, p. 487) [*sic*; see Walcott, 1883, ITEM NO. 21.3313], a fragment of a trilobite, probably of the genus Ptychoparia, has been detected in a bit of shale from the Chuar group." (ENTIRE ITEM) [Later considered to be a pseudofossil.]

1899 21.3329 Pre-Cambrian fossiliferous formations. *Geological Society of America, Bulletin,* 10 (April): 199-244.

► Of note is the description of the new genus and species, *Chuaria circularis* from Grand Canyon, described as "a small discinoid shell . . . 2 to 5 millimeters in diameter" [see cover illustration in the present bibliography]. [Includes several specimens identified to invertebrate taxa, all later considered to be pseudofossils.]

1901 21.3970 Sur les formations pré-Cambriennes fossilifères [*transl.* 'On the Precambrian fossiliferous formations']. *In: Congrès Géologique International, Comptes Rendus de la VIII^{e} Session, en France : premier fascicule.* Paris: Bigot Frères, Lille, pp. 299-312. [8th International Geological Congress.] [In French.]

► See "Fossiles de la série du Grand-Cañon de l'Arizona" [*transl.* 'Fossils of the Grand Canyon series of Arizona'], pp. 311-312.

Walker, B. E.

1899 21.6717 Presidential address. *Canadian Institute, Proceedings*, New Series, 2(Part 1) (7) (February): 1-10.

► See pp. 5-6, quoting C. D. Walcott, regarding Precambrian fossils in Grand Canyon.

Wang, Xin; Yuan, XunLai; Zhou, ChuanMing; Du, KaiHe; AND Gong Miao

2011 21.7780 Anatomy and plant affinity of *Chuaria*. *Chinese Science Bulletin*, 56(12) (April): 1256-1261.

► Pertains principally to studies of material collected from Neoproterozoic strata of Anhui Province, China, but begins with brief remarks on the taxon's discovery in Grand Canyon and its first analyses.

Wetzel, Otto

1940 21.3445 Mikropaläontologische Untersuchungen an eozoischen und paläozoischen Kieselgesteinen aus Nordamerika (USA. und Kanada) [*transl.* 'Micropaleontological investigations of Eozoic and Paleozoic siliceous rocks from North America (USA and Canada)']. *Zentralblatt für Mineralogie, Geologie und Paläontologie*, Abteilung B (Geologie und Paläontologie), no. 3, pp. 60-86. [In German.]

► See pp. 61, 69-70.

White, David

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► Presentation made April 23, 1928.

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2023 21.8527 The role of clay minerals in the preservation of Precambrian organic-walled microfossils. *Geobiology*, 21: 708-724 + Supplementary Material online, 30 pp.

► See Table 1 (p. 711, and Supplementary Material Table S1), which lists for samples studied material from a Chuar Group outcrop in Grand Canyon.

Woltz, Christina; Porter, Susannah M.; Dehler, Carol M.; AND Riedman, Leigh Anne

2023 21.8497 Evaluating the effects of preservation on eukaryotic diversity patterns of the Tonian Chuar and Uinta Mountain Groups of western Laurentia [ABSTRACT]. *Geological Society of America, Abstracts with Programs*, 55(6): abstract 107-7 (https://doi.org/10.1130/abs/2023AM-394325).

2023 21.8530 Organic-walled microfossils from the *c.* 766-730 Ma Moosehorn Lake formation, Uinta Mountain Group, Utah [ABSTRACT]. *In: The Palaeontological Association, 67th Annual*

Meeting, 11th-15th September 2023, University of Cambridge, UK : Programme and abstracts, p. 142.

► Notes, "Fourteen of these species [of 22 species and four unnamed forms] also appear in the coeval Chuar Group of Arizona, including *Kaibabia gemmullela*, *Microlepidopalla mira* and *Volleyballia dehlerae*."

Woltz, Cristina; Webb, Samuel M.; AND Sperling, Erik A.

2024 21.8644 Investigating the effects of local redox on the preservation of organic microfossil [*sic*] from the late Tonian Chuar and Uinta Mountain Groups of western Laurentia [ABSTRACT]. *Geological Society of America, Abstracts with Programs*, 56(4), abstract 21-1 (https://doi.org/10.1130/abs/2024CD-399752).

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► See p. 149, remarks on chitinozoans and acritarchs from the Grand Canyon Precambrian.

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► See p. 58, summary remarks including "*Chuaria*-like circular carbonaceous compressions" (Grand Canyon research cited but not noted by geographic name).

Xiao, Shuhai, AND Tang, Qing

2018 21.8717 After the boring billion and before the freezing millions: evolutionary patterns and innovations in the Tonian Period. *Emerging Topics in Life Sciences*, 2: 161-171.

► Review article. Includes Figure 3 (pp. 165-166), "Representative Tonian fossils", with fig. 3D, "*Cyclocyrillium torquata*, an example of vase-shaped microfossils (VSMs) and a possible amoebozoan, from the Kwagunt Formation of the Chuar Group in Arizona"; figs. 3F, G, "A specimen of *Chuaria circularis* illustrted under reflected light"; fig. 3K, "*Leirosphaeridia* sp., a smooth-walled acritarch with circular holes . . . from the Chuar Group in Arizona".

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Zheng, Wentao; Porter, Susannah M.; AND Tingle, Kelly E.

2024 21.8536 A late Tonian Lagerstätte: Pickled vase-shaped microfossils from the Chuar Group, Grand Canyon, U.S.A. [ABSTRACT]. *In:* Wilson, Jeffrey A. Mantilla, and Friedman, Matt (eds.), 12th North American Paleontological Convention, University of Michigan, 17-21 June 2024; Program with abstracts. *University of Michigan, Papers on Paleontology*, (39): 461.

► Potential index fossils, ca. 789-729 Ma, including soft-part preservation, in the lower Walcott and upper Awatubi Members.

2025 21.8704 A late Tonian lagerstätte: Pickled vase-shaped microfossils from the Chuar Group, Grand Canyon, USA [ABSTRACT]. *Geological Society of America, Abstracts with Programs*, 57(6) (doi:10.1130/abs/2025AM-9048).

► "Recent work has confirmed the presence of organically-preserved VSMs from mudstones of the upper Awatubi and lower Walcott members [of the Kwagunt Formation] of the Chuar Group, Grand Canyon, Arizona, suggesting special preservational conditions at work. . . . findings support the hypothesis that VSMs may have inhabited terrestrial environments during the late Tonian Period, and support hypotheses that suggest arid and possible icy conditions at equatorial latitudes during this time."

Zumberge, John Alexander

2019 21.7956 *A lipid biomarker investigation tracking the evolution of the Neoproterozoic marine biosphere and the rise of eukaryotes.* Doctoral dissertation, University of California at Riverside, 250 pp.

► Includes Chuar Group of Grand Canyon throughout.

Zumberge, J. Alex [Zumberge, John Alexander]**, AND Love, Gordon D.**

2015 21.8101 Tracking the emergence and expansion of eukaryotic phytoplankton and metazoa in Proterozoic oceans [ABSTRACT]. *In: Astrobiology Science Conference 2015*, no. 7466.

► Includes Chuar Group of Grand Canyon.

2016 21.8102 Tracking the expansion of eukaryotes on Proterozoic oceans using kerogen-bound lipid biomarkers [ABSTRACT]. *In: 2016 Goldschmidt Conference, Yokohama, 26 June-1 July : abstracts*, p. 3776.

► Includes Chuar Group of Grand Canyon.

Zumberge, J. Alex [Zumberge, John Alexander]**; Rocher, Don; and Love, Gordon D.**

2020 21.8118 Free and kerogen-bound biomarkers from the late Tonian sedimentary rocks record abundant eukaryotes in mid-Neoproterozoic marine communities. *Geobiology*, 18(3) (May): 326-347.

► *Ca.* 780-729 Ma Chuar Group (Grand Canyon) and Visingsö Group (Sweden).

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2. PALEOZOIC INVERTEBRATE PALEONTOLOGY

HISTORICAL NOTE

The two plates, with explanations, on the following pages are Paleontology Plates I and II from J. S. Newberry's "Geological Report" *in* J. C. Ives, *Report upon the Colorado River of the West, explored in 1857 and 1858* (U.S. 36th Congress, 1st Session, House Executive Document 90 and concurrently as Senate Executive Document [no number]), Part 3 (154 pp., 3 plates, a separately paginated part in the volume). They are inserted here for their historical importance.

Newberry's report is accompanied by two geographical maps of the Ives Expedition by F. W. von Egloffstein and (in the Senate document only) two geological maps in volume pocket which are the Egloffstein maps over which is colored Newberry's general geological interpretations of the regions through which the expedition traveled.[1]

The Ives Expedition began in late 1857 at the Colorado River delta in Mexico. Fully outfitted at Fort Yuma, California, the expedition first traveled upstream aboard a small steamboat on the lower Colorado River to Beale's Crossing, where a land expedition thence departed eastward on mules that had been separately brought upstream by teamsters. The land expedition reached the Grand Canyon in April 1858 and concluded in May at Fort Defiance, New Mexico Territory. Geological specimens were collected during the entire expedition.

Paleonotology Plates I and II include invertebrate fossils from the Grand Canyon region, which comprise the first paleontological collections made in this area, in April 1858. (Some illustrations are not those of specimens from the immediate Grand Canyon area.)

[Paleontology Plate III in Newberry's report depicts Mesozoic fossil plants collected from the general vicinity of the Little Colorado River valley, along which the expedition traveled during its eastward trek toward Fort Defiance, after having visited the Grand Canyon at Peach Springs Wash/Diamond Creek and at Cataract Creek. For historical completeness, Plate III is illustrated in this bibliography accompanying the section on Mesozoic Paleontology.]

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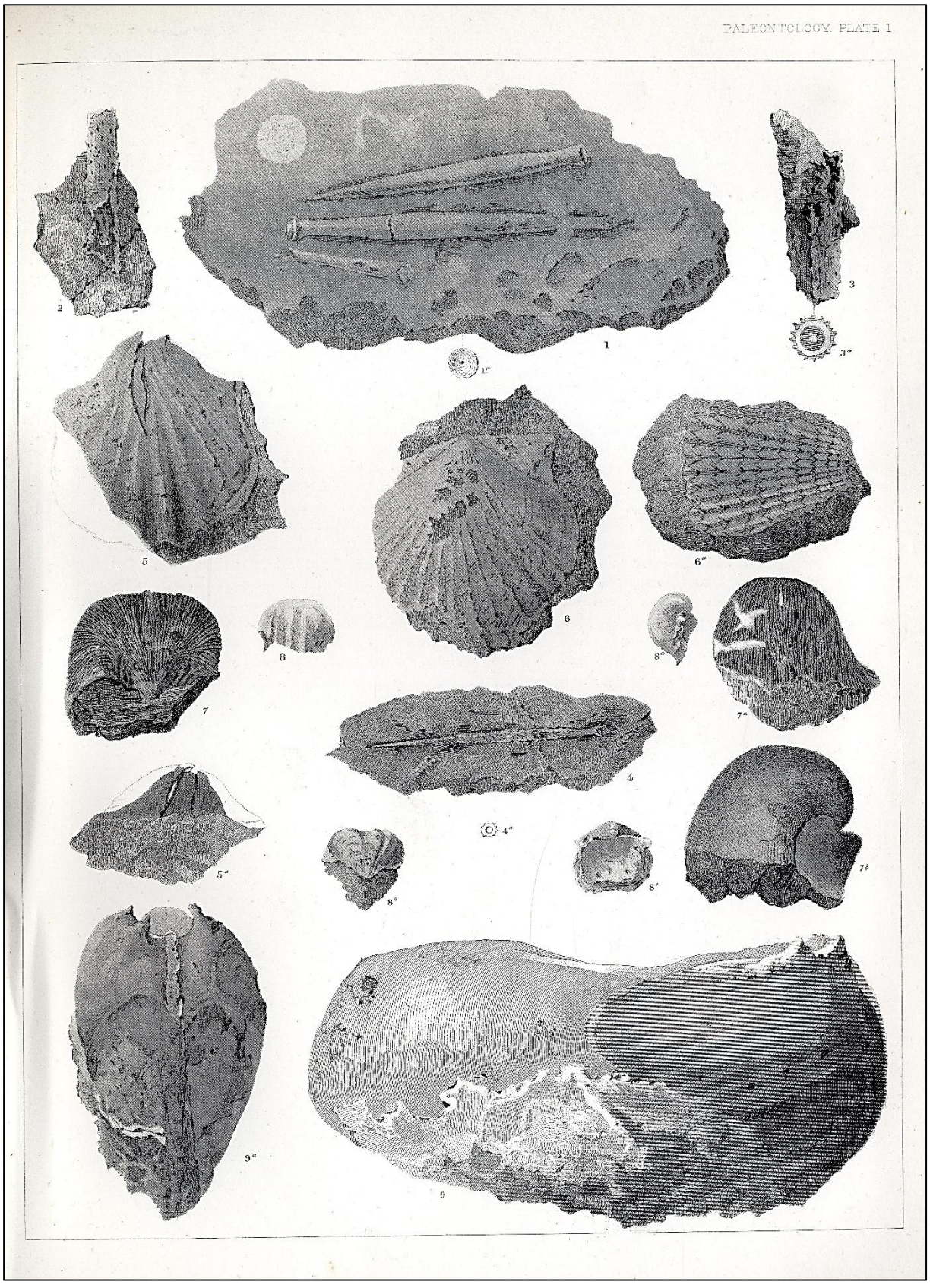
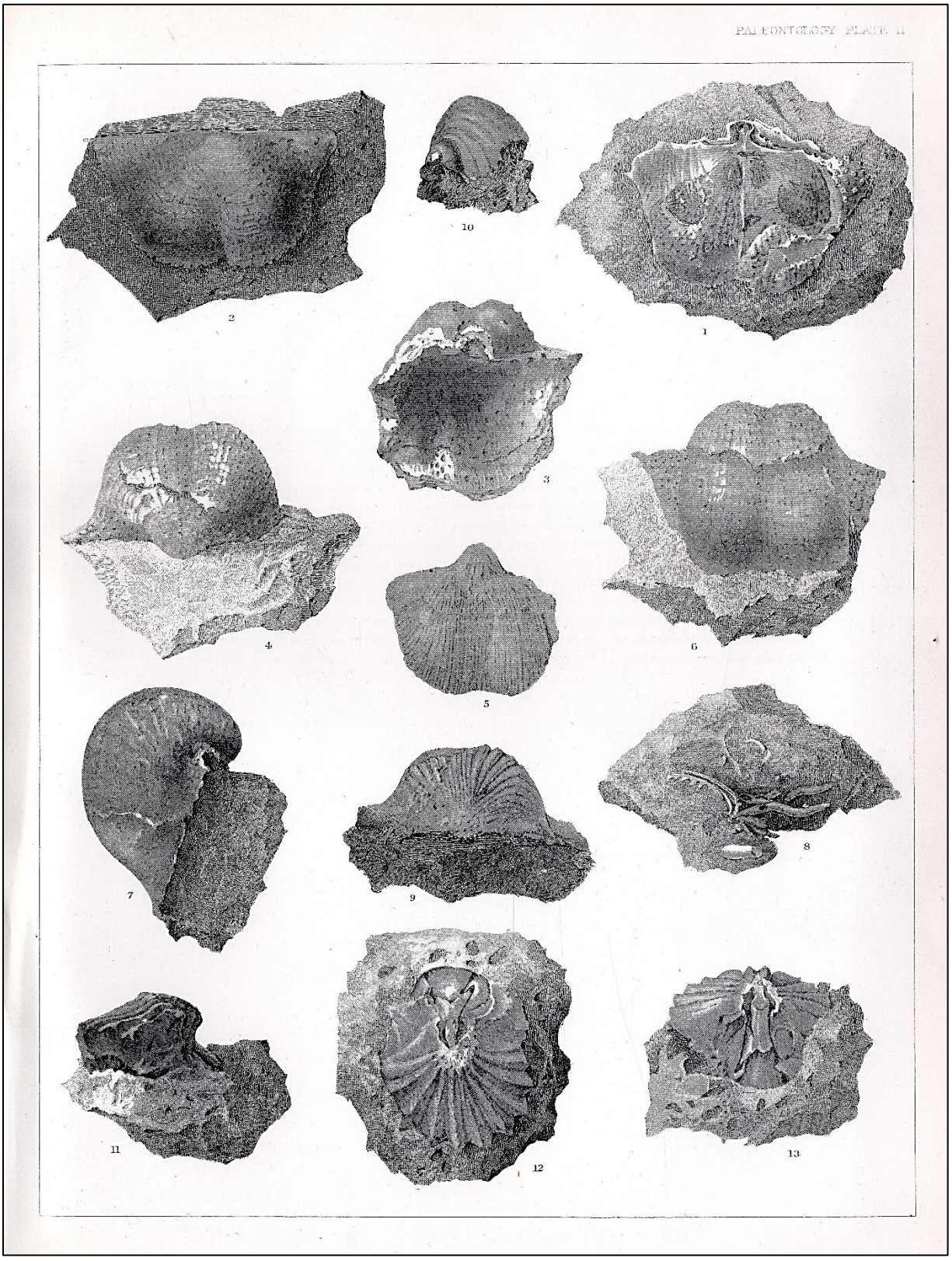
[1] Regarding Egloffstein's expedition maps, see Earle E. Spamer, *A Big Misunderstanding: F. W. von Egloffstein's 1858 Map of the Grand Canyon and Its Influence* (Raven's Perch Media, 2025, https://ravensperch.org; PDF, 286 pp., 54 MB; accessible via Internet Archive at https://archive.org/details/a-big-misunderstanding. Flip book is also accessible at https://online.fliphtml5.com/ryvqb/aelp/.

EXPLANATION OF PLATE I.


PALEONTOLOGY. PLATE 1

EXPLANATION OF PLATE II.

[Note: Though not so indicated in the plate explanation, all species on this plate are new species in Newberry (1861).]


PALEONTOLOGY PLATE II
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Bibliography

As a pragmatic matter of organization, also included in this section are studies of certain superphyletic organisms (such as those described by Mussini *et al.*, 2025).

See pp. 9-10 for stratigraphic nomenclature.

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► Brief note of fossils in Bright Angel Shale along Tonto Trail.

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Carter, John L.; Brezinski, David K.; Kollar, Albert D.; AND Dutro, J. Thomas, Jr.

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L

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2020 21.8032 Chapter 5. Paleozoic invertebrate paleontology of Grand Canyon National Park. *In:* Santucci, Vincent L., and Tweet, Justin S. (eds.), *Grand Canyon National Park : centennial paleontological resource inventory (non-sensitive version).* Fort Collins, Colorado: U.S. National Park Service, Natural Resource Stewardship and Science, pp. 109-236. (Volume: *Natural Resource Report NPS/GRCA/NRR—2020/2103*.)

2021 21.8257 Paleozoic invertebrate paleontology of Grand Canyon National Park. *In:* Santucci, Vincent L., and Tweet, Justin S. (eds.), Grand Canyon National Park centennial paleontological resource inventory; a century of fossil discovery and research. *Utah Geological Association, Special Publication 1*, pp. [unnumbered page facing 73], 73-104, A1-A42, B1-B22, C1-C4, D1 (pagination is contiguous).

► Reset reprinting of Lassiter *et al.* (2020, ITEM NO. 21.8032).

Lochman, Christina

1952 21.7987 Trilobites. *In:* Cooper, G. Arthur, Arellano, A. R. V., Johnson, J. Harlan, Okulitch, Vladimir J., Stoyanow, Alexander, and Lochman, Christina, Cambrian stratigraphy and paleontology near Caborca, northwestern Sonora, Mexico. *Smithsonian Miscellaneous Collections*, 119(1): 60-161, Plates 15-31.

► Study area is extralimital to this bibliography, but Grand Canyon noted on pp. 73, 75, 77, 79, 80, 122, 137; with specific remark (p. 76), "A careful revision of the Grand Canyon generic identifications should be made before the faunal lists [for the study area] can be used accurately for correlation purposes."

Lundin, R. F.; Norby, R. D.; Racey, J. S.; AND Walter, D. R.

1978 21.1989 Conodont biostratigraphy of Mississippian rocks of Arizona [ABSTRACT]. *Geological Society of America, Abstracts with Programs*, 10: 114.

M

Macurda, Donald B., Jr.

1969 21.2011 Blastoids. *In:* McKee, E. D., and Gutschick, R. C., History of the Redwall Limestone of northern Arizona. *Geological Society of America, Memoir 114*, pp. 457-473.

Mamet, B. L., AND Skipp, Betty A.

1970 21.2025 Lower Carboniferous calcareous foramirifera [*sic*]: Preliminary zonation and stratigraphic implications for the Mississippian of North America. *Sixième Congrès International de Stratigraphie et de Géologie du Carbonifère, Sheffield 11th to 16th September 1967, Compte Rendu*, 3: 1129-1146.

1970 21.2026 Preliminary foraminiferal correlations of early Carboniferous strata in the North American Cordillera. *In:* Streel, M., and Wagner, R. H. (eds.), *Colloque sur la stratigraphie du Carbonifere.* Université de Liège, pp. 327-348. (Les Congres et Colloques de l'Universite de Liege, Volume 55.)

Martin, Harriet

1992 21.2055 *Conodont biostratigraphy and paleoenvironment of the Surprise Canyon Formation (Late Mississippian), Grand Canyon, Arizona.* Master's thesis, Northern Arizona University, 298 pp.

Martin, Harriet, AND Barrick, James E.

1999 21.2056 Chapter F. Conodont biostratigraphy of the Surprise Canyon Formation. *In:* Billingsley, George H., and Beus, Stanley S. (eds.), Geology of the Surprise Canyon Formation of the Grand Canyon, Arizona. *Museum of Northern Arizona, Bulletin 61*, pp. 97-115. [References combined for volume, pp. 245-250.]

Martin, Harriet, AND Beus, Stanley S.

1989 21.2057 Conodont biostratigraphy of the Surprise Canyon Formation (Late Mississippian) in western Grand Canyon, Arizona [ABSTRACT]. *Geological Society of America, Abstracts with Programs*, 21(5): 111.

1992 21.2058 Conodont biostratigraphy and paleoenvironment of Late Mississippian strata in the Grand Canyon, Arizona [ABSTRACT]. *Geological Society of America, Abstracts with Programs*, 24(6): 50.

Mason, J. F.

1938 21.2075 Cambrian faunal succession in Nevada and California. *Journal of Paleontology*, 12: 287-294.

Mather, Terry James

1970 21.2076 *Stratigraphy and paleontology of the Permian Kaibab Formation, Mogollon Rim region, Arizona.* Doctoral dissertation, University of Colorado, 187 pp.

McCulloch, Miriam E.

1992 21.4457 *Fenestrate bryozoans of the Toroweap Formation, Clark County, Nevada.* Master's thesis, Eastern Washington University, 150 pp.

McGill College and University

1893 21.8314 *Annual calendar of McGill College and University, Montreal. Session 1893-1894.* Montreal: Printed for the University by John Lovell and Son.

► *In* "Donations to Library and Museum from May, 1892, to April, 1893", see "To the Peter Redpath Museum", p. 242 (exactly): "From Dr. Wolcott, Washington, D.C.—Stromatopora from the Lower Cambrian, Grand Canon, Colorado." (ENTIRE NOTE) [Possibly actually from Precambrian strata.]

McKee, Edwin D.

1931 21.2169 Crinoidal limestone. *Grand Canyon Nature Notes*, 5(12) (October): 126-127.

1934 21.2184 Note on paleontology. *Grand Canyon Nature Notes*, 9(7 [*sic*, 6]) (September): 325-326.

► Fossiliferous layer in Kaibab formation.

1935 21.2185 A Conularia from the Permian of Arizona. *Journal of Paleontology*, 9: 427-429, Plate 48, figures 10, 11 (facing p. 422).

► *Conularia kaibabensis*, new species.

NOTE: The holotype of this medusozoan cnidarian was originally noticed in Unsigned (1926) as the ribs and backbone of a fish; found in the Kaibab limestone near Bright Angel Ranger Station, North Rim (cited in the "Vertebrate Paleontology" section of this bibliography with a note of disambiguation); collected by A. L. Brown.

1937 21.3753 Triassic pebbles in northern Arizona containing Permian invertebrate fossils. *American Journal of Science*, Series 5, 33 (April): 260-263.

1941 21.2199 *Derbya arizonensis*, new name for *D. regularis* McKee. *Journal of Paleontology*, 15: 91.

► *NOTE*: The genus name is correctly spelled *Derbyia*. (*D. regularis* McKee is a name taxonomically preoccupied.)

1947 21.2210 Original colors preserved in fossil seashells. *Plateau*, 19: 48-51.

1960 21.2224 Spatial relations of fossils and bedded cherts in the Redwall Limestone, Arizona. *U.S. Geological Survey, Professional Paper 400-B*, pp. B461-B463.

1982 21.2253 Distribution and age of fauna and flora. *In:* McKee, Edwin D., The Supai Group of Grand Canyon. *U.S. Geological Survey, Professional Paper 1173*, Chapter E, pp. 75-112.

1994 21.2271 Crinoidal limestone. *In:* Lamb, Susan (ed.), *The best of Grand Canyon Nature Notes.* Grand Canyon, Arizona: Grand Canyon Natural History Association, pp. 24-26.

► Reprinted from *Grand Canyon Nature Notes*, October, 1931.

McKee, Edwin D., AND Gutschick, Raymond C.

1969 21.2282 The Redwall faunas. *In:* McKee, E. D., and Gutschick, R. C., History of the Redwall Limestone of northern Arizona. *Geological Society of America, Memoir 114*, pp. 125-172.

1969 21.2283 Brachiopods. *In:* McKee, E. D., and Gutschick, R. C., History of the Redwall Limestone of northern Arizona. *Geological Society of America, Memoir 114*, pp. 435-437.

1969 21.2284 Miscellaneous fossil groups: Algae and stromatolites, holothurians, trilobites, ostracodes, and fish. *In:* McKee, E. D., and Gutschick, R. C., History of the Redwall Limestone of northern Arizona. *Geological Society of America, Memoir 114*, pp. 545-552.

McKinney, Frank K.

1983 21.2308 Ectoprocta (Bryozoa) from the Permian Kaibab Formation, Grand Canyon National Park, Arizona. *Fieldiana—Geology*, New Series, no. 13, 17 pp.

McLemore, Devin M., AND Hargrave, Jennifer E.

2014 21.6491 Fossil coral from the Missisippian Redwall Limestone in the Beaver Dam Mountains, Washington County, Utah [ABSTRACT]. *Geological Society of America, Abstracts with Programs*, 46(6): 514.

Miller, A. K., AND Furnish, W. M.

1957 21.2367 A second Permian specimen of the nautiloid *Aulametacoceras. Journal of Paleontology*, 31(4): 713-714, plate 84.

1958 21.2368 Permian ammonoids from the Colorado Plateau. *Journal of Paleontology*, 32: 682-683.

Miller, A. K., AND Youngquist, Walter

1949 21.2369 American Permian nautiloids. *Geological Society of America, Memoir 41*, 218 pp.

► See pp. 8-9, 25-28, 44, 57-61, 90-91, 93-94, 114-115, 137; plates 7, 13, 14, 21, 33, 34, 45, 59.

Miller, A. K.; Downs, H. R.; AND Youngquist, Walter

1949 21.2370 Some Mississippian cephalopods from central and western United States. *Journal of Paleontology*, 23: 600-612.

Miller, Halsey W., Jr., AND Breed, William J.

1964 21.2373 *Metacoceras bowmani*, a new species of nautiloid from the Toroweap formation (Permian) of Arizona. *Journal of Paleontology*, 38: 877-880.

Moore, Raymond C., AND Dudley, Ruth Mary

1944 21.2410 Cheilotrypid bryozoans from Pennsylvanian and Permian rocks of the Midcontinent region. *In:* 1944 reports of studies. *Kansas Geological Survey, Bulletin 52*, Part 6, pp. 229-408.

► See pp. 304, 384, 392, 396.

Muir-Wood, Helen, AND Cooper, G. Arthur

1960 21.2427 Morphology, classification and life habits of the Productoidea (Brachiopoda). *Geological Society of America, Memoir 81*, 447 pp.

► See pp. 278-281, 285-286, 287-288.

Mussini, Giovanni; Hagadorn, James W.; Miller, Anne E.; Karlstrom, Karl E.; Evans, Rhydian; Dehler, Carol E.; Bastien, Salvador; AND Butterfield, Nicholas J.

2025 21.8671 Evolutionary escalation in an exceptionally preserved Cambrian biota from the Grand Canyon (Arizona, USA). *Science Advances* (American Association for the Advancement of Science), 11: eadv6383 (July 23), 21 pp. + Supplementary Materials online (www.science.org/doi/10.1126/sciadv6383#supplementary-materials, 32 pp. text, Excel file, and .mp4 movie).

► Bright Angel Formation. Includes small carbonaceous fossils, priapulids and crustaceans. Priapulids include *Kraytdraco spectatus*, new genus, new species (Superphylum Ecdysozoa Aguinaldo et al. 1997, Scalidophora Total group of Phylum Priapulida Delage & Hérouard, 1897, Incertae familiae), Holotype Fig. 2A; slide GM23-140L-10, England Finder coordinates: p37; designated paratypes: Figs. 2-4, figs. S4-S8. England-finder coordinates provided in image captions; distribution middle shale members of the middle Cambrian Bright Angel Formation, Grand Canyon National Park; systematic paleontology in Supplementary Text pp. [2]-[3].

N

Newberry, John Strong

1861 21.2455 Geological report. *In:* Ives, J. C., Report upon the Colorado River of the West, explored in 1857 and 1858. *U.S. 36th Congress, 1st Session, Senate Executive Document [no number], Serial 1058*, Part 3, 154 pp. [separately paginated part in volume], with two geographical maps and with two added geological maps in volume pocket.

► Includes a section on paleontology, including new species, with plates (which comprise the first paleontological investigation of the Grand Canyon, conducted principally along Peach Springs Wash on today's Hualapai Indian Reservation).

The Ives volume was also released as *House Executive Document 90*; identical to the Senate version but omitting the two geological maps.

1969 21.2459 Geological report. *In:* Ives, J. C., Report upon the Colorado River of the West, explored in 1857 and 1858. New York: Da Capo Press, 154 pp. [separately paginated part in volume], with two maps in volume pocket.

► Volume is a facsimile reprint of Ives (1861) Senate Executive Document variant, including colored plates, but fold-outs and maps are reduced in size.

Newell, Norman D., AND Ciriacks, Kenneth W.

1962 21.2461 A new bivalve from the Permian of the western United States. *American Museum Novitates*, (2121), 4 pp.

► *Scaphellina bradyi*, new species (Scaphellinidae, new family); from the Gamma member, Kaibab Limestone, south of Flagstaff, Arizona.

Nicol, D.

1944 21.2466 Paleoecology of three faunules in the Permian Kaibab formation at Flagstaff, Arizona. *Journal of Paleontology*, 18: 553-557.

1945 21.2467 Paleoecology of three faunules in the Permian Kaibab formation at Flagstaff, Arizona. *Plateau*, 17: 46-53.

1965 21.2468 An ecological analysis of four Permian faunas. *The Nautilus* (Philadelphia), 78: 86-95.

Norr, Megan R.; Santucci, Vincent L.; AND Tweet, Justin S.

2016 21.7415 An inventory of trilobites from National Park Service areas. *In:* Sullivan, Robert M., and Lucas, Spencer G. (eds.), Fossil Record 5. *New Mexico Museum of Natural History and Science, Bulletin 74*, pp. 179-203.

► See "Lake Mead National Recreation Area and Grand Canyon-Parashant National Monument, Nevada-Arizona", pp. 184, 199; "Grand Canyon National Park, Arizona", pp. 185-186, 197-198.

Norris, A. W.

1979 21.2497 Devonian in the western hemisphere. *In:* Robison, Richard A., and Teichert, Curt (eds.), *Treatise on invertebrate paleontology. Part A. Introduction : fossilization (taphonomy), biogeography, and biostratigraphy.* Boulder, Colorado: Geological Society of America, and Lawrence, Kansas: University of Kansas, pp. A218-A253.

► See pp. A219-A222, A224-A225, A226, A228-A229, A233, A235-A238, A241, A244-A245.

P

Palmer, Allison R.

1979 21.2530 Cambrian. *In:* Robison, Richard A., and Teichert, Curt (eds.), *Treatise on invertebrate paleontology. Part A. Introduction : fossilization (taphonomy), biogeography, and biostratigraphy.* Boulder, Colorado: Geological Society of America, and Lawrence, Kansas: University of Kansas, pp. A119-A166.

► See pp. A120-A124, A128-A132.

Palmer, Allison R., AND Halley, Robert B.

1979 21.2531 Physical stratigraphy and trilobite biostratigraphy of the Carrara Formation (Lower and Middle Cambrian) in the southern Great Basin. *U.S. Geological Survey, Professional Paper 1047*, 131 pp.

► Includes correlations with Grand Canyon.

Peters, Shanan E., AND Gaines, Robert R.

2012 21.5906 Formation of the "Great Unconformity" as a trigger for the Cambrian explosion. *Nature* (London), 484(7394) (April 19): cover, 285, 363-366, and Supplementary Information (Figures S1-S8, Tables S1-S3, 17 pp., http://www.nature.com/nature/journal/v484/n7394/extref/nature10969-s1.pdf).

► Cover tease: "Life Force. Did the Formation of the Great Unconformity Trigger the Cambrian Explosion?"

Pierce, Walter H.

1979 21.2608 Biostratigraphy of the Upper Carboniferous (Pennsylvanian) in the Virgin Mountains of southern Nevada and northwestern Arizona. *In:* Beus, Stanley S., and Rawson, Richard R. (eds.), Carboniferous stratigraphy in the Grand Canyon country, northern Arizona and southern Nevada. 9th International Congress of Carboniferous Stratigraphy and Geology, Field Trip no. 13. *American Geological Institute, AGI Selected Guidebook Series, no. 2*, pp. 127-131.

Poole, Forrest G., AND Sandberg, Charles A.

1991 21.2619 Mississippian paleogeography and conodont biostratigraphy of the western United States. *In:* Cooper, John D., and Stevens, Calvin H. (eds.), *Paleozoic paleogeography of the western United States—II. Volume 1.* Los Angeles: Society of Economic Paleontologists and Mineralogists, Pacific Section, pp. 107-136.

R

Racey, Jan Stewart

1974 21.2677 *Conodont biostratigraphy of the Redwall Limestone of east-central Arizona.* Master's thesis, Arizona State University, 199 pp.

Reagan, Albert B.

1904 21.2710 The fossils of the Lower Aubrey and Upper Red Wall limestones in the vicinity of Fort Apache, Arizona. *Indiana Academy of Science Proceedings for 1903*, pp. 237-246.

1904 21.2711 The fossils of the Red Wall compared with those of the Kansas Coal Measures. *Indiana Academy of Science Proceedings for 1903*, pp. 249-251.

1907 21.2712 The fossils of the Red Wall compared with those of the Kansas Coal measures. *Kansas Academy of Science, Transactions*, 20(2): 95-121.

Resser, Charles E.

1928 21.2741 Cambrian fossils from the Mohave Desert. *Smithsonian Miscellaneous Collections*, 81(2): 1-14.

1931 21.2743 The search for ancient life forms in the rocks of the western United States. *In:* Explorations and field-work of the Smithsonian Insitution in 1930. *Smithsonian Institution Publication 3111*, pp. 21-32. [*Smithsonian Miscellaneous Collections*.]

1935 21.2745 Nomenclature of some Cambrian trilobites. *Smithsonian Miscellaneous Collections*, 93(5): 1-46.

► See p. 33.

1941 21.2748 Investigations of ancient Cambrian rocks in the United States. *In:* Explorations and field-work of the Smithsonian Insitution in 1940. *Smithsonian Institution Publication 3631*, pp. 1-4.

1945 21.2749 Cambrian fossils of the Grand Canyon. *In:* McKee, E. D., and Resser, C. E., Cambrian history of the Grand Canyon region. *Carnegie Institution of Washington, Publication 563*, Part 2, pp. 169-220.

Rigby, J. Keith

1980 21.2773 Permian sponges from the Cordilleran region of western North America [ABSTRACT]. *Geological Society of America, Abstracts with Programs*, 12: 150.

1988 21.2774 The first reported occurrence of the demosponge *Haplistion* in the Permian Toroweap Formation. *Brigham Young University, Geology Studies*, 35: 9-13.

Ritter, Scott M.

1991 21.2777 Conodont-based revision of Upper Devonian-Lower Pennsylvanian stratigraphy in the Lake Mead region of northwestern Arizona and southeastern Nevada. *Brigham Young University, Geology Studies*, 37: 125-138.

► Summary of Master's thesis, 1983.

Ross, Charles A.

1979 21.2805 Carboniferous. *In:* Robison, Richard A., and Teichert, Curt (eds.), *Treatise on invertebrate paleontology. Part A. Introduction : fossilization (taphonomy), biogeography, and biostratigraphy.* Boulder, Colorado: Geological Society of America, and Lawrence, Kansas: University of Kansas, pp. A254-A290.

Ross, Charles A., AND Ross, June R. P.

1976 21.2807 Permian. *In:* Robison, Richard A., and Teichert, Curt (eds.), *Treatise on invertebrate paleontology. Part A. Introduction : fossilization (taphonomy), biogeography, and biostratigraphy.* Boulder, Colorado: Geological Society of America, and Lawrence, Kansas: University of Kansas, pp. A291-A350.

► See pp. A303-A304, A313-A314, A339-A340.

S

Sando, William J.

1963 21.2841 New species of colonial rugose corals from the Mississippian of northern Arizona. *Journal of Paleontology*, 37: 1074-1079.

1964 21.2842 Stratigraphic importance of corals in the Redwall limestone, northern Arizona. *U.S. Geological Survey, Professional Paper 501-C*, pp. C39-C42.

1969 21.2843 Corals. *In:* McKee, E. D., and Gutschick, R. C., History of the Redwall Limestone of northern Arizona. *Geological Society of America, Memoir 114*, pp. 257-343.

1972 21.2844 The identity and significance of *Menophyllum ulrichanum* Girty. *Journal of Paleontology*, 46: 58-61.

Schumacher, Dietmar

1976 21.2889 Devonian conodonts from the Temple Butte Formation, Grand Canyon, Arizona [ABSTRACT]. *University of Arizona, Department of Geosciences, Research report 1975-1976*, Section 2, Part 1, p. 32.

Shumard, B. F.

1868 21.5445 A catalogue of the Palaeozoic fossils of North America. *St. Louis Academy of Science, Transactions*, 2: 334-407.

► See p. 355, listings of three species of *Archaeocidaris* as noticed from [J. C. Ives'] *Report upon the Colorado River of the West*; specimens from "Near Great Cañon of Colorado River". (Refer in this bibliography to J. S. Newberry, 1861.)

Siveter, David J., AND Williams, Mark

1997 21.3649 Cambrian bradoriid and phosphatocopid arthropods of North America. *Palaeontological Association, Special Papers in Palaeontology*, no. 57, 69 pp.

Skipp, Betty A. L.

1963 21.2963 Zonation of calcareous Foraminifera in the Redwall limestone (Mississippian), Arizona [ABSTRACT]. *Geological Society of America, Special Paper 73*, pp. 245-246.

1969 21.2964 Foraminifera. *In:* McKee, E. D., and Gutschick, R. C., History of the Redwall Limestone of northern Arizona. *Geological Society of America, Memoir 114*, pp. 173-255.

1979 21.2965 Great Basin region. *In:* Craig, L. C., and Connor, C. W. (coordinators), Paleotectonic investigations of the Mississippian System in the United States. Part 1. Introduction and regional analyses of the Mississippian System. *U.S. Geological Survey, Professional Paper 1010-P*, pp. 273-328.

Skipp, Betty, AND McKee, Edwin D.

1978 21.2966 Transgressions and regressions of Redwall sea, northern Arizona, related to calcareous foraminiferal faunas [ABSTRACT]. *Geological Society of America, Abstracts with Programs*, 10: 147.

Skipp, Betty; Halcomb, L. D.; AND Gutschick, Raymond C.

1966 21.2967 Tournayellinae, calcareous foraminifera, in Mississippian rocks of North America; with translations from the original Russian of descriptions of several key genera and species by Ivan Mittin and Betty Skipp. *Cushman Foundation for Foraminiferal Research, Special Publication 9*, 38 pp.

Snow, Joseph I.

1945 21.2996 Trilobites of the Middle Permian Kaibab formation of northern Arizona. *Plateau*, 18: 17-24.

Spamer, Earle E.

1982 21.3002 The fossil insects of the Grand Canyon. *Delaware Valley Paleontological Society, Newsletter*, 4(8): 5-6..

► General article.

Sprinkle, James

1973 21.8278 *Morphology and evolution of blastozoan echinoderms.* Cambridge, Massachusetts: Harvard University, Museum of Comparative Zoology, Special Publication, 284 pp. [Eighth in the unnumbered Special Publication series.]

► Systematics of Phylum Echinodermata, Subphylum Blastozoa, new subphylum. See *Gogia longidactylus* (Walcott) (pp. 83-85, plates 9, 10), including "[a] single specimen apparently belonging to this species (GCM 2641; Pl. 10, fig. 11) has also been found at a locality in the Bright Angel Shale, Tonto Trail, ½ mile northest of Indian Gardens"; and *Gogia multibrachiatus* (Kirk) (pp. 85-85, plate 11), type material USNM 108556a, b, "apparently collected by N. J. Cameron and Charles D. Walcott in 1915 from the Bright Angel Shale at a locality just north of Indian Gardens (Walcott locality 74e)". [*NOTE:* Edwin Kirk's new species description for *G. multibrachiatus* appears on pp. 185-187 within the systematic paleontology text of McKee and Resser (1945, ITEM NO. 21.2293).]

1976 21.3040 Biostratigraphy and paleoecology of Cambrian echinoderms from the Rocky Mountains. *Brigham Young University, Geology Studies*, 23(2): 61-73.

Sturdevant, Glen E.

1926 21.3101 Dragon fly. *Grand Canyon Nature Notes*, 1(4) (June 26): 3. [Hermit Shale.]

1927 21.23 When insects were the size of birds. *Grand Canyon Nature Notes*, 2(1) (June 30): 2.

► Hermit Shale.

1928 21.25 Species of Productus of the Kaibab limestone at Grand Canyon. *Grand Canyon Nature Notes*, 2(8) (January 30): 3-5 + two unpaginated illustration pages.

► *NOTE*: Although the by-line for this issue as noted in the masthead is G. E. Sturdevant, it is possible that the author of this item is Edwin D. McKee.]

Sundberg, Fred [Sundberg, Frederick A.] [2]

2019 21.7959 Editorial: Into the canyon of time. *The Trilobite Papers* (An international newsletter for and by trilobite paleontologists) (Show Low, Arizona), (22): 2.

► Remarks on a 14-day research trip on the Colorado River through Grand Canyon with Karl Karlstrom and others, to, among other tasks, "to re-investigate the Cambrian of the Grand Canyon, which included collecting fossil localities".

[2] Editor's note in *The Trilobite Papers*: "Please keep in mind that The Trilobite Papers is not a formal publication and should never be cited. If you wish to use information in this series for a formal publication, please contact

2020 21.8119 [Note.] *In:* Research Reports [SECTION]. *The Trilobite Papers* (An international newsletter for and by trilobite paleontologists) (Show Low, Arizona), (23) (February): 3-4.

► Briefly notes recent research, in press, that redefines the Tonto Group of Grand Canyon.]

Sundberg, Frederick; Foster, John R.; Webster, Mark; Miller, Anne; AND Hagadorn, James

2025 21.8697 Cambrian trilobites and biostratigraphy of the Grand Canyon and vicinity, USA. *Journal of Paleontology*, https://doi.or/10.1017/jpa.2025.10114, 95 pp. + Fossil Locality Supplement (Excel file, https://doi.org/10.5281/zenodo.14879978).

► New taxa: *Kootenia barensis*, new species (pp. 38-40, Fig. 31), holotype and paratypes from Kanab Canyon Member, Muav Formation, Diamond Bar Ranch, Arizona; *Albertella nebeli*, new species (pp. 47-50, Figs. 15.3, 40, 41), holotpe and paratypes from *Mexicella mexicana* Biozone, Bright Angel Formation, near Rampart Cave, Grand Canyon.

Sundberg, Frederick A.; Karlstrom, Karl E.; Geyer, G.; Foster, John R.; Hagadorn, James W.; Mohr, Michael T.; Schmitz, Mark D.; Dehler, Carol M.; and Crossey, Laura J.

2020 21.8017 Asynchronous trilobite extinctions at the early to middle Cambrian transition. *Geology*, 48: doi:10.1130/GG46913.1.

► Includes brief note of detrital zircon dating of the Tapeats Sandstone in Grand Canyon, southern Nevada, and central Arizona.

T

Tasch, Paul

1955 21.3740 The concept of psephonecrocoenosis applied to "dwarf" fossil faunas. *American Midland Naturalist*, 53(1): 205-212.

► Note, *in passing*, to such faunas in the Kaibab Formation.

Tinl, Teresa J., AND Beus, Stanley S.

1985 21.3181 The occurrence of an opportunistic species in the upper Toroweap Formation, northwest Arizona [ABSTRACT]. *Arizona-Nevada Academy of Science, Journal*, 20 (1985 Proceedings Supplement): 44-45.

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the author of the information and then it could be cited only as 'personal communication'. This is particularly important for the sections on 'Field Notes' and 'Taxonomic Notes'." Items from this serial are cited in this bibliography only as historical records of activities and contemporary research directions in the Grand Canyon region, for which it is the user's responsibility to determine what information may have been incorporated in later, formal publications. (The editor's note was not included in later issues.)

U

Ulrich, Edward O., AND Bassler, Ray S.

1931 21.3207 Cambrian bivalved Crustacea of the order Conchostraca. *U.S. National Museum, Proceedings*, 78 (article 4), 130 pp.

1931 21.3208 *Indianites*, new name for the Cambrian crustacean *Indiana* Ulrich and Bassler. *Washington Academy of Sciences, Journal* (Washington, D.C.), 21: 364.

V

Vogel, Irene D.

1977 21.4458 *Bryozoans of the Toroweap Formation, Dry Lake Range and North Muddy Mountains, Clark County, Nevada.* Master's thesis, Eastern Washington University, 75 pp.

W

Walcott, Charles D.

1886 21.3317 Second contribution to the studies on the Cambrian faunas of North America. *U.S. Geological Survey, Bulletin 30*, 369 pp.

► See pp. 41-44, 57-58, 63-64.

1890 21.3319 The fauna of the Lower Cambrian or *Olenellus* zone. *U.S. Geological Survey, 10th Annual Report*, Part 1, pp. 509-760.

► See pp. 550-552, 557, 584; also errata, p. 763.

1897 21.3326 Cambrian Brachiopoda; genera *Iphidae* and *Yorkia*; with descriptions of new species of each, and of the genus *Acrothele. U.S. National Museum, Proceedings*, 19: 707-718.

► See pp. 711, 718. *Errata*: p. 718, add to figure 3: "3b. Posterior view of ventral valve. 6.", and "3c. Summit view of dorsal valve. 2 1/2."

1898 21.3328 Cambrian Brachiopoda: *Obolus* and *Lingulella*, with description of new species. *U.S. National Museum, Proceedings*, 21: 385-420.

► See p. 399.

1901 21.3330 Cambrian Brachiopoda; *Obolella*, subgenus *Glyptias*; *Bicia*; *Obolus*, subgenus *Westonia*; with descriptions of new species. *U.S. National Museum, Proceedings*, 23: 669-695.

► See p. 691.

1903 21.3331 Cambrian Brachiopoda: *Acrotreta*; *Linnarssonella*; *Obolus*; with descriptions of new species. *U.S. National Museum, Proceedings*, 25: 577-612.

► See p. 607.

1905 21.3332 Cambrian Brachiopoda; with descriptions of new genera and species. *U.S. National Museum, Proceedings*, 28: 227-337.

► See pp. 239, 336-337.

1908 21.3333 Cambrian geology and paleontology I, No. 3; Cambrian Branchiopoda, Malacostraca, Trilobita, and Merostomata. *Smithsonian Miscellaneous Collections*, 53: 53-165.

► See pp. 97-98.

1910 21.3334 Cambrian geology and paleontology II; Abrupt appearance of the Cambrian fauna on the North American continent. *Smithsonian Miscellaneous Collections*, 57(1): 1-16.

1912 21.3335 Cambrian geology and paleontology II; Middle Cambrian Branchiopoda, Malacostraca, Trilobita, and Merostomata. *Smithsonian Miscellaneous Collections*, 57(6): 145-228.

► See pp. 198-199, 208.

1912 21.3336 Cambrian Brachiopoda. *U.S. Geological Survey, Monograph 51*, 2 volumes; Part 1, Text, 872 pp.; Part 2, Plates, 363 pp.

► See Part 1, pp. 98-109, 187 [locality 17c], 213-214 [localities 73, 73a-b, 74, 74b-d, 75], 339, 345-346, 355-356, 361-364, 421-422, 454-455, 461-462, 466, 474-476, 515-516, 523-524, 540, 558-559, 732, 743-744, 758; Part 2, plates 2-4, 11, 19, 21, 25, 48, 86.

1914 21.3337 Cambrian geology and paleontology, III; No. 2—Pre-Cambrian Algonkian algal flora. *Smithsonian Miscellaneous Collections*, 64(2): 77-156.

► See pp. 80, 97, 98, 110-112, 140; plate 15.

1915 21.3338 The Cambrian and its problems. *In: Problems of American geology : a series of lectures dealing with some of the problems of the Canadian Shield and of the Cordilleras, delivered at Yale University on the Silliman Foundation in December, 1913.* New Haven, Connecticut: Yale University Press, pp. 287-376.

► See pp. 165, 172, 188, 199, 202, 203, 231.

1916 21.3339 Cambrian geology and paleontology III; Cambrian trilobites. *Smithsonian Miscellaneous Collections*, 64(3): 157-258.

► See pp. 184, 232.

1916 21.3340 Cambrian geology and paleontology III; Relations between the Cambrian and pre-Cambrian formations in the vicinity of Helena, Montana. *Smithsonian Miscellaneous Collections*, 64(4): 259-301.

► See pp. 282, 283; plates 40-43.

1916 21.3341 Cambrian geology and paleontology III; Cambrian trilobites. *Smithsonian Miscellaneous Collections*, 64(5): 303-570.

► See p. 369-371, 373-374, 424, 429.

1918 21.3342 Cambrian geology and paleontology IV: Appendages of trilobites. *Smithsonian Miscellaneous Collections*, 67(4): 115-216.

► See p. 174, 175, 209-210, 212, 213, 215.

1924 21.3343 Cambrian geology and paleontology IV; No. 9; Cambrian and Ozarkian Brachiopoda; Ozarkian Cephalopoda and Notostraca. *Smithsonian Miscellaneous Collections*, 67(9): 477-554.

► See pp. 514, 543.

1924 21.3344 Cambrian geology and paleontology V, No. 2; Cambrian and Lower Ozarkian trilobites. *Smithsonian Miscellaneous Collections*, 75(2): 53-60.

► See p. 54; plate 9.

1925 21.3345 Cambrian geology and paleontology V, No. 3; Cambrian and Ozarkian trilobites. *Smithsonian Miscellaneous Collections*, 75(3): 59-146.

► See p. 68.

Walter, D. R.

1976 21.3347 *Conodont biostratigraphy of the Mississippian rocks of northwestern Arizona.* Master's thesis, Arizona State University, 185 pp.

Wardlaw, B. R., AND Collinson, J. W.

1977 21.3366 Biostratigraphic zonation of the Park City Group. *U.S. Geological Survey, Open-File Report 77-853*, 15 pp.

1978 21.3367 Stratigraphic relationships of the Park City Group (Permian) in eastern Nevada and western Utah. *American Association of Petroleum Geologists, Bulletin*, 62: 1171-1184.

1979 21.3368 Biostratigraphic zonation of the Park City Group. *In:* Studies of the Permian Phosphoria Formation and related rocks, Great Basin-Rocky Mountain region. *U.S. Geological Survey, Professional Paper 1163-D*, pp. 17-22.

Wardlaw, B. R.; Collinson, J. W.; AND Maughan, E. K.

1979 21.3369 Stratigraphy of Park City Group equivalents (Permian) in southern Idaho, northeastern Nevada, and northwestern Utah. *In:* Studies of the Permian Phosphoria Formation and related rocks, Great Basin-Rocky Mountain region. *U.S. Geological Survey, Professional Paper 1163-C*, pp. 9-16.

Webster, G. D.

1971 21.3382 The southwestern United States. *From:* Lane, H. R., Merrill, G. K., Straka, J. J., II, and Webster, G. D., North American Pennsylvanian conodont biostratigraphy. *In:* Sweet, W. C., and Bergstrom, S. M. (eds.), Symposium on conodont biostratigraphy. *Geological Society of America, Memoir 127*, pp. 403-407.

Welsh, John Elliott

1959 21.3392 *Biostratigraphy of the Pennsylvanian and Permian Systems of southern Nevada.* Doctoral dissertation, University of Utah, 215 pp.

White, Charles A.

1874 21.3458 Preliminary report upon invertebrate fossils collected by the expeditions of 1871, 1872, and 1873, with descriptions of new species. *In:* U.S. Army Engineer Department, *Geographical and geological explorations and surveys west of the one hundredth meridian.* U.S. Government Printing Office, 27 pp.

1877 21.3459 Report upon the invertebrate fossils collected in portions of Nevada, Utah, Colorado, New Mexico, and Arizona, by parties of the expeditions of 1871, 1872, 1873, and 1874. *In:* U.S. Army Engineer Department, *Report upon United States geographical surveys west of the 100th meridian, in charge of 1st Lieut. Geo. M. Wheeler. Volume 4. Paleontology.* Washington, D.C.: U.S. Government Printing Office, Part 1, 219 pp.

► See pp. 32-49, 109-113, 122-128, 141-143; plates 1, 8-10.

1883 21.3461 Contributions to invertebrate paleontology no. 6: Certain Carboniferous fossils from the western States and Territories. *In:* Hayden, F. V., *U.S. Geological and Geographical Survey of the Territories, 12th Annual Report*, Part 1, Geology, paleontology, and zoology. U.S. Government Printing Office, pp. 119-141.

► See pp. 119, 120, 124-125, 128, 136-141; plates 33-36.

Wooddell, Charles Edward

1927 21.3523 *The Mississippian fauna of the Redwall limestone near Jerome, Arizona.* Master's thesis, University of Arizona, 117 pp.

Y

Yochelson, Ellis L.

1955 21.3536 *Permian Gastropoda of the southwestern United States.* Doctoral dissertation, Columbia University.

1962 21.3537 Gastropods from the Redwall limestone (Mississippian) in Arizona. *Journal of Paleontology*, 36: 74-80.

1969 21.3538 Gastropods and pelecypods. *In:* McKee, E. D., and Gutschick, R. C., History of the Redwall Limestone of northern Arizona. *Geological Society of America, Memoir 114*, pp. 439-456.

1979 21.3540 Charles D. Walcott—America's pioneer in Precambrian paleontology and stratigraphy. *In:* Kupsch, W. O., and Sarjeant, W. A. S. (eds.), History of concepts in Precambrian geology. *Geological Association of Canada, Special Paper 19*, pp. 261-292.

1998 21.3544 *Charles Doolittle Walcott, paleontologist.* Kent, Ohio, and London: Kent State University Press, 510 pp.

Z

Zeller, Edward J.

1957 21.3580 Mississippian endothyroid Foraminifera from the Cordilleran Geosyncline. *Journal of Paleontology*, 31(4): 679-704, plates 75-82.

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3. PALEOZOIC VERTEBRATE PALEONTOLOGY

For Quaternary vertebrates from Grand Canyon locales, see "Quaternary Paleontology" in this bibliography.

See pp. 9-10 for Paleozoic stratigraphic nomenclature.

Unsigned

1918 21.6265 List of accessions to the collections during the fiscal year 1916-1917. *In: Report on the progress and condition of the United States National Museum for the year ending June 30, 1917.* Washington, D.C.: U.S. Government Printing Office, pp. 99-142.

► See p. 119: ". . . a collection of vertebrate fossils obtained by Mr. L. F. Noble in the Grand Canyon of Arizona, consisting of amphibian or reptile tracks from the Coconino sandstone and Devonian fish remains from the Temple Butte limestone (60064) . . . ."

1926 21.21 Fossil fish. *Grand Canyon Nature Notes*, 1(7) (November 11): 4.

► Ribs and backbone of a fish from the Kaibab limestone near Bright Angel Ranger Station, North Rim.

NOTE: Cited here as a matter of disambiguation. This specimen was later described as *Conularia kaibababensis* McKee, 1935, new species, a medusozoan cnidarian (see the "Invertebrate Paleontology" section of this bibliography).

B

Breed, William J.

1967 21.401 Arizona's oldest amphibian. *Plateau*, 40(2) (Fall): 68-71.

Breed, William J., AND Foster, B. T.

1974 21.412 (WITH DRAWINGS BY Pamela Lungé) Paleozoic fossils of the Grand Canyon. *In:* Breed, William J., and Roat, Evelyn C. (eds.), *Geology of the Grand Canyon.* Flagstaff, Arizona: Museum of Northern Arizona, and Grand Canyon Natural History Association, pp. 65-75.

C

Case, E. C. [Case, Ermine Cowles]

1898 21.5748 The development and geological relations of the vertebrates. *Journal of Geology*, 6(4) (May/June): 393-416.

► See p. 394: "The earliest remains of fishes known are from the Lower Ordivician [*sic*] rocks of the Grand Canyon region of the United States. These are the very imperfectly preserved remains of what seem to be scales and bones of fishes whose affinities cannot be made out from the material." (no further note of Grand Canyon)

1915 21.523 The Permo-Carboniferous red beds of North America and their vertebrate fauna. *Carnegie Institution of Washington, Publication 207*, 176 pp.

► See pp. 74, 75.

1919 21.524 The environment of vertebrate life in the late Paleozoic in North America; a paleogeographic study. *Carnegie Institution of Washington, Publication 283*, 273 pp.

► See pp. 146-153.

D

David, L. R.

1944 21.787 A Permian shark from the Grand Canyon. *Journal of Paleontology*, 18: 90-93.

► *Megactenopetalus kaibabanus*, new genus, new species, from the Kaibab formation near Point Sublime, North Rim. [See also a redescription by Ossian (1976, ITEM NO. 21.2515).]

Denison, R. H.

1951 21.850 Late Devonian fresh-water fishes from the western United States. *Fieldiana—Geology*, 11: 221-261.

E

Elliott, David K.

1989 21.948 Devonian placoderms from Flagstaff[,] Arizona [ABSTRACT]. *Arizona-Nevada Academy of Science, Journal*, 24(1989 Proceedings Supplement): 46.

Elliott, David K., AND Blakey, Ronald C.

2005 21.6889 The pre-Permian vertebrate record in Arizona. *In:* Heckert, Andrew B., and Lucas, Spencer G. (eds.), Vertebrate paleontology in Arizona. *New Mexico Museum of Natural History and Science, Bulletin 29*, pp. 1-9.

Elliott, David K., AND Hodnett, John-Paul M.

2013 21.6372 A new species of *Bransonella* (Chondrichthyes, Xenacanthimorpha, Bransonelliformes) from the Middle Permian Kaibab Formation of northern Arizona. *Journal of Paleontology*, 87(6): 1136-1142.

► *Bransonella tribula*, new species; type locality southwest of Flagstaff, Arizona.

Elliott, David K.; Hodnett, John-Paul; AND Olsen, Tom

2010 21.7695 Ctenacanthiform sharks from the Permian Kaibab Formation, northern Arizona [ABSTRACT]. *In: Program and abstracts : 70th Anniversary Meeting, Society of Vertebrate Paleontology : David L. Lawrence Convention Center, East Lobby and Westin Convention Center Pittsburgh, Pittsburgh, Pennsylvania USA, October 10-13, 2010*, p. 85A.

G

Gass, H. L.

1964 21.1143 *A review of the Paleozoic fish of Arizona.* Master's thesis, University of Arizona, 97 pp.

H

Hansen, Michael C.

1978 21.1328 A presumed lower dentition and spine of a Permian petalodontiform chondrichthyan, *Megactenopetalus kaibabanus. Journal of Paleontology*, 52: 55-60.

Hodnett, John-Paul M., AND Elliott, David K.

2018 21.7520 Chondrichthyan assemblages from the Surprise Canyon (Late Mississippian, Serpukhovian) and Watahomigi (latest Mississipian/Early Pennsylvanian, Serpukhovian/Bashkirian) Formations of the western Grand Canyon, northern Arizona [ABSTRACT]. *Geological Society of America, Abstracts with Programs*, 50(5): Final Paper 22-1, doi:10.1130/abs/2018RM-313812.

2018 21.7732 Carboniferous chondrichthyan assemblages from the Surprise Canyon and Watahomigi formations (latest Mississippian-Early Pennsylvanian) of the western Grand Canyon, northern Arizona. *Journal of Paleontology*, 92 (Memoir 77), 33 pp.

► A separate publication. Includes new species.

2020 21.8033 Chapter 6. Paleozoic vertebrate paleontology of Grand Canyon National Park: Research history, resources, and potential. *In:* Santucci, Vincent L., and Tweet, Justin S. (eds.), *Grand Canyon National Park : centennial paleontological resource inventory (non-sensitive version).* Fort Collins, Colorado: U.S. National Park Service, Natural Resource Stewardship and Science, pp. 237-256. (Volume: *Natural Resource Report NPS/GRCA/NRR—2020/2103*.)

2021 21.8258 Paleozoic vertebrate paleontology of Grand Canyon National Park: Research history, resources, and potential. *In:* Santucci, Vincent L., and Tweet, Justin S. (eds.), Grand Canyon National Park centennial paleontological resource inventory; a century of fossil

discovery and research. *Utah Geological Association, Special Publication 1*, pp. [unnumbered page facing 105], 105-118.

► Reset reprinting of Hodnett and Elliott (2020, ITEM NO. 21.8033).

Hodnett, John-Paul M.; Elliott, David K.; AND Olsen, Tom J.

2011 21.6737 The Petalodontiformes (Chondricthyes; Euchondrocephali) from the marine Permian (Leonardian/Guadeloupian) Kaibab Formation, northern Arizona [ABSTRACT]. *In: Society of Vertebrate Paleontology, Abstracts of Papers, Seventy-first Annual Meeting, Paris Las Vegas Hotel, Las Vegas, NV, USA, November 2-5, 2011*, p. 126. [Volume, "Supplement to the online Journal of Vertebrate Paleontology".]

Hodnett, John-Paul M.; Elliott, David K.; Olsen, Tom J.; AND Wittke, James H.

2012 21.7082 Ctenacanthiform sharks from the Permian Kaibab Formation, northern Arizona. *Historical Biology*, 24(4): 1-15.

► Vicinity of Flagstaff, Arizona.

Hodnett, John-Paul M.; Elliott, David K.; AND Santucci, Vincent L.

2021 21.8350 The holocephalans (Chondrichthyes) of the Mississippian (Visean) Redwall Limestone, Grand Canyon National Park, Arizona. *In:* Lucas, Spencer G., Hunt, Adrian P., and Lichtig, Asher J. (eds.), Fossil Record 7. *New Mexico Museum of Natural History and Science, Bulletin 82*, pp. 141-144.

► *Helodus* sp., *Psephodus* sp.

Hunt, Adrian P., AND Lucas, Spencer G.

2005 21.6905 The chondrichthyan *Megactenopetalus kaibabanus* from the Early-?Middle Permian of southern New Mexico and adjacent areas of Texas. *In:* Lucas, Spencer G., and Zeigler, Kate E. (eds.), The nonmarine Permian. *New Mexico Museum of Natural History and Science, Bulletin 30*, pp. 117-118.

► Includes photo of TMM 41689, cast of holotype (MNA G 2.2280) of the species from the Kaibab Formation of Grand Canyon.

Hunt, Adrian P.; Lucas, Spencer G.; Santucci, Vincent L.; AND Elliott, David K.

2005 21.6890 Permian vertebrates of Arizona. *In:* Heckert, Andrew B., and Lucas, Spencer G. (eds.), Vertebrate paleontology in Arizona. *New Mexico Museum of Natural History and Science, Bulletin 29*, pp. 10-15.

Hunt, Rebecca K.; Santucci, Vincent L.; AND Kenworthy, Jason

2006 21.6315 A preliminary inventory of fossil fish from National Park Service units. *In:* Lucas, Spencer G., Spielmann, Justin A., Hester, Patricia M., Kenworthy, Jason P., and Santucci, Vinicent L. (eds.), America's antiquities: 100 years of managing fossil on federal lands. *New Mexico Museum of Natural History and Science, Bulletin 34*, pp. 63-69.

► "Lake Mead National Recreation Area and Parashant National Monument [Grand Canyon-Parashant National Monument]", p. 64; "Grand Canyon National Park", p. 64.

Hussakof, Louis

1941 21.1557 Fishes from the Devonian of Arizona. *American Museum Novitates*, (1186), 9 pp.

1943 21.1558 Permian fishes from the Kaibab formation of Arizona [ABSTRACT]. *Geological Society of America, Bulletin,* 54: 1834.

J

Johnson, Heidemarie G., AND Elliott, David K.

1995 21.1614 A redescription of *Eldenosteus arizonensis* (Placodermi: Arthrodira) from the Upper Devonian Martin Formation of northern Arizona. *Journal of Vertebrate Paleontology*, 15(2): 221-234.

M

McKee, Edwin D., AND Gutschick, Raymond C.

1969 21.2282 The Redwall faunas. *In:* McKee, E. D., and Gutschick, R. C., History of the Redwall Limestone of northern Arizona. *Geological Society of America, Memoir 114*, pp. 125-172.

1969 21.2284 Miscellaneous fossil groups: Algae and stromatolites, holothurians, trilobites, ostracodes, and fish. *In:* McKee, E. D., and Gutschick, R. C., History of the Redwall Limestone of northern Arizona. *Geological Society of America, Memoir 114*, pp. 545-552.

McKee, Edwin D., AND Hussakof, Louis

1934 21.7020 [Shark tooth, *Deltodus mercurii*, from Kaibab formation below Desert View Point.] *In:* Field Observations [SECTION]. *Grand Canyon Nature Notes*, 9(2) (May):.

Miller, Donald M.; Young, Robert A.; Gatlin, Thomas W.; AND Richardson, John A.

1982 21.2371 Amphibians and reptiles of the Grand Canyon National Park. *Grand Canyon Natural History Association, Monograph 4*, 144 pp.

► See Part 2, "Prehistoric herpetofauna of the Grand Canyon region", pp. 5-15.

O

Ossian, Clair Russell

1976 21.2515 Redescription of *Megactenopetalus kaibabanus* David 1944 (Chondrichthyes: Petalodontidae) with comments on its geographic and stratigraphic distribution. *Journal of Paleontology*, 50: 392-397.

► Original description by David (1944, ITEM NO. 21.787).

S

St. John, Orestes, AND Worthen, A. H.

1883 21.5125 Descriptions of fossil fishes. *From:* St. John, Orestes, and Worthen, A. H., Part II. Palaeontology of Illinois. Section I. Descriptions of fossil vertebrates. *In: Illinois Geological Survey, Volume VII. Geology and palaeontology.* Published by authority of the Legislature of Illinois, pp. [55]-264.

► See pp. 154-156, and Plate 10, figure 1; description of *Deltodus powellii*, new species. "The unique example above described was obtained by Maj. Powell's expedition to the Grand cañon of Colorado [*sic*], from the Carboniferous limestone." (p. 155). "*Geological position and locality*: Carboniferous limestone, probably of the age of the Coal Measures; Grand cañon of the Colorado, Utah territory." (p. 156). Precise locality unknown, though not from the Grand Canyon–proper. Cited here for the nomenclatural data conveyed.

Sumida, Stuart S.

1995 21.3116 Notes from the Third Biennial Conference of Research on the Colorado Plateau; first in a series. Correspondence of fossil vertebrate assemblages between the Colorado Plateau and continental Europe: Implications for Pangaean landforms during the Early Permian. *Grand Canyon Field Notes* (Center for Resource Interpretation, Grand Canyon National Park), (6) (November 20): [1-2] [entire number].

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4. PALEOZOIC PALEOBOTANY

For Precambrian fossils described as flora, see "Proterozoic Paleontology" in this bibliography. See also in "Mesozoic Paleontology" for additional paleobotanical citations.

See pp. 9-10 for Paleozoic stratigraphic nomenclature.

Unsigned

1929 21.7204 Scientific work. *Grand Canyon Nature Notes*, 3(10) (June 30): 1-2.

► Includes note of David White studying fossil flora and Precambrian sedimentary strata.

1930 21.31 Disclosures of ancient life in the Grand Canyon. *Carnegie Institution of Washington, News Service Bulletin*, 2: 63-70.

► Field work on fossil plants of the Hermit Shale and of fossil trackways in the Coconino, Hermit, and Supai formations.

A

Aasoumi, H.; Broutin, J.; Gand, G.; AND El Wartiti, M.

2009 21.7035 La paléontologie de l'époque Permien. Paleoflores "mixtes" et traces vertébrés tétrapodes du Permien inférieur du Maroc Central: Paléo-environnement et paléoclimat [ABSTRACT] [*transl.* 'Paleontology of the Permian Period: "Mixed" paleofloras and tetrapod vertebrate traces from the Lower Permian of Central Morocco—paleoenvironment and paleoclimate']. *From:* Présentations Orales: Paléozöique. *In: 1er Congrès International sur la Paléontologie des Vertébrés du Nord de l'Afrique : programme et résumé.* Marrakech, Morocco: [no imprint], p. 6. [In French.]

► Includes note of Hermit Formation of Grand Canyon.

Andrews, Henry N.

1980 21.89 *The fossil hunters : in search of ancient plants.* Ithaca, New York: Cornell University Press, 421 pp.

► See p. 217.

Asama, Kazuo [浅間一男]

1959 21.110 Systematic study of so-called *Gigantopteris*. *Tohoku University, Science Reports* (Sendai, Japan), Series 2 (Geology), 31(1): 1-72 [entire number].

1975 21.111 古生代末植物 区の成立 について [Koseidai-sue shokubutsu-ku no seiritsu ni tsuite]. / The rise of paleobotanical provinces in the latest Paleozoic Era. 地学雑誌 *Journal of Geography* (Tokyo Geographical Society), 84(2): 55-70. [In Japanese, with bilingual titles and abstract.]

► Includes *Supaia* of Grand Canyon.

Ash, Sidney R.

1977 21.6401 An unusual bennettitalean leaf from the Upper Triassic of the south-western United States. *Palaeontology*, 20(3): 641-659, Plates 77-79.

► Localities include Cameron, Arizona.

2006 21.7123 *Chilbinia* gen. nov., an archaic seed fern in the Late Triassic Chinle formation of Arizona, USA. *Palaeontology*, 49(2): 237-245.

► *Chilbinia lichii*, new genus, new species, from the Shinarump Member of the Chinle Formation "across the canyon of the Little Colorado River from the village of Cameron, Arizona, on the Navajo National Reservation".

Augusta, Němejc-Jos.

1937 21.124 Deux nouvelles découvertes de plantes dan le Permien de la Moravie (Tchécoslovaquie) [*transl.* 'Two new plant discoveries in the Permian of Moravia (Czechoslovakia)']. *Přírodovědeckou Fakultou Karlovy University, Spisy / Faculté des Sciences de l'Université Charles, Publications* (Praha), (151), 10 pp. [In French, with serial title in Czech and French.]

► See description of *Supaia moravica* J. Augusta (pp. 7-9), which includes remarks (p. 8) and illustration (p. 9) of *Supaia linearifolia* D. White from the Permian of Grand Canyon.

B

Baldwin, Christopher T.; Strother, P. K.; Beck, J. H.; AND Rose, Eben

2004 21.4049 Palaeoecology of the Bright Angel Shale in the eastern Grand Canyon, Arizona, USA, incorporating sedimentological, ichnological and palynological data. *In:* McIlroy, D. (ed.), The application of ichnology to palaeoenvironmental and stratigraphic analysis. *Geological Society, Special Publications* (London), (228): 213-236.

Blazey, Edward Brice

1971 21.336 *Fossil flora of the Mogollon Rim.* Doctoral dissertation, Arizona State University, 169 pp.

► Includes stratigraphic correlations with Grand Canyon.

1974 21.337 Fossil flora of the Mogollon Rim, central Arizona. *Palaeontographica*, 146(B): 1-20.

Bober, Katherine M. M.; Cace, Courtney R.; Matel, Theodore P.; Huegele, Indah B.; Boucher, Lisa D.; Hermsen, Elizabeth J.; Manchester, Steve R.; McCoy, Victoria E.; Santucci, Vincent L.; AND Tweet, Justin S.

2024 21.8531 An overview of Paleozoic paleobotanic resources documented in National Park Service areas [ABSTRACT]. *In:* Wilson, Jeffrey A. Mantilla, and Friedman, Matt (eds.), 12th North American Paleontological Convention, University of Michigan, 17-21 June 2024; Program with abstracts. *University of Michigan, Papers on Paleontology*, (39): 124-125.

Boureau, Édouard

1964 21.355 Quatrième embranchement; Sphenophyta [*transl.* 'Fourth phylum; Sphenophyta']. *In:* Boureau, Édouard (ed.), *Traité de Paléobotanique* [*transl.* 'Treatise on Paleobotany'] (publié sous la direction de Édouard Boureau). Tome III, Sphenophyta, Noeggerathiophyta. Paris: Masson et Cie., 544 pp. [In French.]

► See p. 64.

Boureau, Édouard, AND Doubinger, Jeanne

1975 21.356 Pteridophylla (première partie) [*transl.* 'Pteridophyta (first part)']. *In:* Boureau, Édouard (ed.), *Traité de Paléobotanique* [*transl.* 'Treatise on Paleobotany'] (publié sous la direction de Édouard Boureau). Tome IV, Fascicule 2. Paris: Masson et Cie., 768 pp. [In French.]

► See pp. 200-201, 368, 419-426.

C

Canright, J. E.

1970 21.506 Spores and associated macrofossils from the Devonian of Arizona. *In: Geoscience and man.* Baton Rouge, Louisiana: Louisiana State University, School of Geoscience, pp. 83-88.

1978 21.507 Palynomorph assemblages from the Supai Formation of Arizona as indicators of age [ABSTRACT]. *Geological Society of America, Abstracts with Programs*, 10: 98.

Chaloner, W. G., AND Lacey, W. S.

1973 21.533 The distribution of late Paleozoic floras. *In:* Hughes, N. F. (ed.), Organisms and continents through time; methods of assessing relationships between past and present biologic distributions and the positions of continents; a symposium volume of 23 papers. *Special Papers in Palaeontology* (Palaeontological Association), no. 12, pp. 271-289.

D

Dijkstra, S. J., AND Amerom, H. W. J. van

1988 21.865 *Fossilium catalogus. II: Plantae* (S. J. Dijkstra, ed.), *Pars 93. Filicales, Pteridospermae, Cycadales, incertae sedis. 2. Supplement. 48. Sph. nystroemii-Z.*

Amsterdam: Kulger Publications, pp. 753-926. [Strictly taxonomic, with notations in German; titles in Latin.]

► See pp. 800-801, 908-909.

DiMichele, William A., AND Aronson, Richard B.

1992 21.3724 The Pennsylvanian-Permian vegetational transition: A terrestrial analogue to the onshore-offshore hypothesis. *Evolution*, 46(3): 807-824.

► Includes Hermit Shale.

DiMichele, William A.; Chaney, Dan S.; Nelson, W. John; Lucas, Spencer G.; Looy, Cindy V.; Quick, Karen; AND Wang, Jun

2006 21.7092 A low diversity, seasonal tropical landscape dominated by conifers and peltasperms: Early Permian Abo Formation, New Mexico. *Review of Palaeobotany and Palynology*, 145: 249-273.

► Includes comparative *Supaia* material from the Hermit Shale of Grand Canyon (reproduced from White, 1929), pp. 259, 262, and see 266, 271.

DiMichele, William A.; Lucas, Spencer G.; Chaney, Dan S.; Donovan, Michael P.; Kerp, Hans; Koll, Rebecca A.; AND Looy, Cindy V.

2018 21.8721 Early Permian flora, Doña Ana Mountains, southern New Mexico, with special consideration of taxonomic issues and arthropod damage. *In:* Lucas, S. G., and Sullivan, R. M. (eds.), Fossil Record 6. *New Mexico Museum of Natural History and Science, Bulletin 79*, pp. 165-205.

► Includes remarks on the Hermit Shale flora of Grand Canyon. Under discussion of *Auritofolia anomala* (D. White), a lectotype is designated (pp. 183, 187) for the basionym *Supai anomala* D. White from the Hermit Shale of Grand Canyon—USNM 324583 (White, 1929, Pl. 21, fig. 1; figured by DiMichele *et al.*, Figs. 14A, B). See "Morphology of *Supaia anomala* Syntypes" (pp. 182-182, including Figs. 15, 16), which includes some taxonomic redescriptions. The Hermit Shale flora is also noted on pp. 186-187, 199-200.

Doubinger, Jeanne, AND Heyler, Daniel

1975 21.878 Nouveaux fossiles dans le Permien français [*transl.* 'New fossils from the Permian of France]. *Société Géologique de France, Bulletin*, Series 7, 17(6): 1176-1180. [In French.]

► Includes note of *Supaia* from the Hermit Shale.

Doyle, James A.

1978 21.5768 Origin of angiosperms. *Annual Review of Ecology and Systematics*, 9: 365-392.

► See p. 382, brief note of Permian callipterids, based in part on the paper by S. Mamay (1971, ITEM NO. 21.2024).

E

Elias, Maxim K.

1946 21.3735 Fossil symbiotic algae in comparison with other fossil and living algae. *American Midland Naturalist*, 36(2) (September): 282-290.

► See p. 288: "A peculiar double-basket growth-form from the Permian Kaibab limestone of Grand Canyon, which was recently described by Condra and Elias (1945), is another example of phytomorph in intimate symbiosis with a bryozoan. A basket-like bryozoan is encrusted on the inside by a phytomorph."

1947 21.6744 Algae in Recent and ancient reefs. *In:* U.S. National Research Council, Division of Geology and Geography, *Report of the Committee on a Treatise on Marine Ecology and Paleoecology, 1946-1947 : presented in preliminary form as Appendix H at the Annual Meeting of the Division, May 2, 1947).* Washington, D.C.: U.S. National Research Council, Division of Geology and Geography, pp. 73-76. (Report of the Committee on a Treatise on Marine Ecology and Paleoecology, No. 7.)

► See pp. 74-75, regarding Permian *Bicorbula* from Grand Canyon: "The phytomorph in this consortium is apparently related to the living red algae *Marchessetti* and *Liagora* from the Southern Pacific."

F

Florin, Rudolf

1938 21.1079 Die Koniferen Oberkarbons und des Unteren Perms [*transl.* 'The conifers of the Upper Carboniferous and Lower Permian']. *Palaeontographica*, Abteilung B, Paläophytologie, 85(1): 1-62. [In German.]

1939 21.1080 Die Koniferen Oberkarbons und des Unteren Perms [*transl.* 'The conifers of the Upper Carboniferous and Lower Permian']. *Palaeontographica*, Abteilung B, Paläophytologie, 85(2): 63-122. [In German.]

► See pp. 64, 76.

1939 21.1081 Die Koniferen Oberkarbons und des Unteren Perms [*transl.* 'The conifers of the Upper Carboniferous and Lower Permian']. *Palaeontographica*, Abteilung B, Paläophytologie, 85(4): 175-241. [In German.]

► See pp. 178, 199, 219, 220, 225-228.

1940 21.1082 Die Koniferen Oberkarbons und des Unteren Perms [*transl.* 'The conifers of the Upper Carboniferous and Lower Permian']. *Palaeontographica*, Abteilung B, Paläophytologie, 85(5): 243-363. [In German.]

► See pp. 250, 260, 305-307, 350.

1945 21.1083 Die Koniferen Oberkarbons und des Unteren Perms [*transl.* 'The conifers of the Upper Carboniferous and Lower Permian']. *Palaeontographica*, Abteilung B, Paläophytologie, 85(8): 655-721. [In German.]

► See Tables 1, 2.

1950 21.1084 Upper Carboniferous and Lower Permian conifers. *Botanical Review*, 16(5): 258-282.

► See pp. 267-268.

J

Jongmans, W., AND Dijkstra, S. J.

1958 21.1628 *Fossilium catalogus. II: Plantae.* (W. Jongmans, ed.) *Pars 33, Filicales, Pteridospermae, Cycadales 6.* 's-Gravenhage: W. Junk, pp. 367-462. [Strictly taxonomic, with notations in German; title in Latin.]

► See pp. 401, 430-431.

1965 21.1629 *Fossilium catalogus. II: Plantae.* (S. J. Dijkstra, ed.) *Pars 62, Filicales, Pteridospermae, Cycadales 35.* 's-Gravenhage: W. Junk, pp. 3309-3420. [Strictly taxonomic, with notations in German; title in Latin.]

► See pp. 3356-3358.

1967 21.1630 *Fossilium catalogus. II: Plantae.* (S. J. Dijkstra, ed.) *Pars 38, Filicales, Pteridospermae, Cycadales 38.* 's-Gravenhage: W. Junk, pp. 3621-3702. [Strictly taxonomic, with notations in German; title in Latin.]

► See p. 3627.

1971 21.1631 *Fossilium catalogus. II: Plantae.* (S. J. Dijkstra, ed. *Pars 80, Gymnospermae (Gingophyta* [sic] *et Coniferae) II.* 's-Gravenhage: W. Junk, pp. 93-195. [Strictly taxonomic, with notations in German; title in Latin.]

► See pp. 129, 144.

1973 21.1632 *Fossilium catalogus. II: Plantae.* (S. J. Dijkstra, ed.) *Pars 83, Gymnospermae (Ginkgopyta et Coniferae) V.* 's-Gravenhage: W. Junk, pp. 423-558. [Strictly taxonomic, with notations in German; title in Latin.]

► See p. 550.

K

Knight, Cassi

2020 21.8034 Chapter 7. Paleozoic paleobotany of Grand Canyon National Park. *In:* Santucci, Vincent L., and Tweet, Justin S. (eds.), *Grand Canyon National Park : centennial paleontological resource inventory (non-sensitive version).* Fort Collins, Colorado: U.S. National Park Service, Natural Resource Stewardship and Science, pp. 257-275. (Volume: *Natural Resource Report NPS/GRCA/NRR—2020/2103*.)

2021 21.8259 Paleozoic paleobotany of Grand Canyon National Park. *In:* Santucci, Vincent L., and Tweet, Justin S. (eds.), Grand Canyon National Park centennial paleontological resource inventory; a century of fossil discovery and research. *Utah Geological Association, Special Publication 1*, pp. 119-130, a1, [a2] (pagination is contiguous).

► Reset reprinting of Knight (2020, ITEM NO. 21.8034).

L

Laudermilk, J. D. [Laudermilk, Jerry]

1948 21.1832 They left their prints in stone. *Desert Magazine*, 12(2) (December): 22-24.

► Fossil plants in Hermit Shale, Grand Canyon.

Linnell, Tore

1933 21.7963 Zur Morphologie und Systematik der Trias-Cycadophyten. II. Über *Scytophyllum* Bornem, eine wenig bekannte Cycadophytengattung als Keuper. [*transl.* 'On the morphology and systematics of Triassic cycadophytes. II. On *Scytophyllum* Bornemann—a little-known genus of cycadophyte from the Keuper']. *Svensk Botanisk Tidskrift* (Svenska Botaniska Föreningen, Stockholm), 27(3): 310-332, Plate 2. [In German.]

► See *Scytophyllum apoldense* (Compter) n. comb.; compares (p. 324) morphological elements to *Supaia anomala* White, from the Permian Hermit Shale of Grand Canyon.

Lyons, Paul C., AND Morey, Elsie Darrah

1995 21.1997 David White (1862-1935): American paleobotanist and geologist. *In:* Lyons, Paul C., Morey, Elsie Darrah, and Wagner, Robert H. (eds.), Historical perspective of early twentieth century Carboniferous paleobotany in North America; in memory of William Culp Darrah. *Geological Society of America, Memoir 185*, pp. 135-148.

2006 21.4303 David White (1862-1935): Pioneer in coal, petroleum, and paleobotanical studies. *GSA Today* (Geological Society of America), (June): 54-55. ["Rock Stars" feature.]

M

Mamay, Sergius H.

1976 21.2022 Paleozoic origin of the cycads. *U.S. Geological Survey, Professional Paper 934*, 48 pp.

► See pp. 28-29, regarding the *Supaia* flora of the Hermit Shale.

Mamay, Sergius H., AND Breed, William J.

1970 21.2023 Early Permian plants from the Cutler Formation in Monument Valley, Utah. *U.S. Geological Survey, Professional Paper 700-B*, pp. B109-B117.

► Includes notes of Grand Canyon.

Mamay, Sergius H., AND Watt, A. D.

1971 21.2024 An ovuliferous callipteroid plant from the Hermit Shale (Lower Permian) of the Grand Canyon, Arizona. *U.S. Geological Survey, Professional Paper 750-C*, pp. C48-C51.

McKee, Edwin D.

1982 21.2253 Distribution and age of fauna and flora. *In:* McKee, Edwin D., The Supai Group of Grand Canyon. *U.S. Geological Survey, Professional Paper 1173*, Chapter E, pp. 75-112.

McKee, Edwin D., AND Gutschick, Raymond C.

1969 21.2284 Miscellaneous fossil groups: Algae and stromatolites, holothurians, trilobites, ostracodes, and fish. *In:* McKee, E. D., and Gutschick, R. C., History of the Redwall Limestone of northern Arizona. *Geological Society of America, Memoir 114*, pp. 545-552.

P

Pulsipher, Mikaela A.; Miller, Anne E.; Nebel, Mark L.; Looy, Cindy V.; Duijnstee, Ivo A. P.; AND Shiffbauer, James D.

2024 21.8533 Bringing the Hermit out of hiding: A reinvestigation of the Permian Hermit flora in Grand Canyon National Park after nearly a century in obscurity [ABSTRACT]. *In:* Wilson, Jeffrey A. Mantilla, and Friedman, Matt (eds.), 12th North American Paleontological Convention, University of Michigan, 17-21 June 2024; Program with abstracts. *University of Michigan, Papers on Paleontology*, (39): 351.

R

Read, Charles B., AND Mamay, Sergius H.

1960 21.2704 Upper Paleozoic floral zones of the United States. *U.S. Geological Survey, Professional Paper 400-B*, pp. 381-382.

1964 21.2705 Upper Paleozoic floral zones and floral provinces of the United States. *U.S. Geological Survey, Professional Paper 454-K*, pp. K1-K32.

► See pp. K13-K15: "Zone 14. Zone of the older *Gigantopteris* flora in parts of Texas, Oklahoma, and New Mexico, equivalent zone of *Glenopteris* spp. in Kansas, and equivalent zone of the *Supaia* flora in New Mexico and Arizona (Table 5, pls. 14-18)".

Retallack, Gregory J.

2024 21.8568 Form-classification for microbially induced sedimentary structures. *Alcheringa*, 2024, https://doi.org/10.1080/03115518.2024.2345641, 15 pp.

► See in the section on the systematic paleontology of *Rivularites* Fliche, 1906 (monospecific as *R. repertus* Fliche), see remark (p. 10), "The only other species of this genus, *Rivularities permiensis* White, 1929 [which is from the Permian Hermit Shale of Grand Canyon], is flexuous without cracking or distortion of *Rivularites*, and is regarded here as a junior synonym of *Neantia verrucoswa* (Lebesconte, 1887)." (ENTIRE NOTE)

Romans, Robert C.

1973 21.2798 A history of paleobotany in Arizona. *Plateau*, 45: 93-101.

S

Santucci, Vincent L., AND Knight, Cassi

2013 21.6200 An inventory of paleobotanical resources from National Park Service areas [ABSTRACT]. *Geological Society of America, Abstracts with Programs*, 45(7): 65.

Seward, Albert C.

1931 21.2914 *Plant life through the ages : a geological and botanical retrospect.* Cambridge, England: The University Press, 601 pp.

1931 21.2915 *Plant life through the ages : a geological and botanical retrospect.* New York: Macmillan Co., 601 pp.

1933 21.2916 *Plant life through the ages : a geological and botanical retrospect.* Cambridge, England: Cambridge University Press, 2nd ed.

1959 21.2917 *Plant life through the ages : a geological and botanical retrospect.* New York: Hafner Publishing Co., 603 pp.

► See "The Grand Canyon of Arizona", pp. 14-17, and "A Permian flora in Arizona", pp. 249-251.

Spamer, Earle E.

1982 21.3003 The Devil and David White; or, The road to fame and misfortune through static morphology and lack of study. *Delaware Valley Paleontological Society, Newsletter*, 4(10): 4-6.

Strother, Paul K.

2000 21.3958 Cryptospores: The origin and early evolution of the terrestrial flora. *In:* Phanerozoic Terrestrial Ecosystems (convened by Robert A. Gastaldo and William A. DiMichele). *Paleontological Society, Papers*, 6 (November): 3-20.

2016 21.7125 Systematics and evolutionary significance of some new cryptospores from the Cambrian of eastern Tennessee, USA. *Review of Palaeobotany and Palynology*, 227: 28-41.

► See *Adinosporus bullatus*, new genus, new species (p. 33), type locality in Tennessee. Some non-type Grand Canyon samples used for plate illustrations in this paper (pp. 30, 33): *A. bullatus* from Bright Angel Shale, Red Canyon (Plate 2, figure 9) and Bright Angel Shale, Thunder Falls [Thunder River] (Plate 2, figure 12) (Plate 2 is on p. 34, with legend on p. 35).

Strother, Paul K.; Baldwin, Christopher T.; Beck, John H.; AND Rose, Eben

2004 21.4433 An integrated sedimentological, ichnological and palynological study of the paleoecology of the Middle Cambrian, Bright Angel Shale, Grand Canyon, Arizona. *In:*

Abstracts of the Proceedings of the Thirty-Sixth Annual Meeting of the American Association of Stratigraphic Palynologists; St. Catharines, Ontario—October 5-8, 2003. *Palynology*, 28: 265.

Strother, Paul K.; Wood, Gordon D.; Taylor, Wilson A.; AND Beck, John H.

2004 21.4050 Middle Cambrian cryptospores and the origin of land plants. *In:* Laurie, John R., and Foster, C. B. (eds.), Palynological and micropalaeontological studies in honour of Geoffrey Playford. *Association of Australian Palaeontologists, Memoir 29*, pp. 99-113.

Sturdevant, Glen E.

1926 21.3100 Ancient ferns. *Grand Canyon Nature Notes*, 1(3) (May 13): 3-4.

► Hermit Shale.

Sze, Xing Jian [Sze, H. C.] [斯 行 健]

1955 21.7085 山西上石盒子系一種 "種子蕨" Protoblechnum wongi Halle 的一塊新發現的 分叉的蕨葉化石. On a forked frond of Protoblechnum wongii Halle. 古生物學報 *Acta Palaeontologica Sinica* (Beijing), 3(1) (February): 11-24, Plates 1-4. [In Chinese, with English title and abstract.]

► Includes comparisons to paleoflora from the Hermit Shale of Grand Canyon, pp. 15-17, 20. Abstract notes in part (p. 23), ". . . the new generic name *Supaia* of White founded on specimens from the Hermit Shale in Grand Canyon, Arizona[,] is not valid." [*NOTE*: The specific epithet *wongii* is spelled "wongi" in the Chinese title (in Roman orthography, as shown), but is otherwise correctly spelled *wongii* in the English title and throughout the paper. *P. wongii* does not occur in Grand Canyon strata.]

T

Taylor, Wilson A., AND Strother, Paul K.

2008 21.4254 Ultrastructure of some Cambrian palynomorphs from the Bright Angel Shale, Arizona, USA. *Review of Palaeobotany and Palynology*, 151(1/2): 41-50.

2008 21.4318 Ultrastructure of Cambrian cryptospores support multilaminate walls as the primitive condition in the plant sporoderm [ABSTRACT]. *Geological Society of America, Abstracts with Programs (Northeast Section, 43rd Annual Meeting)*, Paper no. 2-5.

Tidwell, William D.

1975 21.3173 *Common fossil plants of western North America.* Provo, Utah: Brigham Young University Press, 197 pp.

► See pp. 23, 33, 84.

1998 21.3174 *Common fossil plants of western North America.* Washington, D.C.: Smithsonian Institution Press, 2nd ed., 299 pp.

Tidwell, William D.; Jennings, James R.; AND Beus, Stanley S.

1992 21.3175 A Carboniferous flora from the Surprise Canyon Formation in the Grand Canyon, Arizona. *Journal of Paleontology*, 66(6) (November): 1013-1021.

V

Visscher, H.; Kerp, J. H. F.; AND Clement-Westerhof, J. A.

1986 21.8600 Aspects of Permian palaeobotany and palynology. VI. Towards a flexible system of naming Palaeozoic conifers. *Acta Botanica Neerlandica*, 35(2) (May): 87-99.

► See particularly "7. The Form-Genus Hermitia" (pp. 96-98), which includes Form-genus *Hermitia* Kerp et Clement-Westerhof, new genus; type-species *Hermitia dawsonii* (White 1929) Kerp et Clement-Westerhof, new combination (which was named by White from the Grand Canyon Hermit Shale); lectotype of *Hermitia dawsonii* designated.

W

Ward, Lester F.

1889 21.5618 The geographical distribution of fossil plants. *In: U.S. Geological Survey, 8th Annual Report*, pp. 663-931, plates, map.

► See p. 917, brief references to *Cruziana linnarssoni* and *C. rustica* noted by C. A. White in Grand Canyon Cambrian strata; and also passing notice (pp. 917-918) of "C. D. Walcott, who also collected much silicified wood in the Grand Cañon district".

Watt, Arthur D.

1970 21.3378 Catalog of the illustrated Paleozoic plant specimens in the National Museum of Natural History. *Smithsonian Contributions to Paleobiology*, (5), 53 pp.

White, David

1927 21.3462 Study of the fossil floras in the Grand Canyon, Arizona. *Carnegie Institution of Washington, Year Book 26*, pp. 366-369.

1927 21.3463 The flora of the Hermit shale in the Grand Canyon, Arizona. *U.S. National Academy of Sciences, Proceedings*, 13: 574-575.

1928 21.3464 Study of the fossil floras in the Grand Canyon, Arizona. *Carnegie Institution of Washington, Year Book 27*, pp. 389-390.

1928 21.6509 David White: The age of the Hermit shale in the Grand Canyon, Ariz. (illustrated)." [TITLE ONLY]. *In: Report of the National Academy of Sciences : fiscal year 1926-1927.* Washington, D.C.: U.S. Government Printing Office, p. 26.

► Presentation made April 26, 1927.

1929 21.3466 Flora of the Hermit shale, Grand Canyon, Arizona. *Carnegie Institution of Washington, Publication 405*, 221 pp.

1929 21.3467 Study of the fossil floras in the Grand Canyon, Arizona. *Carnegie Institution of Washington, Year Book 28*, pp. 392-393.

1929 21.3469 Interpreting the Grand Canyon. *Science*, New Series, 69: 671-672.

1929 21.3468 The flora of the Hermit shale in Grand Canyon. *Grand Canyon Nature Notes*, 4(4) (December 31): 24-25.

1930 21.3470 Deposition and age of the Hermit shale [ABSTRACT]. *Geological Society of America, Bulletin,* 41: 47.

1934 21.3471 The seeds of *Supaia*, a Permian pteridosperm [ABSTRACT]. *Science*, New Series 79: 462.

1936 21.3472 Some features of the early Permian flora of America. *16th International Geological Congress, United States, 1933, Report*, 1: 679-689.

1994 21.3473 The flora of the Hermit Shale in Grand Canyon. *In:* Lamb, Susan (ed.), *The best of Grand Canyon Nature Notes.* Grand Canyon, Arizona: Grand Canyon Natural History Association, p. 26.

► Reprinted from *Grand Canyon Nature Notes*, December, 1929.

Y

Yabe, Hisakatsu, AND Imaizumi, Rikizô

1946 21.7034 Plant-bed with the Cathaysian flora of Kaizan-tung, Kantô-syô, Manchuria, and its relation to the marine Permian deposits. *Japan Academy, Proceedings* (Tokyo), 22: 204-209, 218-224.

► Two parts, published in separate numbers. See p. 224, brief comparisons to *Brongniartites*? *yakiensis* D. White and *B. aliena* D. White from the Hermit Shale of Grand Canyon.

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5. PALEOZOIC ICHNOLOGY

For occasional references to ichnofossils of the Mesozoic or Quaternary, see in the sections on "Mesozoic Paleontology" or "Quaternary Paleontology" in this bibliography.

See pp. 9-10 for Paleozoic stratigraphic nomenclature.

Unsigned

1918 21.6265 List of accessions to the collections during the fiscal year 1916-1917. *In: Report on the progress and condition of the United States National Museum for the year ending June 30, 1917.* Washington, D.C.: U.S. Government Printing Office, pp. 99-142.

► See p. 119: ". . . a collection of vertebrate fossils obtained by Mr. L. F. Noble in the Grand Canyon of Arizona, consisting of amphibian or reptile tracks from the Coconino sandstone and Devonian fish remains from the Temple Butte limestone (60064) . . . ."

1926 21.22 Prehistoric footprints from the Grand Canyon. *Scientific American*, 134: 330.

1926 21.7377 Prehistoric footprints from the Grand Canyon. *Science*, New Series, 63(1638) (May 21): xvi.

1926 21.7378 Prehistoric footprints from the Grand Canyon. *Canadian Medical Association Journal*, 16(7) (July): 857.

► Credited to *Science*, May 21, 1926 (Unsigned, 1926, ITEM NO. 21.7377).

1926 21.7378 Prehistoric footprints from the Grand Canyon. *Canadian Medical Association Journal*, 16(7) (July): 857. [Credited to *Science*, May 21, 1926 (Unsigned, 1926, ITEM NO. 21.7377).]

1926 21.8623 Nyolclábu ősállat [*transl.* 'Eight-footed prehistoric animal']. *A Munka* (Salgótarján, Hungary), 4(28) (July 10): 4. [In Hungarian.]

► Reporting *(in translation here)* on the footprints of an "eight-legged primitive animal" described by Charles W. Gilmore from the Grand Canyon. Also notes a "sixteen-toed animal".

1926 21.8303 Fossilized footprints millions of years old. *The Monthly Evening Sky Map* (Brooklyn, New York), 20(326) (August): [4]-[5].

► Reports Charles Gilmore's discoveries at Grand Canyon.

1926 21.5297 Fossil footprints ages old found in Grand Canyon. *Popular Mechanics Magazine*, 46(3) (September): 433.

1927 21.5124 Footprints millenniums old. *Popular Science Monthly*, 111(4) (October): 36.

1929 21.30 Hither and yon. *Grand Canyon Nature Notes*, 4(2) (October 31): 13-14.

► Includes brief note of fossil footprints in the Coconino Sandstone in Bass Canyon (p. 13).

1930 21.31 Disclosures of ancient life in the Grand Canyon. *Carnegie Institution of Washington, News Service Bulletin*, 2: 63-70.

► Field work on fossil plants of the Hermit Shale and of fossil trackways in the Coconino, Hermit, and Supai formations.

1930 21.7209 Briefs. *Grand Canyon Nature Notes*, 5(1) (November 30): 11.

► Range extension of Coconino Sandstone trackway. Edwin D. McKee sighted "large footprints" west of Seligman, Arizona, "65 miles beyond the nearest track locality in the Grand Canyon."

1998 21.4648 Fossil vertebrate tracks in National Park Service areas. *Park Paleontology* (U.S. National Park Service), 4(4) (Fall): 2.

2004 21.3968 Tracks in time; explorers find 265-million-year-old animal trails. *In:* Behind the Scenes [SECTION]. *National Geographic*, (June): [xlii].

2019 21.8046 Tiny footprints, big discovery: Reptile tracks oldest ever found in Grand Canyon; UNLV geologist investigating 310 million-year-old fossil trackway from ancient reptilian creature. *UNLV College of Sciences* (University of Nevada at Las Vegas, College of Sciences), (Spring): 3.

► Steve Rowland discovered a sideways-motion reptile trackway in float boulder along Bright Angel Trail. (Supai Group.)

A

Aasoumi, H.; Broutin, J.; Gand, G.; AND El Wartiti, M.

2009 21.7035 La paléontologie de l'époque Permien. Paleoflores "mixtes" et traces vertébrés tétrapodes du Permien inférieur du Maroc Central: Paléo-environnement et paléoclimat [ABSTRACT] [*transl.* 'Paleontology of the Permian Period: "Mixed" paleofloras and tetrapod vertebrate traces from the Lower Permian of Central Morocco—paleoenvironment and paleoclimate']. *From:* Présentations Orales: Paléozöique. *In: 1er Congrès International sur la Paléontologie des Vertébrés du Nord de l'Afrique : programme et résumé.* Marrakech, Morocco: [no imprint], p. 6. [In French.]

► Includes note of Hermit Formation of Grand Canyon.

Alf, R. M. [Alf, Raymond Manfred]

1968 21.73 A spider trackway from the Coconino Formation, Seligman, Arizona. *Southern California Academy of Sciences, Bulletin*, 67(2): 125-128.

Alpert, Stephen P.

1974 21.7786 Systematic review of the genus *Skolithos*. *Journal of Paleontology*, 48(4) (July): 661-669.

► See *Skolithos annulatus* (Howell, 1957) (pp. 664-665); holotype from Grand Canyon. Also notes (p. 665) *Scolithus arizonicus* (*nomen nudum*), traces observed by Newberry (1861) that were provided with this suggested name (without description) by James (1892, ITEM NO. 21.5133) [relates to the Muav Formation].

B

Baird, Donald

1952 21.151 Revision of the Pennsylvanian and Permian footprints *Limnopus*, *Allopus* and *Baropus. Journal of Paleontology*, 26: 832-840.

1965 21.152 Footprints from the Cutler Formation. *In:* Lewis, G. E., and Vaughn, P. P., Early Permian vertebrates from the Cutler Formation of the Placerville area, Colorado. *U.S. Geological Survey, Professional Paper 503-C*, pp. C47-C50.

► Includes Grand Canyon ichnofauna.

Baldwin, Christopher T.; Strother, P. K.; Beck, J. H.; AND Rose, Eben

2004 21.4049 Palaeoecology of the Bright Angel Shale in the eastern Grand Canyon, Arizona, USA, incorporating sedimentological, ichnological and palynological data. *In:* McIlroy, D. (ed.), The application of ichnology to palaeoenvironmental and stratigraphic analysis. *Geological Society, Special Publications* (London), (228): 213-236.

Bartlett, Rickey, AND Elliott, David K.

2011 21.5576 The paleoecology of the Coconino Sandstone depositional environment: The case for available surface water [ABSTRACT]. *Geological Society of America, Abstracts with Programs*, 43(5): 30.

2015 21.6836 Pit-trapping predation strategy: The first record of ant-lion pits in the fossil record [ABSTRACT]. *Geological Society of America, Abstracts with Programs*, 47(7): 346.

► Coconino Sandstone. Northern Arizona; specific locale(s) not indicated.

Blakey, Ronald C.

1995 21.330 Tracks of time. *Cañon Journal*, 1(1): 48-53.

Braddy, Simon J.

1995 21.6914 The ichnotaxonomy of the invertebrate trackways of the Coconino Sandstone (Lower Permian), northern Arizona. *In:* Lucas, Spencer G., and Heckert, Andrew B. (eds.), Early Permian footprints and facies. *New Mexico Museum of Natural History and Science, Bulletin 6*, pp. 219-224.

Brady, L. F. [Brady, Lionel F.]

1939 21.376 Tracks in the Coconino sandstone compared with those of small living arthropods. *Plateau*, 12: 32-34.

1947 21.377 Invertebrate tracks from the Coconino sandstone of northern Arizona. *Journal of Paleontology*, 21: 466-472.

1949 21.378 *Oniscoidichnus*, new name for *Isopodichnus* Brady 1947 not Bornemann 1889. *Journal of Paleontology*, 23: 573.

► See also adjoining article (but which does not pertain to Grand Canyon strata): Hans, Otto, 1949, Possibility of synonymous homonyms, *Journal of Paleontology*, 23: 573-574.

1961 21.382 A new species of *Palaeohelcura* Gilmore from the Permian of northern Arizona. *Journal of Paleontology*, 35: 201-202.

► *P. dunbari*, new species, from the Coconino Sandstone near Ash Fork, Arizona; also from Canyon de Chelly.

Braver, Grace

2024 21.8573 High-precision handheld photogrammetry integration for non-invasive paleontological and geological studies [ABSTRACT]. *Geological Society of America, Abstracts with Programs*, 56(5), abstract 213-4 (https://doi.org/10.1130/abs/2024AM-401587).

► "[A]pplications include studies conducted at Grand Canyon-Parashant National Monument where a trace-fossil covered rock was located" (specific locale not indicated).

Briggs, Derek E. G., AND Rolfe, W. D. Ian

1983 21.423 A giant arthropod trackway from the Lower Mississippian of Pennsylvania. *Journal of Paleontology*, 57: 377-390.

► Includes Grand Canyon notes.

C

Chameroy, Eric; Rowland, Stephen; AND Caputo, Marlo

2022 21.8416 Hidden in plain sight: Revisiting some known tetrapod trackways of the Wescogame Formation (Late Pennsylvanian) of Grand Canyon National Park, Arizona, USA [ABSTRACT]. *Geological Society of America, Abstracts with Programs*, 54(2): abstract 22-4, https://doi.org/10.1130/abs/2022CD-374002.

2023 21.8511 Photogrammetric documentation of some known, yet undescribed, late Pennsylvanian (Wescogame Formation) tetrapod trackways of Grand Canyon National Park, Arizona, USA [ABSTRACT]. *Geological Society of America, Abstracts with Programs*, 55(4): abstract 36-14 (https://doi.org/10.1130/abs/2023CD-387397).

► "All three trackways appear to belong to the ichnogenus cf. *Amphisauropus* isp. with likely seymouriamorph anamniote trackmakers. All three trackways are preserved in eolian sandstone, which is the dominant lithology of the Wescogame."

Clendenon, Cedric, AND Brand, Leonard

2024 21.8538 On the synonymization of *Paleohelcura tridactyla* with *Stiaria intermedia*: Reanalysis of ichnotaxobases [ABSTRACT]. *In: ICHNIA 2024—The 5th International Congress on Ichnology : celebrating one ichnology! : Florianópolis, Brazil, April 14-19th, 2024 : abstract book*, p. 66.

► *Paleohelcura tridactyla* Gilmore, 1926 (type material from Grand Canyon), is proposed to be a junior synonym of *Stiaria intermedia* Smith, 1909.

2024 21.8539 Is a neotype needed for *Diplodichnus biformis* Brady, 1947? [ABSTRACT]. *In: ICHNIA 2024—The 5th International Congress on Ichnology : celebrating one ichnology! : Florianópolis, Brazil, April 14-19th, 2024 : abstract book*, pp. 67-68.

► Type material from the Coconino Sandstone of Arizona.

2024 21.8540 Trackways of scorpions, tarantulas, and crayfish produced experimentally in subaerial and subaqueous conditions compared with *Paleohelcura* and *Octopodichnus* [ABSTRACT]. *In: ICHNIA 2024—The 5th International Congress on Ichnology : celebrating one ichnology! : Florianópolis, Brazil, April 14-19th, 2024 : abstract book*, pp. 69-71.

► Relates to ichnofossils of the Coconino Sandstone, supporting Brand's creationist perspectives. [See also publications by Brand under Creationist Publications in the present bibliography.]

D

DeCourten, Frank L.

1976 21.838 *Trace fossils of the Kaibab Formation (Permian) of northern Arizona.* Master's thesis, University of California at Riverside, 72 pp.

1980 21.839 The relationship between lithofacies and ichnofauna in shallow marine deposits of the Kaibab Formation, northern Arizona [ABSTRACT]. *Geological Society of America, Abstracts with Programs*, 12(7): 410.

Donovan, Christine; Thompson, Kelcy; AND West, William

1992 21.876 Trace fossils. *In: Colorado River Investigations XI : July/August, 1992*. (Supervised by Stanley S. Beus, James N. David, Frank B. Lojko, and Lawrence E. Stevens.) Flagstaff, Arizona: Northern Arizona University, *for* U.S. National Park Service, Grand Canyon National Park, pp. 156-167.

E

Elliott, David K.

1990 21.949 [Brief information on current research.] *Ichnology Newsletter*, no. 19, p. 19.

► Bright Angel Shale, Coconino Sandstone.

2016 21.6985 Trace fossils; footprints and imprints of past life. *In:* Hill, Carol A., Davidson, Gregg, Helble, Tim, and Ranney, Wayne (eds.), *The Grand Canyon : monument to an ancient*

earth : can Noah's Flood explain the Grand Canyon? Grand Rapids, Michigan: Kregel Publications; and Tulsa, Oklahoma: Solid Rock Lectures, pp. 152-159.

Elliott, David K., AND Bartlett, Rickey W.

2013 21.6911 A new trace fossil from the Permian Coconino Sandstone of northern Arizona. *In:* Lucas, Spencer G., DiMichele, William A., Barrick, James E., Schneider, Joerg W., and Spielmann, Justin A. (eds.), The Carboniferous-Permian transition. *New Mexico Museum of Natural History and Science, Bulletin 60*, pp. 79-80.

► Small conical pits like those of modern antlion larvae are described from occurrences near Ash Fork, Arizona.

Elliott, David K., AND Martin, Daryl L.

1987 21.950 A new trace fossil from the Cambrian Bright Angel Shale, Grand Canyon, Arizona. *Journal of Paleontology*, 61: 641-648.

Emtage, Marilyn A.

1977 21.4455 *Modern invertebrate footprints compared with fossil footprints from the Coconino Sandstone (Permian).* Master's thesis, Loma Linda University, 49 pp.

F

Farmer, Malcolm F.

1956 21.1023 Tracks and trackways of northern Arizona—a record of the past. *Plateau*, 28: 54-66.

Faul, Henry, AND Roberts, Wayne A.

1951 21.1027 New fossil footprints from the Navajo(?) sandstone of Colorado. *Journal of Paleontology*, 25: 266-274.

► Includes notes on Grand Canyon.

Fichter, Jurgen

1990 21.1052 [Brief information on current research.] *Ichnology Newsletter*, no. 19, p. 19.

► Coconino Sandstone.

Francischini, Heitor; Lucas, Spencer G.; Voigt, Sebastian; Marchetti, Lorenzo; Santucci, Vincent L.; Knight, Cassandra L.; Wood, John R.; Dentzien-Dias, Paula; AND Schultz, Cesar L.

2019 21.7792 On the presence of *Ichniotherium* in the Coconino Sandstone (Cisuralian) of the Grand Canyon and remarks on the occupation of deserts by non-amniote tetrapods: *PalZ* (*Paläontologische Gesellschaft*), https://doi.org/10.1007/s12542-019-00450-5, 19 pp. + Supplementary Material online (9 pp., https://static-content.springer.com/esm/art%3A10.1007%2Fs12542-019-00450-5/MediaObjects/12542_2019_450_MOESM1_ESM.pdf).

G

Gilmore, Charles W.

1926 21.1184 Fossil footprints from the Grand Canyon [ABSTRACT]. *Geological Society of America, Bulletin,* 37: 240-241.

1926 21.1185 Fossil footprints. *Grand Canyon Nature Notes*, 1(4) (June 26): 1-3.

1926 21.1186 Fossil footprints from the Grand Canyon. *Smithsonian Miscellaneous Collections*, 77(9): 1-41.

1926 21.1187 Collecting fossil footprints in Arizona. *In:* Explorations and field-work of the Smithsonian Institution in 1926. *Smithsonian Miscellaneous Collections*, 78(1): 20-23.

1927 21.1188 Footprints of unknown vertebrate animals in the Carboniferous and Permian of the Grand Canyon [ABSTRACT]. *Science*, New Series, 65: 479-480.

1927 21.1189 Fossil footprints in the Grand Canyon [ABSTRACT]. *Washington Academy of Sciences, Journal* (Washington, D.C.), 7: 272.

1927 21.1190 Collecting fossil footprints in the Grand Canyon, Arizona. *In:* Exploration and field work of the Smithsonian Institution in 1926. *Smithsonian Miscellaneous Collections*, 78(7): 45-48.

1927 21.1191 Fossil footprints from the Grand Canyon: Second contribution. *Smithsonian Miscellaneous Collections*, 80(3): 1-78.

1928 21.1192 Fossil footprints from the Grand Canyon: Third contribution. *Smithsonian Miscellaneous Collections*, 80(8): 1-16.

1928 21.1193 Fossil footprints in the Grand Canyon of the Colorado, Arizona. *In:* Smithsonian Institution, Exploration and field work in 1927. *Smithsonian Institution Publication 2957*, pp. 7-10.

1928 21.6508 Charles W. Gilmore (introduced by John C. Merriam): Footprints of unknown vertebrate animals in the Carboniferous and Permian of the Grand Canyon, Ariz. (illustrated)." [TITLE ONLY]. *In: Report of the National Academy of Sciences : fiscal year 1926-1927.* Washington, D.C.: U.S. Government Printing Office, p. 26.

► Title only for a presentation made April 26, 1927.

Gilmore, Charles W., AND Cochran, Doris M.

1930 21.1194 Reptiles. *In:* Cold-blooded vertebrates. *Smithsonian Scientific Series* (Abbot, Charles Greeley, ed.-in-chief), Volume 8, Part 3, pp. 209-355.

► See pp. 275-277, plates 61, 62.

Gilmore, Charles W., AND Sturdevant, Glen E.

1928 21.1195 Discovery of fossil tracks on the North Rim of the Grand Canyon. *Science*, New Series, 67: 216.

► Coconino Sandstone and Supai Group.

Graversen, Ole; Milàn, Jesper; AND Loope, David B.

2007 21.4792 Dinosaur tectonics: A structural analysis of theropod undertracks with a reconstruction of theropod walking dynamics. *Journal of Geology*, 115: 641-654.

► See p. 652, reptile footprints in Coconino Sandstone on Hermit Trail.

H

Häntzschel, W. [Häntzschel, Walter]

1962 21.1331 Trace fossils and problematica. *In:* Moore, R. C. (ed.), *Treatise on invertebrate paleontology, Part W, Miscellanea.* Boulder, Colorado: Geological Society of America, and Lawrence, Kansas: University of Kansas Press, pp. W177-W245.

1975 21.1332 Trace fossils and problematica. *In:* Teichert, C. (ed.), *Treatise on invertebrate paleontology, Part W, Miscellanea, Supplement 1.* Boulder, Colorado: Geological Society and America, and Lawrence, Kansas: University of Kansas Press, 2nd ed., revised, enlarged, pp. W1-W269 [entire volume].

Haubold, Hartmut

1971 21.1355 *Handbuch der Paläoherpetologie* (Oskar Kuhn, ed.), *Teil 18, Ichnia amphibiorum et reptiliorum fossilium* [*transl.* 'Part 18, Amphibian and reptilian fossil traces']. Stuttgart and Portland (Oregon): Gustav Fischer. [In German; part title in Latin.]

► See pp. 11-19, 26-29, 32-34, 38-40, 44-45, 92, 104-114, 121-124.]

[Concurrent title of series in English, *Handbook of Paleoherpetology*.]

1984 21.1356 *Saurierfährten* [*transl.* 'Saurian tracks']. Wittenberg and Lutherstadt: A. Ziemsen Verlag, 231 pp. [In German.]

1996 21.3708 Ichnotaxonomie und Klassifikation von Tetrapodenfährten aus dem Perm [*transl.* 'Ichnotaxonomy and classification of Permian tetrapod tracks']. *Hallesches Jahrbuch Geowissenschaften*, B18: 23-88. [In German.]

2000 21.8229 Tetropodenfährten aus dem Perm—Kenntnisstand und progress 2000. / The tetrapod tracks of the Permian—state of knowledge and progress 2000. *Hallesches Jahrbuch Geowissenschaften*, (B), 22: 1-16. [In German, with bilingual item title and abstract.]

Haubold, Hartmut, AND Lucas, Spencer G.

2001 21.8539 Early Permian tetrapod tracks—preservation, taxonomy, and Euramerican distribution. *In:* Cassinis, Giuseppe (ed.), Permian continental deposits of Europe and other areas. Regional reports and and correlations. *Monografie di «Natura Bresciana»* (Museo Civico di Scienze Naturali di Brescia, Italia), (25): 347-354.

Haubold, Hartmut; Hunt, Adrian P.; Lucas, Spencer G.; AND Lockley, Martin G.

1995 21.6913 Wolfcampian (Early Permian) vertebrate tracks from Arizona and New Mexico. *In:* Lucas, Spencer G., and Heckert, Andrew B. (eds.), Early Permian footprints and facies. *New Mexico Museum of Natural History and Science, Bulletin 6*, pp. 135-165.

► Includes Hermit Formation.

Hminna, Abdelkbir; Voigt, Sebastian; Saber, Hafid; Schneider, Jörg W.; AND Hmich, Driss

2009 21.7036 Tetrapod footprints from Ikakern formation (Argana basin, western High Atlas, Morocco) [ABSTRACT]. *From:* Présentations Affichées: Paléozöique. *In: 1er Congrès International sur la Paléontologie des Vertébrés du Nord de l'Afrique : programme et résumé.* Marrakech: [no imprint], pp. 53-54.

► Includes note of Hermit Formation of Grand Canyon.

Howell, Benjamin F.

1957 21.1492 *Stipsellus annulatus*, a *Skolithos*-like Cambrian fossil from Arizona. *Wagner Free Institute of Science, Bulletin* (Philadelphia), 32(2): 17-20.

► New species, from the Tapeats Formation.

Hunt, Adrian P., AND Lucas, Spencer G.

1998 21.3710 Implications of the cosmopolitanism of Permian tetrapod ichnofaunas. *New Mexico Museum of Natural History and Science, Bulletin 12*, pp. 55-57.

1998 21.4286 Ichnological evidence for tetrapod predation in the Paleozoic: Is there any? *New Mexico Museum of Natural History and Science, Bulletin 12*, pp. 59-65.

1998 21.4287 Vertebrate tracks and the myth of the belly-dragging, tail-dragging tetrapods of the late Paleozoic. *New Mexico Museum of Natural History and Science, Bulletin 12*, pp. 67-70.

2005 21.6906 The significance of Permian tracks to the development of a tetrapod ichnology [ABSTRACT]. *In:* Lucas, Spencer G., and Zeigler, Kate E. (eds.), The nonmarine Permian. *New Mexico Museum of Natural History and Science, Bulletin 30*, p. 127.

2005 21.6907 Nonmarine Permian track faunas from Arizona, USA: Ichnotaxonomy and ichnofacies. *In:* Lucas, Spencer G., and Zeigler, Kate E. (eds.), The nonmarine Permian. *New Mexico Museum of Natural History and Science, Bulletin 30*, pp. 128-131.

2005 21.6908 Stratigraphic distribution of ichnofossils in the Coconino Sandstone (Permian: Leonardian) of Grand Canyon National Park and the Seligman/Ash Fork area, northern Arizona, USA [ABSTRACT]. *In:* Lucas, Spencer G., and Zeigler, Kate E. (eds.), The nonmarine Permian. *New Mexico Museum of Natural History and Science, Bulletin 30*, p. 132.

2006 21.5353 Permian tetrapod ichnofacies. *In:* Lucas, Spencer G., Cassinis, Giuseppe, and Schneider, Joerg W. (eds.), Non-marine Permian biostratigraphy and biochronology. *Geological Society*, *Special Publications* (London), (265): 137-156.

Hunt, Adrian P., AND Santucci, Vincent L.

1998 21.1506 Taxonomy and ichnofacies of Permian tetrapod tracks from Grand Canyon National Park, Arizona. *In:* Santucci, Vincent L., and McClelland, Lindsay (eds.), National Park Service paleontological research. *U.S. National Park Service, Geologic Resources Division Technical Report NPS/NRGRD/GRDTR-98/01*, pp. 94-96.

1998 21.1507 An identification key to Permian tetrapod tracks from Grand Canyon National Park. *In:* Santucci, Vincent L., and McClelland, Lindsay (eds.), National Park Service paleontological research. *U.S. National Park Service, Geologic Resources Division Technical Report NPS/NRGRD/GRDTR-98/01*, pp. 97-98.

2001 21.3711 An unusual tetrapod track morphology from the Permian Coconino Sandstone, Grand Canyon National Park, Arizona. *In:* Santucci, Vincent L., and McClelland, Lindsay (eds.), Proceedings of the 6th Fossil Resource Conference. *U.S. National Park Service, Geologic Resources Division, Technical Report NPS/NRGRD/GRDTR-01/01*, pp. 44-47.

2002 21.3806 Reassessment of late Paleozoic tetrapod tracks from Grand Canyon National Park, Arizona [ABSTRACT]. *Journal of Vertebrate Paleontology*, 22(3, Supplement): 68A. [First author given as "Hunt, Adrian L."]

Hunt, Adrian P.; Lockley, M. G.; Haubold, H.; AND Braddy, S.

1995 21.1508 Tetrapod ichnofacies in Early Permian red beds of the American Southwest. *New Mexico Museum of Natural History and Science, Bulletin 6*, pp. 295-301.

Hunt, Adrian P.; Lucas, Spencer G.; AND Lockley, M. G.

1995 21.4288 Paleozoic tracksites of the western United States. *In:* Lucas, Spencer G., and Heckert, A. B. (eds.), Early Permian footprints and facies. *New Mexico Museum of Natural History and Science, Bulletin 6*, pp. 213-218.

Hunt, Adrian P.; Lucas, Spencer G.; Lockley, M. G.; Haubold, H.; AND Braddy, S.

1995 21.3712 Tetrapod ichnofacies in Early Permian red beds of the American Southwest. *New Mexico Museum of Natural History and Science*, *Bulletin 6*, pp. 295-301.

Hunt, Adrian P.; Santucci, Vincent L.; AND Lucas, Spencer G.

2005 21.6891 Vertebrate trace fossils from Arizona with special reference to tracks preserved in National Park Service units and notes on the Phanerozoic distribution of fossil footprints. *In:* Heckert, Andrew B., and Lucas, Spencer G. (eds.), Vertebrate paleontology in Arizona. *New Mexico Museum of Natural History and Science, Bulletin 29*, pp. 158-166.

J

James, Joseph F.

1892 21.5133 Studies in problematic organisms—the genus *Scolithus*. *In:* Proceedings of the summer meeting, held at Washington, August 24 and 25, 1891. *Geological Society of America, Bulletin*, 3: 32-44.

► See p. 36, note of J. S. Newberry's (1861) observation of "casts of worm-holes", seen at Diamond Creek, interpreted by James as *Scolithus*; and p. 46, ". . . a name should be given to forms collected from [different] horizons, say *S. arizonicus* to the form from the Grand cañon [*sic*] of Arizona." (ENTIRE NOTE) (*Nomen nudum*; see also Alpert, 1974, ITEM NO. 21.7786.) [Relates to the Muav Formation.]

K

Kramer, Jon M.; Erickson, Bruce R.; Lockley, Martin G.; Hunt, Adrian P.; AND Braddy, Simon J.

1995 21.6915 Pelycosaur predation in the Permian: Evidence from *Laoporus* trackways from the Coconino Sandstone with description of a new species of *Permichnium*. *In:* Lucas,

Spencer G., and Heckert, Andrew B. (eds.), Early Permian footprints and facies. *New Mexico Museum of Natural History and Science, Bulletin 6*, pp. 245-249.

► The new ichnospecies, *P. coconinensis*, is described from near Seligman, Arizona.

Krapovickas, Verónica

2010 21.6370 *El rol de las trazas fósiles de tetrápodos en los modelos de icnofacies continentales en embientes de climas áridos-semiáridos* [*transl.* 'The role of tetrapod trace fossils in continental ichnofacies models in arid to semi-arid climates']. Doctoral dissertation, Universidad de Buenos Aires, 343 pp. [In Spanish.]

► See pp. 36-37, regarding Grand Canyon fossil collections examined in the American Museum of Natural History; specifically, the Coconino Sandstone ichnotaxa *Ammobatrachus turbatan*, *Dilochopodus tetradactylus*, and *Laoporus noblei*. Only listed; no discussion by taxon.

L

Lane, A. A.; Braddy, S. J.; Briggs, D. E. G.; AND Elliott, D. K.

2003 21.3915 A new trace fossil from the Middle Cambrian of the Grand Canyon, Arizona, USA. *Palaeontology*, 46(Part 5): 987-997.

► *Bicavichnites martini*, new ichnogenus, new ichnospecies; from the Bright Angel Shale.

Lane, Abigail

2000 21.6339 1999; Burgess Shale arthropods—walking techniques and fossil trackways. *In:* Sylvester-Bradley Awards. *The Palaeontology Newsletter* (The Palaeontological Association, United Kingdom), (43): 22-23.

► Funding award to enable "examination of trackway specimens housed at the U.S. National Museum of Natural History and the Museum of Northern Arizona, and collection of new material from the Tapeats Sandstone and Bright Angel Shale Formations of the Grand Canyon, revealing a wide range of trackway morphologies preserved in these Cambrian deposits." (p. 22) Compares to Burgess Shale ichnofossils.

Lee, Willis T.

1927 21.6139 Correlation of geologic formations between east-central Colorado, central Wyoming and southern Montana. *U.S. Geological Survey, Professional Paper 149*, 80 pp.

► See p. 12, "Lyons Sandstone (redefined)", including notes by C. W. Gilmore on fossil footprints of the Coconino Sandstone of Grand Canyon.

Lerner, Allan J.; Voigt, Sebastian; AND Lucas, Spencer G.

2012 21.5795 The first Mesozoic record of *Walpia hermitensis*, an invertebrate trace fossil previously known only from the Permian of the American Southwest [ABSTRACT]. *Geological Society of America, Abstracts with Programs*, 44(6): 89.

► Cited here for the references to the previously known occurrences in the Permian Hermit Shale of Grand Canyon.

Lesser, Samantha; Santucci, Vincent L.; AND Jorstad, Thomas

2012 21.7698 National Park Service vertebrate collections at the Smithsonian: Collaboration to support science and stewardship [ABSTRACT]. *In: Program and abstracts : 72nd Annual Meeting, Society of Vertebrate Paleontology : Raleigh Convention Center, Raleigh, NC, USA, October 17-20, 2012 : Supplement to the online Journal of Vertebrate Paleontology, October 2012*, p. 127.

► Pilot project to inventory and photograph three collections, including "Charles Gilmore's Paleozoic vertebrate ichnofossils from Grand Canyon National Park".

2013 21.6195 A Smithsonian Institution and National Park Service collaboration to manage paleontological resources [ABSTRACT]. *Geological Society of America, Abstracts with Programs*, 45(7): 429.

Linck, Otto

1948 21.7964 Lebens-Spuren aus dem Schilfsandstein (Mittl. Keuper km 2) NW-Würtembergs und ihre Bedeutung für die Bildungsgeschichte der Stufe [*transl.* 'Trace fossils from the Schilfsandstein (Middle Keuper km 2) of NW Württemberg and their significance for the depositional history of the stage']. *Vereins für Vaterländische Naturkunde in Württemberg, Jahreshefte*, 97/101: 1-100 (including Plates 1-8). [In German.]

► See p. 61, remarks pertaining to the ichnospecies *Octopodichnus didactylus* Gilmore and the paleoenvironment of the Coconino Sandstone.

Lockley, Martin G.

1992 21.1887 Comment [on "Fossil vertebrate footprints in the Coconino Sandstone (Permian) of northern Arizona: Evidence for underwater origin" by Brand and Tang (1991).] *Geology*, 20: 666-667.

► See also reply by Brand (1992), pp. 668-669; with combined references cited, pp. 669-670. [*NOTE:* The publications by Brand and others are cited in this bibliography in the section on Creationist works.]

2011 21.6803 The ichnotaxonomic status of *Brasilichnium* with special reference to occurrences in the Navajo Sandstone (Lower Jurassic) in the western USA. *In:* Sullivan, Robert M., Lucas, Spencer G., and Spielmann, Justin A. (eds.), Fossil Record 3. *New Mexico Museum of Natural History and Science, Bulletin 53*, pp. 306-315.

► Includes note of *Chelichnus* from Permian Coconino Sandstone.

Lockley, Martin G.; Novokov, Valery; Dos Santos, Vanda Faria; Nessov, Lev A.; AND Forney, Gerald

1994 21.7389 "Pegadas de Mula": an explanation for the occurrence of Mesozoic traces that resemble mule tracks. *Ichnos*, 3: 125-133.

► Includes Paleozoic trace fossils from Grand Canyon.

Lofgren, Donald L., AND Liu, Jennifer

2019 21.8041 (WITH Eric B. Williams)
Moment in time: The life of Raymond Alf and the history of the Peccary Society. Claremont, California: The Webb Schools, 340 pp. [Privately pubished.]

► Includes Alf's paleontological work in Grand Canyon.

Lofgren, Donald L.; Greening, Jay A.; Johnson, Cooper F.; Lewis, Sarah J.; AND Torres, Mark A.

2006 21.4643 Footprints on the sands of time: Fossil tracks at the Raymond Alf Museum of Paleontology. *In:* Reynolds, Robert E. (ed.), *Making tracks across the Southwest.* [No place]: California State University, Desert Studies Consortium; and LSA Associates, Inc., pp. 52-62.

2006 21.6316 Fossil tracks at the Raymond Alf Museum of Paleontology and management of tracks on public lands. *In:* Lucas, Spencer G., Spielmann, Justin A., Hester, Patricia M., Kenworthy, Jason P., and Santucci, Vinicent L. (eds.), America's antiquities: 100 years of managing fossil on federal lands. *New Mexico Museum of Natural History and Science, Bulletin 34*, pp. 109-118.

Loope, David B.

1992 21.1919 Comment [on "Fossil vertebrate footprints in the Coconino Sandstone (Permian) of northern Arizona: Evidence for underwater origin" by Brand and Tang (1991).] *Geology*, 20: 667-668.

► See also reply by Brand (1992), pp. 668-669; with combined references cited, pp. 669-670. [*NOTE:* The publications by Brand and others are cited in this bibliography in the section on Creationist works.]

1992 21.1920 Fossil vertebrate footprints in the Coconino Sandstone (Permian) of northern Arizona: subaqueous or subaerial? [ABSTRACT]. *In:* Proceedings of the Nebraska Academy of Sciences, including the NATS and TERQUA divisions and affiliated societies. *Nebraska Academy of Sciences and Affiliated Societies, Proceedings*, 102: 70.

Lucas, Spencer G.

1998 21.4289 Toward a tetrapod biochronology of the Permian. *New Mexico Museum of Natural History and Science, Bulletin 12*, pp. 71-92.

2019 21.8095 An ichnological perspective on some major events of Paleozoic tetrapod evolution. *Società Paleontologica Italiana, Bollettino*, 58(3): 223-266. [In English, with abstract also in Italian.]

► Includes Grand Canyon.

Lucas, Spencer G.; Francischini, Heitor; Dentzien Dias, Paula; AND Ludlow, Bill

2018 21.7529 More than *Chelichnus* in the lower Permian Coconino Sandstone: New tetrapod footprint localities in Coconino County, Arizona [ABSTRACT]. *Geological Society of America, Abstracts with Programs*, 50(5): Final Paper 43-1, doi:10.1130/abs/2018RM-313462.

► Study area is the Apache-Sitgreaves National Forest.

Lucas, Spencer G.; Marchetti, Lorenzo; AND Francischini, Heitor

2019 21.7930 Rethinking the ichnology of the lower Permian Coconino Sandstone, Grand Canyon, Arizona [ABSTRACT]. *Geological Society of America, Abstracts with Programs*, 51(5): Paper No. 160-1 (https://gsa.confex.com/gsa/2019AM/meetingapp.cgi/Paper/340926).

Lucas, Spencer G.; Olson, Thomas J.; Ludlow, Bill; AND Rogers, John B.

2019 21.7900 Arizona's oldest extensive Permian tracksite and its stratigraphic significance [ABSTRACT]. *Geological Society of America, Abstracts with Programs*, 51(5): Paper No. 271-14 (https://gsa.confex.com/gsa/2019AM/meetingapp.cgi/Paper/336596).

► Study area in the Tonto Creek area, Mogollon Rim. Notes that "some previous correlations of Pennsylvanian strata (e.g., Wescogame Formation) of the Supai Group in the Grand Canyon to the lower Supai Formation along the Mogollon Rim are questionable."

Lull, Richard Swann

1904 21.5622 Nature's hieroglyphics. *Popular Science Monthly*, (December): 139-149.

► Fossil footprints. See p. 149, "Fossil footprints have been found in various parts of the world, as in England, Germany, France, and, in our own country, in the Grand Canon of the Colorado . . ." (ENTIRE NOTE)

1918 21.1984 Fossil footprints from the Grand Canyon of the Colorado. *American Journal of Science*, Series 4, 45: 337-346.

► Coconino Sandstone and Supai formation. Includes *Laoporus*, new ichnogenus (Coconino), and new ichnospecies from Coconino and Supai.

1918 21.1985 The pulse of life. *In: The evolution of the earth and its inhabitants : a series of lectures delivered before the Yale Chapter of the Sigma Xi during the academic year 1916-1917.* New Haven, Connecticut: Yale University Press, and London: Humphrey Milford, Oxford University Press, pp. 109-146.

► See pp. 111, 118-119.

M

Marché, Jordan D., II

1992 21.2034 Edward Hitchcock, *Fucoides,* and the ichnogenus *Scoyenia. Earth Sciences History*, 11(1): 13-20.

Marchetti, Lorenzo; Francischini, Heitor; Lucas, Spencer G.; Voigt, Sebatian; Hunt, Adrian P.; AND Santucci, Vincent L.

2020 21.8036 Chapter 9. Paleozoic vertebrate ichnology of Grand Canyon National Park. *In:* Santucci, Vincent L., and Tweet, Justin S. (eds.), *Grand Canyon National Park : centennial paleontological resource inventory (non-sensitive version).* Fort Collins, Colorado: U.S. National Park Service, Natural Resource Stewardship and Science, pp. 333-379. (Volume: *Natural Resource Report NPS/GRCA/NRR—2020/2103*.)

2021 21.8261 Paleozoic vertebrate ichnology of Grand Canyon National Park. *In:* Santucci, Vincent L., and Tweet, Justin S. (eds.), Grand Canyon National Park centennial paleontological

resource inventory; a century of fossil discovery and research. *Utah Geological Association, Special Publication 1*, pp. 171-204.

► Reset reprinting of Marchetti *et al.* (2020, ITEM NO. 21.8036).

Marchetti, Lorenzo; Voigt, Sebastian; Lucas, Spencer G.; Francischini, Heitor; Dentzien-Dias, Paula; Sacchi, Roberto; Mangiacotti, Marco; Scali, Stefano; Gazzola, Andrea; Ronchi, Ausonio; AND Millhouse, Amanda

2019 21.7791 Tetrapod ichnotaxonomy in eolian paleoenvironments (Coconino and De Chelly formations, Arizona) and late Cisuralian (Permian) sauropsid radiation. *Earth-Science Reviews*, 190: 148-170.

Marchetti, Lorenzo; Voigt, Sebastian; Mujal, Eudald; Lucas, Spencer G.; Francischini, Heitor; Fortuny, Josep; AND Santucci, Vincent L.

2020 21.8144 Extending the footprint record of Pareiasauromorpha to the Cisuralian: Earlier appearance and wider palaeobiogeography of the group. *Papers in Palaeontology* (Palaeontological Association), 2020: 1-23, doi:10.1002/spp2.1342.

► Ichonospecies *Pachypes ollieri* (Ellenberger), new combination; includes material from "Hermit Formation, Hermit Basin, Cisuralian, Arizona, USA: GRCA 3172, trackway with three consecutive pes–manus couples, concave epirelief. GRCA 3173, counterpart of GRCA 3172, incomplete step cycle with two consecutive pes–manus couples, convex hyporelief." (p. 7) See also pp. 9 (with figures 5A-E, p. 11), 17, 18.

Martin, Daryl Lynn

1985 21.2052 *Depositional systems and ichnology of the Bright Angel Shale (Cambrian), eastern Grand Canyon, Arizona.* Master's thesis, Northern Arizona University, 365 pp.

Martin, Daryl L., AND Elliott, David K.

1984 21.2053 A regressive sequence and associated ichnofaunal assemblage, Bright Angel Shale (Cambrian), Grand Canyon, Arizona [ABSTRACT]. *Arizona-Nevada Academy of Science, Journal*, 19 (1984 Proceedings Supplement): 55-56.

McKee, Edwin D.

1929 21.2124 Laoporus goes walking. *Grand Canyon Nature Notes*, 3(12) (August 31): 3-4. [*Laoporus noblei*, ichnospecies of the Coconino Sandstone.]

1931 21.2167 Fossil footprints of the Coconino. *Grand Canyon Nature Notes*, 5(5) (March): 43-44.

1931 21.36 [Footprints of *Baropus*.] *In:* Miscellany [SECTION]. *Grand Canyon Nature Notes*, 6(1) (November): 14.

► Item not signed but written in the first person and in context is McKee.

1932 21.2174 Some fucoides from the Grand Canyon. *Grand Canyon Nature Notes*, 7(8) (November): 77-81.

1944 21.2203 Tracks that go uphill. *Plateau*, 16: 61-72.

1947 21.2209 Experiments on the development of tracks in fine, cross-bedded sand. *Journal of Sedimentary Petrology*, 17: 23-28.

1994 21.2269 Some fucoides from Grand Canyon. *In:* Lamb, Susan (ed.), *The best of Grand Canyon Nature Notes.* Grand Canyon, Arizona: Grand Canyon Natural History Association, p. 23.

► Reprinted from *Grand Canyon Nature Notes*, November, 1932.

1994 21.2272 Laoporus goes walking. *In:* Lamb, Susan (ed.), *The best of Grand Canyon Nature Notes.* Grand Canyon, Arizona: Grand Canyon Natural History Association, p. 27.

► Reprinted from *Grand Canyon Nature Notes*, August, 1929.

McKeever, Patrick J., AND Haubold, Hartmut

1996 21.2307 Reclassification of vertebrate trackways from the Permian of Scotland and related forms from Arizona and Germany. *Journal of Paleontology*, 70(6): 1011-1022.

► Includes proposed synonyms for Coconino Sandstone ichnotaxa.

Merriam, John Campbell

1926 21.2338 Ancient footprints in the Grand Canyon. *Scribner's Magazine*, 79 (January): 77-82.

1930 21.2342 *The living past.* New York: Charles Scribner's Sons.

► See Chapter 5, "An abyss in time", pp. 73-92; and see Chapter 6, "Footprints on the path of history", pp. 95-110, which is a slightly revised, expanded reprint of Merriam's (1926, ITEM NO. 21.2338) "Ancient footprints in the Grand Canyon".

1938 21.2343 The past as living. *In:* Published papers and addresses of John Campbell Merriam, Volume 3. *Carnegie Institution of Washington, Publication 500*, pp. 1941-1944.

► Reprint of Merriam (1930, ITEM NO. 21.2340). The text of this reprinting is not applicable to the Grand Canyon, but three figures of interest are positioned between pp. 1944-1945.

1938 21.2344 Ancient footprints in the Grand Canyon. *In:* Published papers of John Campbell Merriam, Volume 3. *Carnegie Institution of Washington, Publication 500*, pp. 1913-1919, 5 figures between pp. 1920-1921.

► Reprint of Merriam (1926, ITEM NO. 21.2338).

Milàn, Jesper

2006 21.7805 Fossile fodspor i Grand Canyon [*transl.* 'Fossil footprints in the Grand Canyon']. *Varv* (Geologisk Centralinstitut, København), 2006(4) (February 15): 26-32. [In Danish.]

► Pertains to the author's field visit to Coconino Sandstone locations on Hermit Trail.

Miller, Anne Elizabeth

2019 21.8048 *Ichnology of the Bright Angel Shale Formation, Grand Canyon, Arizona: Indicators for Middle Cambrian paleoecology.* Master's thesis, Northern Arizona University.

2022 21.8408 Ichnology of the Bright Angel Formation, Grand Canyon, Arizona: Indicators for Middle Cambrian paleoecology [ABSTRACT]. *Geological Society of America, Abstracts with Programs*, 54(5): abstract 260-4, https://doi.org/10.1130/abs/2022AM-382268.

Miller, Anne E.; Francischini, Heitor; Marchetti, Lorenzo; Pulsipher, Mikaela A.; AND Nebel, Mark L.

2024 21.8541 New tetrapod trackways in the Coconino Sandstone, Grand Canyon National Park, AZ. [ABSTRACT]. *In: ICHNIA 2024—The 5th International Congress on Ichnology : celebrating one ichnology! : Florianópolis, Brazil, April 14-19th, 2024 : abstract book*, pp. 69-71.

► Relates to ichnofossils of the Coconino Sandstone.

2024 21.8532 New tetrapod trackways in the Coconino Sandstone, Grand Canyon National Park, Arizona [ABSTRACT]. *In:* Wilson, Jeffrey A. Mantilla, and Friedman, Matt (eds.), 12th North American Paleontological Convention, University of Michigan, 17-21 June 2024; Program with abstracts. *University of Michigan, Papers on Paleontology*, (39): 312.

Miller, Anne E.; Marchetti, Lorenzo; Francischini, Heitor; AND Lucas, Spencer G.

2020 21.8035 Chapter 8. Paleozoic invertebrate ichnology of Grand Canyon National Park. *In:* Santucci, Vincent L., and Tweet, Justin S. (eds.), *Grand Canyon National Park : centennial paleontological resource inventory (non-sensitive version).* Fort Collins, Colorado: U.S. National Park Service, Natural Resource Stewardship and Science, pp. 277-331. (Volume: *Natural Resource Report NPS/GRCA/NRR—2020/2103*.)

2021 21.8260 Paleozoic invertebrate ichnology of Grand Canyon National Park. *In:* Santucci, Vincent L., and Tweet, Justin S. (eds.), Grand Canyon National Park centennial paleontological resource inventory; a century of fossil discovery and research. *Utah Geological Association, Special Publication 1*, pp. 131-170.

► Reset reprinting of Miller *et al.* (2020, ITEM NO. 21.8035).

Miller, Donald M.; Young, Robert A.; Gatlin, Thomas W.; AND Richardson, John A.

1982 21.2371 Amphibians and reptiles of the Grand Canyon National Park. *Grand Canyon Natural History Association, Monograph 4*, 144 pp.

► See Part 2, "Prehistoric herpetofauna of the Grand Canyon region", pp. 5-15.

Millhouse, Amanda M.

2009 21.4634 *Analysis of trackways in the Permian Coconino Sandstone of Ash Fork and Grand Canyon, Arizona.* Master's thesis, Northern Arizona University, 127 pp.

Monastersky, Richard

1992 21.2393 Wading newts may explain enigmatic tracks. *Science News*, 141 (January 4): 5.

► Fossil footprints in Coconino Sandstone; reporting on research by L. R. Brand and T. Tang [whose work is cited in this bibliography in the section on Creationist works].

Müller, A. H.

1969 21.2430 Über ein neues Ichnogenus (*Tambia* n.g.) und andere Problematica aus dem Rotliegenden (Unterperm) von Thüringen [*transl.* 'On a new ichnogenus (*Tambia* n.g.)

and other problematica from the Rotliegend (Lower Permian) of Thuringia']. *Deutsche Akademie der Wissenschaften zu Berlin, Monatsberichte*, 11: 922-931. [In German.]

► The new genus is not pertinent to Grand Canyon, but Grand Canyon material is in discussion.

P

Pivetta, Marcos

2019 21.8597 Um estranho no Grand Canyon; pegadas fósseis de 280 milhões de anos são o primeiro registro de vertebrados, em tese, não adaptados a ambientes secos em um antigo deserto [*transl.* 'A stranger in the Grand Canyon: 280-million-year-old fossil footprints are the first record of vertebrates—theoretically unadapted to arid environments—in an ancient desert']. *Pesquisa FAPESP* (Fundação de Amparo à Pesquisa do Estado de São Paulo, São Paulo, Brasil), 20(280) (June): 58-60. [In Portuguese.]

► Vertebrate ichnofossils of the Coconino Sandstone.

R

Radwański, Andrzej, AND Roniewicz, Piotr

1963 21.7817 Upper Cambrian trilobite ichnocoenosis from Wielka Wiśniówka (Holy Cross Mountains, Poland). *Acta Palaeontologica Polonica* (Warszawa), 8(2): 259-280, Plates 1-10. [Abstracts also in Polish and Russian.]

► Quarry at Wielka Wiśniówka, near Kielce, western part of Góry Świętokrzyskie (Holy Cross Mountains). See *Bergaueria perata* Prantl, 1945 (pp. 271-273); specifically, p. 272, which notes occurrence in the Bright Angel Shale of Grand Canyon.

Retallack, Gregory J.

2024 21.8568 Form-classification for microbially induced sedimentary structures. *Alcheringa*, 2024, https://doi.org/10.1080/03115518.2024.2345641, 15 pp.

► See in the section on the systematic paleontology of *Rivularites* Fliche, 1906 (monospecific as *R. repertus* Fliche), see remark (p. 10), "The only other species of this genus, *Rivularities permiensis* White, 1929 [which is from the Permian Hermit Shale of Grand Canyon], is flexuous without cracking or distortion of *Rivularites*, and is regarded here as a junior synonym of *Neantia verrucoswa* (Lebesconte, 1887)." (ENTIRE NOTE)

Rowland, Stephen M. [Rowland, Steve]

2017 21.7307 Trackway of sideways-walking pelycosaur in the Carboniferous Manakacha Formation in Grand Canyon National Park [ABSTRACT]. *Geological Society of America, Abstracts with Programs*, 49(6), Session 136, doi:10.1130/abs/2017AM-297334.

► Bright Angel Trail. Ichnogenus *Chelichnus*(?).

2019 21.7767 The oldest vertebrate trackway in Grand Canyon and the dawn of reptiles [ABSTRACT]. *In:* Karlstrom, Karl E., Crossey, Laura J., Semken, Steven, Stoeberl, Todd, and

Calhoun, Jeanne (convenors), *Grand Canyon Geology and Geoscience Education Public Symposium, April 18-20, 2019 : in honor of Grand Canyon National Park's 2019 centennial celebration, Earth Day 2019, and the 150th anniversary of John Wesley Powell's 1869 pioneering Colorado River expedition.* [No imprint], pp. 14-15.

► "A recent rockfall along the Bright Angel Trail, about half a mile up the trail from 3 Mile Rest House, produced a jumble of sandstone blocks from the Manakacha Formation—second oldest formation in the Supai Group. Two of the blocks contain corresponding upper and lower surfaces of a conspicuous vertebrate trackway." (from an introductory blurb for a Vimeo posting of the presentation, https://vimeo.com/343769450) [accessed 25 March 2026]).

2024 21.8685 Fossil trackways of desert-sand-dune–dwelling amphibians and reptiles at a newly discovered tracksite in the Lower Permian Coconino Sandstone of Grand Canyon [ABSTRACT]. *From:* Abstracts from proceedings: the 2024 Desert Symposium. *In:* Miller, David M., and Rowland, Stephen M. (eds.), *Get your kicks: Trails across the Mojave : 2024 Desert Symposium field guide and proceedings : April 2024.* [No place]: Desert Symposium, Inc., p. 166.

► Locality in the north fork of Soap Creek Canyon. Ichnospecies *Varanopus curvidactylus*, *Ichniotherium sphaerodactylum*.

Rowland, Stephen M., AND Caputo, Mario V.

2018 21.7693 Trackway of a sideways-walking basal tetrapod in the Pennsylvanian Manakacha Formation of Grand Canyon National Park [ABSTRACT]. *In:* Farke, Andy, MacKenzie, Amber, and Miller-Camp, Jess (eds.), *Meeting program and abstracts : October 17-20, 2018 : Society of Vertebrate Paleontology : 78th Annual Meeting 2018 : Albuquereque Convention Center, Albuquerque, NM.* [No place]: Society of Vertebrate Paleontology, p. 206.

► *Chelichnus* isp., from Bright Angel Trail.

Rowland, Stephen M.; Caputo, Mario V.; AND Chameroy, Eric

2024 21.8579 Silicified bones, invertebrate burrows, and eolian adhesion structures in the Pennsylvanian Wescogame Formation, Supai Group, Grand Canyon, Arizona [ABSTRACT]. *Geological Society of America, Abstracts with Programs*, 56(5), abstract 40-5 (https://doi.org/10.1130/abs/2024AM-404589).

Rowland, Stephen M.; Caputo, Mario V.; AND Jensen, Zachary A.

2020 21.8112 Early adaptation to eolian sand dunes by basal amniotes is documented in two Pennsylvanian Grand Canyon trackways. *PLoS One*, 15(8): e0237636, https://doi.org/10.1317/journal.pone,0237636, 28 pp.

► *Chelichnus*-like trackway from Manakacha Formation, Bright Angel Trail.

Rowland, Stephen M.; Rickerson, Cameron; Matz, Summer; Vosburgh, Stephanie; Cluff, Tom; AND Burkett, Michele

2016 21.7059 First report of *Chelichnus gigas* in the Lower Permian (Wolfcamp) Queantoweap Sandstone of southern Nevada [ABSTRACT]. *Geological Society of America, Abstracts with Programs*, 48(7): Paper 75-10, doi:10.1130/abs/2016AM-285893.

► Includes notes of correlation to Grand Canyon.

2016 21.7694 First report of a large tetrapod trackway in the Lower Permian (Wolfcampian) Queantoweap Sandstone of southern Nevada [ABSTRACT]. *In:* Farke, Andy, MacKenzie, Amber, and Miller-Camp, Jess (eds.), *Meeting program and abstracts ; SVP 2016 : SVP 76th Annual Meeting : Society of Vertebrate Paleontology : October 26-29, 2016,*

Grand America Hotel, Salt Lake City, Utah, USA. [No place]: Society of Vertebrate Paleontology, p. 214.

► Gold Butte area. Tentatively identified as *Chelichnus gigas*. Includes notes of correlation to Grand Canyon.

S

Sadler, Christa J.

1993 21.2834 Arthropod trace fossils from the Permian De Chelly Sandstone, northeastern Arizona. *Journal of Paleontology*, 67(2): 240-249.

Santucci, Vincent L., AND Hunt, Adrian P.

1998 21.2846 Biostratigraphy and paleoecology of late Paleozoic tetrapod tracks from Grand Canyon National Park, Arizona [ABSTRACT]. *In:* Abstracts of papers; 58th Annual Meeting, Society of Vertebrate Paleontology, Snowbird, Utah, September 30-October 3, 1998. *Journal of Paleontology*, 18(3, Supplement): 75A.

Santucci, Vincent L., AND Koch, Alison L.

2003 21.6234 Paleontological resource monitoring strategies for the National Park Service. *Park Science* (U.S. National Park Service), 22(1) (Fall): 22-25.

► See in Figure 1 (p. 22), illustration of late Paleozoic reptilian or amphibian tracks in Grand Canyon National Park.

Santucci, Vincent L., AND Wall, William P.

1995 21.2847 Climbing up sand dunes in the Permian: New tracksites from Grand Canyon National Park, Arizona. *In:* Santucci, Vincent L., and McClelland, Lindsay (eds.), National Park Service paleontological research. Denver: U.S. National Park Service, Natural Resources Publication Office, *U.S. National Park Service, Technical Report NPS/NRPO/NRTR-95/16*, pp. 64-65.

► This is a variant of the same document cited as ITEM NO. 21.6319.

1995 21.6319 Climbing up sand dunes in the Permian: New tracksites from Grand Canyon National Park, Arizona. *In:* Santucci, Vincent L., and McClelland, Lindsay (eds.), National Park Service paleontological research. Denver: U.S. National Park Service, Natural Resources Publication Office, *U.S. National Park Service, Technical Report NPS/NRPO/NRTR-95/16*, pp. 91-93.

► This is a variant of the same document cited as ITEM NO. 21.2847.

Santucci, Vincent L.; Hunt, Adrian P.; AND Lockley, Martin G.

1998 21.6318 Fossil vertebrate tracks in National Park Service areas. *In:* Martin, James E., Hoganson, John W., and Benton, Rachel C. (eds.), Partners Preserving Our Past, Planning Our Future; Proceedings for the Fifth Conference on Fossil Resources. *Dakoterra* (South Dakota School of Mines and Technology, Museum of Geology), 5: 107-114.

► Grand Canyon National Park, p. 107; Pipe Spring National Monument, p. 112.

Santucci, Vincent L.; Hunt, Adrian P.; Nyborg, Torrey; AND Kenworthy, Jason P.

2006 21.6317 Additional fossil vertebrate tracks in National Park Service areas. *In:* Lucas, Spencer G., Spielmann, Justin A., Hester, Patricia M., Kenworthy, Jason P., and Santucci, Vinicent L. (eds.), America's antiquities: 100 years of managing fossil on federal lands. *New Mexico Museum of Natural History and Science, Bulletin 34*, pp. 152-158.

► Grand Canyon National Park, p. 152.

Sarjeant, William Antony S.

1975 21.2848 Fossil tracks and impressions of vertebrates. *In:* Frey, Robert W. (ed.), *The study of trace fossils : a synthesis of principles, problems, and procedures in ichnology.* New York: Springer-Verlag, pp. 283-324.

► See pp. 303, 311-312.

Schmidt, Hermann

1959 21.2864 Die Cornberger Fährten im Rahmen der Vierfüssler-Entwicklung [*transl.* 'The Cornberg tracks in the context of tetrapod evolution']. *Hessische Landesamtes für Bodenforschung, Abhandlungen*, Heft 28, pp. 1-137. [In German.]

► Includes notes on Grand Canyon tracks.

Schult, Mark Frederick

1994 21.2887 *Paleoecology and paleoenvironment of an Early Permian vertebrate trace fossil fauna, Las Cruces, New Mexico.* Doctoral dissertation, Indiana University, 203 pp.

1995 21.6912 Comparisons between the Las Cruces ichnofauna and other Permian ichnofaunas, including inferred trackmakers. *In:* Lucas, Spencer G., and Heckert, Andrew B. (eds.), Early Permian footprints and facies. *New Mexico Museum of Natural History and Science, Bulletin 6*, pp. 127-133.

► See "Colorado Plateau Region", p. 130, which includes note of Grand Canyon occurrences.

Science Service

1927 21.2893 Fossil footprints in the Grand Canyon. *In:* Science News [SECTION]. *Science*, New Series, 65 (March 11, Supplement): x.

Seilacher, Adolf

1964 21.2910 Biogenic sedimentary structures. *In:* Imbrie, John, and Newell, Norman (eds.), *Approaches to paleoecology.* New York: John Wiley and Sons, Inc., pp. 296-316.

Spamer, Earle E.; Daeschler, Edward; AND Vostreys-Shapiro, L. Gay

1995 21.3023 A study of fossil vertebrate types in the Academy of Natural Sciences of Philadelphia; taxonomic, systematic, and historical perspectives. *Academy of Natural Sciences of Philadelphia, Special Publication 16*, 434 pp.

► See *Anthracopus ellangowensis* Lorenz *in* Leidy, pp. 287-288. (*A. ellangowensis* does not pertain to Grand Canyon but Grand Canyon is noted as part of

the discussion. Gilmore [1927, ITEM NO. 21.1191] had considered *A. ellangowensis* to be possibly a senior subjective synonym of *Hylopus hermitanus* Gilmore from the Hermit Shale of Grand Canyon.

Strother, Paul K.; Baldwin, Christopher T.; Beck, John H.; AND Rose, Eben

2004 21.4433 An integrated sedimentological, ichnological and palynological study of the paleoecology of the Middle Cambrian, Bright Angel Shale, Grand Canyon, Arizona. *In:* Abstracts of the Proceedings of the Thirty-Sixth Annual Meeting of the American Association of Stratigraphic Palynologists; St. Catharines, Ontario—October 5-8, 2003. *Palynology*, 28: 265.

Sturdevant, Glen E.

1927 21.24 Grand Canyon animal tracks. *Grand Canyon Nature Notes*, 2(4) (September 30): 5.

► Notice of C. W. Gilmore's "Fossil Footprints of the Grand Canyon" (Gilmore, 1927, ITEM NO. 21.1191).

1928 21.27 Third publication on Grand Canyon animal tracks. *Grand Canyon Nature Notes*, 2(10) (March 31): 4.

► C. W. Gilmore publication of fossil tracks.

T

Tilton, John L.

1931 21.3177 Permian vertebrate tracks in West Virginia. *Geological Society of America, Bulletin,* 42: 547-556.

► Includes notes of Grand Canyon.

U

U.S. National Museum

1905 21.5817 Appendix II. List of accessions, 1902-3. *From:* Report of the U. S. Natiobnal Museum, under the direction of the Smithsonian Institution, for the year ending June 30, 1903. *In: Annual report of the Board of Regents of the Smithsonian Institution, showing the operations, expenditures, and condition of the institution for the year ending June 30, 1903. Report of the U. S. National Museum.* Washington, D.C.: U.S. Government Printing Office, pp. 95-.

► See p. 139: "Walcott, Hon. C. D. . . . specimen of Middle Carboniferous sandstone slab with reptile tracks, collected on the Grand View trail, Grand Cañon, Arizona, by Mr. Walcott (41094)."

V

Vaughn, Peter Paul

1963 21.3289 A downslope trackway in the De Chelly sandstone, Permian of Monument Valley. *Plateau*, 36(1) (Summer): 25-28.

► Notes comparison to Coconino Sandstone trackways.

Voigt, Sebastian

2005 21.6910 *Die Tetrapodenichnofauna des kontinentalen Oberkarbon und Perm im Thüringer Wald—Ichnotaxonomie, Paläoökologie und Biostratigraphie* [*transl.* 'The tetrapod ichnofauna of the continental Upper Carboniferous and Permian in the Thuringian Forest—ichnotaxonomy, paleoecology, and biostratigraphy']. Göttingen: Cuvillier Verlag, 299 pp. [In German.]

► Publication of the author's doctoral dissertation (Martin-Luther-Universität Halle-Wittenberg, 2004). Under *Batrachichnus* Woodworth, 1900, includes remark on *B. delicatulus* (Lull) from the Hermit Shale of Grand Canyon (p. 68). Under *Amphisauropus kablikae* (Geinitz and Deichmüller, 1882, n. comb., includes remark on *Gilmoreichnus* (*Hylopus*) *hermitanus* (Gilmore) from the Hermit Shale of Grand Canyon (pp. 84, 86). Under *Varanopus* Moodie, 1929, includes remarks on *Gilmoreichnus =Hylopus hermitanus* (Gilmore) from the Hermit Shale of Grand Canyon (pp. 110, 112). Under *Dromopus* Marsh, 1894, includes remark on ichnofauna of the Coconino Sandstone of Grand Canyon (p. 118). Under "Ichnia tetrapodorum indet." includes remarks on Coconino Sandstone ichnofauna, p. 135. Also see note of Hermit Shale in Grand Canyon, p. 151.

Voigt, Sebastian; Lagnaoui, Abdelouahed; Hminna, Abdelkbir; Saber, Hafid; AND Schneider, Jörg W.

2011 21.7981 Revisional notes on the Permian tetrapod ichnofauna from the Tiddas Basin, central Morocco. *Paleogeography, Palaeoclimatology, Palaeoecology*, 302: 474-483.

► See p. 481, correlation with Grand Canyon late Early Permian strata.

Voigt, Sebastian; Small, Bryan J.; AND Sanders, Frank

2005 21.6909 A diverse terrestrial ichnofauna from the Maroon Formation (Pennslvanian-Permian), Colorado: Biostratigraphic and paleoecological significance. *In:* Lucas, Spencer G., and Zeigler, Kate E. (eds.), The nonmarine Permian. *New Mexico Museum of Natural History and Science, Bulletin 30*, pp. 342-351.

► A discussion of specimens of *Varanopus* sp. includes comparison to *Hyloidichnus* Gilmore from Grand Canyon, and the note, "The holotype of *Gilmoreichnus =Hylopus hermitanus* Gilmore, 1927, also from the Hermit Shale from the Grand Canyon, is probably a *Varanopus* trackway (cf. Voigt, 2004 [ITEM NO. 21.6910])."

W

Walcott, Charles D.

1898 21.3327 Fossil medusæ. *U.S. Geological Survey, Monograph 30*, 201 pp.

► See p. 63, in discussion of occurrences of an "*Eophyton*-like trail", notes a specimen (Pl. 38) from the "Middle Cambrian (Tonto) sandstone". Illustrated in Pl. 38 (legend, p. 180), "View of slab of Tonto (Middle Cambrian) sandstone from the Grand Canyon of the Colorado"; specimen in U.S. National Museum. [*NOTE*: *Eophyton* is now considered to be an inorganically produced feature; a pseudofossil.]

1926 21.5388 Report of the Secretary of the Smithsonian Institution; for the year ending June 30, 1926. Washington, D.C.: U.S. Government Printing Office. (Smithsonian Institution, Publication 2877.)

► See pp. 9-10, "Collecting Fossil Footprints in Arizona", regarding the work in Grand Canyon undertaken by C. W. Gilmore.

Wetmore, Alexander

1925 21.5873 Appendix 1. Report on the United States National Museum. *In:* Walcott, Charles D., *Report of the Secretary of the Smithsonian Institution : for the year ending June 30, 1925.* Washington, D.C.: U.S. Government Printing Office, pp. 28-47.

► See p. 42, regarding the ichnological work of C. W. Gilmore in Grand Canyon.

1926 21.5389 Appendix 1. Report on the United States National Museum. *In:* Walcott, Charles D., *Report of the Secretary of the Smithsonian Institution : for the year ending June 30, 1926.* Washington, D.C.: U.S. Government Printing Office, pp. 34-49.

► See pp. 39, 45, regarding the ichnological work of C. W. Gilmore in Grand Canyon.

Whidden, Katherine J., AND Bottjer, David J.

1989 21.3455 Petrographic analysis of preferentially silicified trace fossils in the Permian Kaibab Formation, southwestern Utah [ABSTRACT]. *Geological Society of America, Abstracts with Programs*, 21(5): 158.

1989 21.3456 A model for early diagenetic silicification of trace and body fossils [ABSTRACT]. *Geological Society of America, Abstracts with Programs*, 21(6): A19.

Y

Yang, Shipu

1985 21.3534 Advances in palaeoichnological research in China. *Geological Review* (Beijing), 31(3): 197-203, 2 plates. [In Chinese, with bilingual title and abstract.]

► Includes notes of Grand Canyon.

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6. PALEOZOIC PALEOECOLOGY AND SURVEYS OF PALEOENVIRONMENTS

There is necessarily some overlap between publications specifically addressing paleoecology or paleoenvironments and publications that are principally taxonomically focused, in that the latter may include substantive remarks concerning the contribution of biostratigraphic analyses to the understanding of past environments. The publications cited here are considered to belong to the former category. There are more citations that might have been added, particularly those that are broad stratigraphic, sedimentological, and paleogeological studies. Many of them should also contain references to fossils from portions or all of the Grand Canyon stratigraphic column, but only a careful rereading of all candidate titles would ascertain this. In any case, the publications listed here are those that obviously belong to this section—and for a complete set of references to Grand Canyon geology refer to Part 21 in the far more comprehensive Grand Canyon bibliography, THE GRAND CANON (as noted in the Introduction herein).

See "Quaternary Paleontology" in this bibliography for paleoecological studies based on cave, midden, and similar deposits.

See pp. 9-10 for Paleozoic stratigraphic nomenclature.

B

Baldwin, Christopher T.; Strother, P. K.; Beck, J. H.; AND Rose, Eben

2004 21.4049 Palaeoecology of the Bright Angel Shale in the eastern Grand Canyon, Arizona, USA, incorporating sedimentological, ichnological and palynological data. *In:* McIlroy, D. (ed.), The application of ichnology to palaeoenvironmental and stratigraphic analysis. *Geological Society, Special Publications* (London), (228): 213-236.

Bartlett, Rickey, AND Elliott, David K.

2011 21.5576 The paleoecology of the Coconino Sandstone depositional environment: The case for available surface water [ABSTRACT]. *Geological Society of America, Abstracts with Programs*, 43(5): 30.

2015 21.6836 Pit-trapping predation strategy: The first record of ant-lion pits in the fossil record [ABSTRACT]. *Geological Society of America, Abstracts with Programs*, 47(7): 346.

► Coconino Sandstone. Northern Arizona; specific locale(s) not indicated.

Bartos, Frances Maribel

1972 21.6018 *Pollen in fecal pellets as an environmental indicator.* Master's thesis, University of Arizona, 94 pp.

► Grand Canyon collections include Stanton's Cave (fossil pellets), Buck Farm Canyon, and rim of Fossil Bay.

Billingsley, George H., AND Beus, Stanley S.

1985 21.286 The Surprise Canyon Formation—an Upper Mississippian and Lower Pennsylvanian(?) rock unit in the Grand Canyon, Arizona. *U.S. Geological Survey, Bulletin 1605-A*, pp. A27-A33.

1999 21.287 (EDS.) Geology of the Surprise Canyon Formation of the Grand Canyon, Arizona. *Museum of Northern Arizona, Bulletin 61*, 254 pp., Plates A1-A9 (Plate A1 is map in pocket). [Also an "Errata sheet" distributed by Billingsley in July 1999, [5] pp.]

C

Case, E. C. [Case, Ermine Cowles]

1919 21.524 The environment of vertebrate life in the late Paleozoic in North America; a paleogeographic study. *Carnegie Institution of Washington, Publication 283*, 273 pp.

► See pp. 146-153.

Case, Zachery T., AND Nielson, R. LaRell

2020 21.8051 Stratigraphic, depositional environmental and paleontologic analysis of the Harrisburg Member of the Kaibab Formation in north central Arizona [ABSTRACT]. *Geological Society of America, Abstracts with Programs*, 52(1): doi:10.1130/abs/2020SC-343754. [*NOTE*: The 2020 GSA section meetings, scheduled for the earlier part of the year, all were cancelled due to the COVID-19 pandemic, although the abstracts volumes were published.]

Clevenger, Joe, AND Dehler, Carol

2023 21.8507 Newly identified microbialite reefs of the Grand Canyon Tonto Group [ABSTRACT]. *Geological Society of America, Abstracts with Programs*, 55(6): abstract 112-13 (https://doi.org/10.1130/abs/2023AM-392192).

► Microbial patch reefs in the so-called "rusty-brown dolostones" of intermittent exposure throughout the Colorado River corridor.

Copeland, Peter; Watson, E. Bruce; Thomas, J. B.; AND Cox, Katrina

2008 21.4299 Fossils as alpha thermochronometers [ABSTRACT]. *Geological Society of America, Abstracts with Programs*, 40(6): abstract no. 222-13.

D

DeCourten, Frank L.

1980 21.839 The relationship between lithofacies and ichnofauna in shallow marine deposits of the Kaibab Formation, northern Arizona [ABSTRACT]. *Geological Society of America, Abstracts with Programs*, 12(7): 410.

DiMichele, William A., AND Aronson, Richard B.

1992 21.3724 The Pennsylvanian-Permian vegetational transition: A terrestrial analogue to the onshore-offshore hypothesis. *Evolution*, 46(3): 807-824.

► Includes Hermit Shale.

DiMichele, William A.; Chaney, Dan S.; Nelson, W. John; Lucas, Spencer G.; Looy, Cindy V.; Quick, Karen; AND Wang, Jun

2006 21.7092 A low diversity, seasonal tropical landscape dominated by conifers and peltasperms: Early Permian Abo Formation, New Mexico. *Review of Palaeobotany and Palynology*, 145: 249-273.

► Includes comparative *Supaia* material from the Hermit Shale of Grand Canyon (reproduced from White, 1929), pp. 259, 262, and see 266, 271.

F

Fisher, W. L.

1964 21.1067 Lithologic and faunal zonation of massive limestones, Kaibab Formation, northwestern Arizona. *Plateau*, 36: 110-114.

Foster, John R.

2014 21.7937 *Cambrian ocean world : ancient sea life of North America.* Bloomington and Indianapolis, Indiana: Indiana University Press, 416 pp., 28 plates in color.

► Grand Canyon, see particularly pp. 43-70, 89-91, 183-185; Plates 1-3 (following p. 224); also elsewhere, *passim*.

Foster, John R.; Sundberg, Fred A.; Karlstrom, Karl E.; Schmitz, Mark D.; Mohr, Michael T.; AND Hagadorn, James W.

2019 21.7929 Long-distance lateral variability in biotas and lithologies of the Cambrian Bright Angel Formation (Tonto Group), Grand Canyon, USA [ABSTRACT]. *Geological Society of America, Abstracts with Programs*, 51(5): Paper No. 160-2 (https://gsa.confex.com/gsa/2019AM/meetingapp.cgi/Paper/336319).

H

Haley, B. J.

2001 21.6587 Using $\delta^{13}C$ to reconstruct paleocological [*sic*] environments and paleoclimatic conditions of the Middle Cambrian Bright Angel Shale in the eastern Grand Canyon of northern Arizona [ABSTRACT]. *American Geophysical Union, 2001 Spring Meeting*, Abstract B32A-04.

M

Martin, Daryl Lynn

1985 21.2052 *Depositional systems and ichnology of the Bright Angel Shale (Cambrian), eastern Grand Canyon, Arizona.* Master's thesis, Northern Arizona University, 365 pp.

Martin, Daryl L., AND Elliott, David K.

1984 21.2053 A regressive sequence and associated ichnofaunal assemblage, Bright Angel Shale (Cambrian), Grand Canyon, Arizona [ABSTRACT]. *Arizona-Nevada Academy of Science, Journal*, 19 (1984 Proceedings Supplement): 55-56.

McIntosh, Jennifer; Drake, Henrik; Osburn, Magdalena; Reiners, Peter; Fischer, Mark; Austin, Sarah; Martini, Anna; Kim, Ji-Hyun; Stevenson, Bradley; Roberts, Nick M. W.; Hiett, Coleman; Tikoff, Basil; AND Ferguson, Grant

2024 21.8578 Ancient to modern geologic and hydrologic forcings drive deep biosphere across Colorado Plateau [ABSTRACT]. *Geological Society of America, Abstracts with Programs*, 56(5), abstract 56-11 (https://doi.org/10.1130/abs/2024AM-403291).

► Regarding "deep subsurface (>500 m) microbe, rock, and fluid systems". Includes note of the effect of "[r]apid denudation (<3-4 Ma), related to rapid incision of the Colorado River, decreased in-situ temperatures and dramatically increased hydraulic gradients, activating deep meteoric circulation, flushing of saline fluids, and possibly transport of microorganisms."

McKee, Edwin D.

1933 21.2177 The Coconino sandstone—its history and origin. *In:* Papers concerning the palaeontology of California, Arizona, and Idaho. *Carnegie Institution of Washington, Publication 440*, pp. 77-115.

1934 21.2182 A probable influence on life in the Kaibab sea. *Grand Canyon Nature Notes*, 8(11) (February): 239-243.

1938 21.2190 The environment and history of the Toroweap and Kaibab formations of northern Arizona and southern Utah. *Carnegie Institution of Washington, Publication 492*, 268 pp.

1945 21.2204 Stratigraphy and ecology of the Grand Canyon Cambrian. *In:* McKee, E. D., and Resser, C. E., Cambrian history of the Grand Canyon region. *Carnegie Institution of Washington, Publication 563*, Part 1, pp. 3-168.

1960 21.2224 Spatial relations of fossils and bedded cherts in the Redwall Limestone, Arizona. *U.S. Geological Survey, Professional Paper 400-B*, pp. B461-B463.

1994 21.2273 The probable influence of life in the Kaibab sea. *In:* Lamb, Susan (ed.), *The best of Grand Canyon Nature Notes.* Grand Canyon, Arizona: Grand Canyon Natural History Association, pp. 27-29.

► Reprinted from *Grand Canyon Nature Notes*, February, 1934.

Mussini, Giovanni; Hagadorn, James W.; Miller, Anne E.; Karlstrom, Karl E.; Evans, Rhydian; Dehler, Carol E.; Bastien, Salvador; AND Butterfield, Nicholas J.

2025 21.8671 Evolutionary escalation in an exceptionally preserved Cambrian biota from the Grand Canyon (Arizona, USA). *Science Advances* (American Association for the Advancement of Science), 11: eadv6383 (July 23), 21 pp. + Supplementary Materials online (www.science.org/doi/10.1126/sciadv6383#supplementary-materials, 32 pp. text, Excel file, and .mp4 movie).

► Bright Angel Formation. Includes small carbonaceous fossils, priapulids and crustaceans. Priapulids include *Kraytdraco spectatus*, new genus, new species (Superphylum Ecdysozoa Aguinaldo et al. 1997, Scalidophora Total group of Phylum Priapulida Delage & Hérouard, 1897, Incertae familiae), Holotype Fig. 2A; slide GM23-140L-10, England Finder coordinates: p37; designated paratypes: Figs. 2-4, figs. S4-S8. England-finder coordinates provided in image captions; distribution middle shale members of the middle Cambrian Bright Angel Formation, Grand Canyon National Park; systematic paleontology in Supplementary Text pp. [2]-[3].

N

Nicol, D.

1944 21.2466 Paleoecology of three faunules in the Permian Kaibab formation at Flagstaff, Arizona. *Journal of Paleontology*, 18: 553-557.

1945 21.2467 Paleoecology of three faunules in the Permian Kaibab formation at Flagstaff, Arizona. *Plateau*, 17: 46-53.

1965 21.2468 An ecological analysis of four Permian faunas. *The Nautilus* (Philadelphia), 78: 86-95.

P

Pierce, Walter H.

1979 21.2608 Biostratigraphy of the Upper Carboniferous (Pennsylvanian) in the Virgin Mountains of southern Nevada and northwestern Arizona. *In:* Beus, Stanley S., and Rawson, Richard R. (eds.), Carboniferous stratigraphy in the Grand Canyon country, northern Arizona and southern Nevada. 9th International Congress of Carboniferous Stratigraphy and Geology, Field Trip no. 13. *American Geological Institute, AGI Selected Guidebook Series, no. 2*, pp. 127-131.

R

Rowland, Stephen M.; Caputo, Mario V.; AND Chameroy, Eric

2024 21.8579 Silicified bones, invertebrate burrows, and eolian adhesion structures in the Pennsylvanian Wescogame Formation, Supai Group, Grand Canyon, Arizona [ABSTRACT]. *Geological Society of America, Abstracts with Programs*, 56(5), abstract 40-5 (https://doi.org/10.1130/abs/2024AM-404589).

S

Seilacher, Adolf

1956 21.2909 Der Beginn des Kambriums als biologische Wende [*transl.* 'The beginning of the Cambrian as a biological turning point']. *Neues Jahrbuch für Geologie und Palaeontologie, Abhandlungen*, 103: 155-180. [In German.]

1964 21.2910 Biogenic sedimentary structures. *In:* Imbrie, John, and Newell, Norman (eds.), *Approaches to paleoecology.* New York: John Wiley and Sons, Inc., pp. 296-316.

Strother, Paul K.; Baldwin, Christopher T.; Beck, John H.; AND Rose, Eben

2004 21.4433 An integrated sedimentological, ichnological and palynological study of the paleoecology of the Middle Cambrian, Bright Angel Shale, Grand Canyon, Arizona. *In:* Abstracts of the Proceedings of the Thirty-Sixth Annual Meeting of the American Association of Stratigraphic Palynologists; St. Catharines, Ontario—October 5-8, 2003. *Palynology*, 28: 265.

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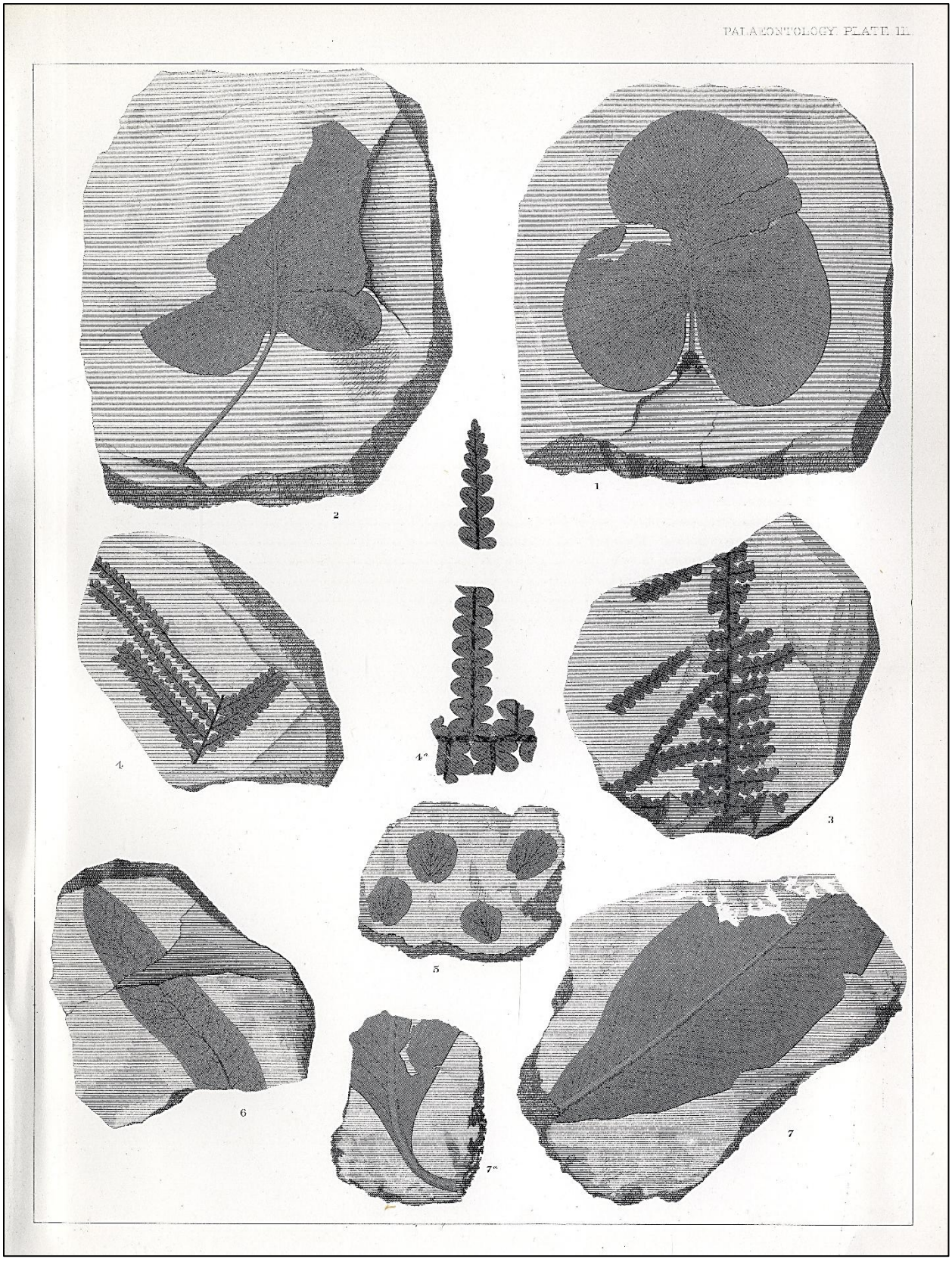
7. MESOZOIC PALEONTOLOGY (Grand Canyon Vicinity)

HISTORICAL NOTE

The plate, with explanation, on the following pages reproduces Paleontology Plate III [spelled "Palaeontology" only on this plate] from J. S. Newberry's "Geological Report" *in* J. C. Ives, *Report upon the Colorado River of the West, explored in 1857 and 1858* (U.S. 36th Congress, 1st Session, House Executive Document 90 and concurrently as Senate Executive Document [no number]), Part 3 (154 pp., 3 plates, a separately paginated part in the volume). It is inserted here for its historical importance. (For notes regarding the Ives Expedition, see the historical note under "Invertebrate Paleontology (Paleozoic)" in this bibliography, where the accompanying Paleontology Plates I and II are illustrated.)

Paleontology Plate III in Newberry's report depicts Mesozoic fossil plants collected from the general vicinity of what he termed the "Moqui country"; that is, the vicinity of the Hopi mesas and along the Little Colorado River valley well east of the Grand Canyon. Collections were made in May 1858 during the expedition's eastward trek toward Fort Defiance, after having visited the Grand Canyon at Peach Springs Wash/Diamond Creek and at Cataract Creek farther west.

EXPLANATION OF PLATE III.


PALÆONTOLOGY. PLATE III.
1
2
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4a
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7a

Bibliography

Since the rim rock of the Grand Canyon is Permian in age, occurrences of Mesozoic fossils in the vicinity marginally relate to the Grand Canyon, although some Triassic-age fossils can be found even within the boundary of Grand Canyon National Park, at Cedar Mountain, an erosional outlier on the east (see Marsh *et al.*, 2020). To the north of the canyon, fossiliferous Mesozoic strata are found in other federally administrated jurisdictions in the Vermilion Cliffs area and other Arizona Strip locales.

See p. 9 for stratigraphic nomenclature.

B

Breithaupt, Brent H., AND Matthews, Neffra A.

2010 21.7696 An Early Jurassic desert ichnofauna: Paleontological resources in the Vermilion Cliffs National Monument and Paria Canyon-Vermilion Cliffs Wilderness [ABSTRACT]. *In: Program and abstracts : 70th Anniversary Meeting, Society of Vertebrate Paleontology : David L. Lawrence Convention Center, East Lobby and Westin Convention Center Pittsburgh, Pittsburgh, Pennsylvania USA, October 10-13, 2010*, p. 64A.

► Navajo Sandstone.

2011 21.6026 Paleontological resources in the Vermilion Cliffs National Monument and Paria Canyon-Vermilion Cliffs Wilderness: The use of photogrammetric ichnology in the 21st century [ABSTRACT]. *In:* Olstad, Tyra, and Aase, Arivd K. (eds.), Proceedings of the Ninth Conference on Fossil Resources. *Brigham Young University, Geology Studies*, 49(A): 5.

► Jurassic Navajo Sandstone.

L

Lucas, Spencer G.; Heckert, Andrew B.; AND Tanner, Lawrence H.

2005 21.6373 Arizona's Jurassic fossil vertebrates and the age of the Glen Canyon Group. *In:* Heckert, Andrew B., and Lucas, Spencer G. (eds.), Vertebrate paleontology in Arizona. *New Mexico Museum of Natural History and Science, Bulletin 29*, pp. 95-104.

► Includes outcrop areas on the Arizona Strip.

Lucas, Spencer G.; Tanner, Lawrence H.; AND Heckert, Andrew B.

2005 21.6892 Tetrapod biostratigraphy and biochronology across the Triassic-Jurassic boundary in northeastern Arizona. *In:* Heckert, Andrew B., and Lucas, Spencer G. (eds.),

Vertebrate paleontology in Arizona. *New Mexico Museum of Natural History and Science, Bulletin 29*, pp. 83-93.

► Includes outcrop areas on the Arizona Strip.

M

Marsh, Adam D.; Parker, William G.; AND Miller, Anne E.

2020 21.8037 Chapter 10. Mesozoic paleontology of Grand Canyon National Park: Trace fossils, stratigraphy, and regional correlations. *In:* Santucci, Vincent L., and Tweet, Justin S. (eds.), *Grand Canyon National Park : centennial paleontological resource inventory (non-sensitive version).* Fort Collins, Colorado: U.S. National Park Service, Natural Resource Stewardship and Science, pp. 381-401. (Volume: *Natural Resource Report NPS/GRCA/NRR—2020/2103*.)

► Focus is on Triassic strata at Cedar Mountain; Moenkopi Formation and Chinle Formation.

2021 21.8262 Mesozoic paleontology of Grand Canyon National Park—trace fossils, stratigraphy, and regional correlations. *In:* Santucci, Vincent L., and Tweet, Justin S. (eds.), Grand Canyon National Park centennial paleontological resource inventory; a century of fossil discovery and research. *Utah Geological Association, Special Publication 1*, pp. 205-219.

► Reset reprinting of Marsh *et al.* (2020, ITEM NO. 21.8037). Focus is on Triassic strata at Cedar Mountain; Moenkopi Formation and Chinle Formation.

R

Ransom, Jay Ellis

1949 21.6032 Uranium strike . . . in petrified wood. *Desert Magazine*, 12(10) (August): 10-14. [Ellipsis is part of title.]

► Vermilion Cliffs carnotite. Includes postscript, p. 14, "Rich New Find at Baker Uranium Mine" of Maggie and Riley Baker.

S

Seiler, Winston Marmion

2008 21.6078 *Jurassic Navajo Sandstone of Coyote Buttes, Utah/Arizona: Coloration and diagenetic history, preservation of a dinosaur trample surface, and terrestrial analogs to Mars.* Master's thesis, University of Utah, 238 pp.

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8. CENOZOIC PALEONTOLOGY
(Grand Canyon Vicinity: Excluding Quaternary [1])

In addition to occasional non-Quaternary Cenozoic fossils in strata of the immediate Grand Canyon area, this section includes the isolated Anita local fauna (Pliocene) that had been found in fissure deposits at the since-abandoned mining community of Anita, south of Grand Canyon.

The **LATE MIOCENE HUALAPAI LIMESTONE MEMBER OF THE MUDDY CREEK FORMATION** lies athwart the course of the Colorado River at the Grand Wash Cliffs, on the western end of the Grand western end of the Grand Canyon. This unit is a key element in establishing the age of the Colorado River's presence here, providing a minimum age for this part of the canyon. However, its age is established by radiometric dating of intercalated basalts since the sedimentary parts of the formation contain only undiagnostic ichnofossils, plant molds, ostracodes, diatoms, and algal structures. The unit's paleoecology also figures in the study of late Tertiary tectonic history of the area and marine influences in the integration of the Colorado River into the proto-Gulf of California, wherein some fossiliferous materials indicate near-marine environments. This paleoecological research is a subject most rigorously studied in the past couple of decades in the Lower Colorado River corridor in and is ongoing. Numerous references will be found in Part 11/Section 2 of the more comprehensive bibliography for the Grand Canyon and Lower Colorado River regions, THE GRAND CANON (Raven's Perch Media, 5th ed., 2025, https://ravensperch.org). Citations for Hualapai Limestone research are largely omitted from the present bibliography insofar as discussions of fossils related principally to paleoecology.

UPPER PALEOCENE–EOCENE fossiliferous units in the greater Grand Canyon region have aided in dating the so-called "Rim Gravels" that have direct bearing on analyses of regional drainage patterns during the early evolution of the Colorado River. Specific paleontological studies do not have direct bearing on studies of Grand Canyon paleontology, thus their citations are omitted in this bibliography. However, see in Part 21 of THE GRAND CANON for numerous publications that pertain to the "Rim Gravels" and related studies.

[1] Late Pleistocene–Holocene cave and midden fossils and subfossil occurrences are noted in this bibliography under "Quaternary Paleontology."

B

Berta, Annalisa

1981 21.216 The Plio-Pleistocene hyaena *Chasmaporthetes ossifragus* from Florida. *Journal of Vertebrate Paleontology*, 1: 341-356.

► Includes the Anita local fauna (Pliocene of Arizona).

Bradbury, J. Platt, AND Blair, Will N.

1979 21.371 Paleoecology of the upper Miocene Hualapai Limestone Member of the Muddy Creek Formation, northwestern Arizona. *In:* Newman, Gary W., and Goode, Harry D. (eds.), *Basin and Range Symposium and Great Basin Field Conference.* Denver: Rocky Mountain Association of Geologists, pp. 293-303.

E

Elston, Donald P.; Young, Richard A.; McKee, Edwin H.; AND Dennis, Michael L.

1989 21.987 Paleontology, clast ages, and paleomagnetism of Upper Paleocene and Eocene gravel and limestone deposits, Colorado Plateau and Transition Zone, northern and central Arizona. *In:* Elston, Donald P., Billingsley, George H., and Young, Richard A. (eds.), Geology of Grand Canyon, northern Arizona (with Colorado River guides). *28th International Geological Congress, Field Trip Guidebook T115/315.* Washington, D.C.: American Geophysical Union, pp. 155-165.

F

Fleming, R. Farley

1993 21.3925 Pliocene climate of the Colorado Plateau and the age of the Grand Canyon: Evidence from Anza-Borrego, California. *In:* Wrenn, John H., Suc, Jean-Pierre, and Leroy, Suzanne A. G. (eds.), *The Pliocene: time of change : including papers from the symposium entitled "The Palynology, Climate, and Sequence Stratigraphy of the Pliocene" (held during the 26th Annual Meeting of the American Association of Stratigraphic Palynologists, Inc., Baton Rouge, Louisiana, 1993).* Dallas, Texas: American Association of Stratigraphic Palynologists Foundation, pp. 217-226.

1994 21.1077 Cretaceous pollen in Pliocene rocks: Implications for Pliocene climate in the southwestern United States. *Geology*, 22(9): 787-790.

Fleming, R. Farley, AND Remeika, Paul

1997 21.1078 Pliocene climate of the Colorado Plateau and age of the Grand Canyon: Evidence from Anza-Borrego Desert State Park, California [ABSTRACT]. *In:* Johnston, Margaret, and McChristal, James (compilers, eds.), Partners in Paleontology; Proceedings of the Fourth Conference on Fossil Resources, October 31-November 4, 1994, Colorado

Springs, Colorado. *U.S. National Park Service, Natural Resources Report NPS/NRFLFO/NRR-97/01*, p. 73.

G

Galiano, Henry, AND Frailey, David

1977 21.1133 *Chasmaporthetes kani*, new species from China, with remarks on phylogenetic relationships within the Hyaenidae (Mammalia, Carnivora). *American Museum Novitates*, (2632), 16 pp.

► Includes references to *Chasmaporthetes* in the Anita local fauna (Pliocene of Arizona).

H

Hartman, Joseph H.; AND Young, Richard A.

2010 21.5349 Paleontological constraints on early Eocene landscapes and paleoenvironment of northwestern Arizona [ABSTRACT]. *Geological Society of America, Abstracts with Programs*, 42(5): 76.

Hartman, Joseph H.; Gunnell, Gregg F.; AND Young, Richard A.

2013 21.6199 Determining the geologic age of the Duff Brown Tank continental mollusk local fauna (Coconino County, Arizona): An improving science (or, why does it have to be so hard?) [ABSTRACT]. *Geological Society of America, Abstracts with Programs*, 45(7): 401.

Hay, Oliver P.

1921 21.1372 Descriptions of species of Pleistocene Vertebrata, types or specimens of most of which are preserved in the United States National Museum. *U.S. National Museum, Proceedings*, 59: 599-642.

► See pp. 617-638.

1927 21.1373 The Pleistocene of the western region of North America and its vertebrated animals. *Carnegie Institution of Washington, Publication 322B*, 346 pp.

► See pp. 45, 56, 80, 129-137, 327, 330-331, 336-337.

Huntoon, Peter W., AND Billingsley, George H.

1978 21.4472 *Stratigraphy of the post-Redwall, pre-Supai erosion channels, and pollen dating of Cenozoic travertine and fine-grained clastic deposits, Grand Canyon, Arizona : completion report.* [Laramie, Wyoming: University of Wyoming?], *for* Grand Canyon Natural History Association, unpaginated.

K

Kurtén, Björn, AND Werdelin, Lars

1988 21.1792 A review of the genus *Chasmaporthetes* Hay, 1921 (Carnivora, Hyaenidae). *Journal of Vertebrate Paleontology*, 8(1): 46-66.

► Includes occurrence in the Anita local fauna (Pliocene).

L

Lindsay, Everett H., AND Tessman, Norman T.

1974 21.1869 Cenozoic vertebrate localities and faunas in Arizona. *Arizona Academy of Science, Journal*, 9: 3-24.

M

Morgan, Gary S., AND White, Richard S., Jr.

2005 21.8714 Miocene and Pliocene vertebrates from Arizona. *In:* Heckert, A. B., and Lucas, S. G. (eds.), Vertebrate paleontology in Arizona. *New Mexico Museum of Natural History and Science, Bulletin 29*, pp. 115-136.

► See "Anita" (pp. 126-127) regarding the Anita local fauna (Pliocene).

N

Nations, J. Dale, AND Landye, J. Jerry

1974 21.2441 Cenozoic plant and animal fossils of Arizona. *In:* Smiley, Terah L., Nations, J. Dale, Péwé, Troy L., and Schafer, John P. (eds.), *Landscapes of Arizona : the geological story.* Landham, Maryland: University Press of America, pp. 7-35.

O

Osborn, Henry Fairfield

1921 21.5212 *The Age of Mammals in Europe, Asia and North America.* New York: Macmillan Co., 635 pp.

► See p. 451, passing reference to the Anita local fauna (Pliocene), near Grand Canyon.

T

Tedford, Richard H.; Wang, Xiaoming; AND Taylor, Beryl E.

2009 21.6377 Phylogenetic systematics of the North American fossil Caninae (Carnivora: Canidae). *American Museum of Natural History, Bulletin 325*, 218 pp.

► Includes material from the Anita local fauna (Pliocene).

9. QUATERNARY PALEONTOLOGY

This section cites publications based principally on Late Pleistocene and early Holocene material from cave and midden deposits throughout the Grand Canyon region, adding occasional miscellaneous reports pertaining to sub-fossil occurrences. All studies relating to the Quaternary are consolidated here—taxonomy of vertebrate, invertebrate, plant, and trace fossils; and analyses of paleoenvironments and paleoecology. (Of special note are recent finds in Grand Canyon caves of exceptionally well-preserved *in situ* remains of bats and other animals, some aged beyond the capability of carbon dating [see for example Chambers *et al.*, 2024, and Eginoire, 2024]. See also the frontispiece to the present bibliography, which illustrates a mummified sub-fossil big brown bat.) [1]

Unsigned

1936 21.37 Find well preserved sloths in cave resembling stable. *Science News Letter*, (September 5): 157.

► Rampart Cave.

1936 21.6639 Ground sloth cave. *In:* The Supplement [SECTION]. *Southwestern Monuments Monthly Report* (U.S. National Park Service), (December): 437.

► Rampart Cave. One paragraph quoted with credit, "Extracted from Museum News, December 1, 1936."; with the interesting note added: "Plans for showing the cave to the public have not been completed but it is hoped that an exhibit in situ can be made. Tentative plans include running a trench through the cave and lining the walls of the trench with glass so that bones or any possible human artifacts may be seen."

[1] Raven's Perch Media also has produced a separate publication that is a bibliographical and historical record of *published materials* that pertain specifically or partly to named caves of the Grand Canyon and vicinity—addressing all topics, not only paleontology. Locations are not given for the caves due to concerns for resource management and cultural sensitivity, although a few of them are very well known even if they are not accessible by the general public. Consult: Earle E. Spamer, *Grand Canyon Underground: The Bibliographical Record of Caves in Grand Canyon National Park, Grand Canyon–Parashant National Monument, and Vicinity (Arizona)* (2nd ed., January 2025), 92 pp. PDF (2.6 MB): https://ravensperch.org/wp-content/uploads/2025/01/Grand-Canyon-Underground_2nd-ed.pdf); flip book is available at https://online.fliphtml5.com/ryvqb/qkcf/; Internet Archive copy is available at https://archive.org/details/grand-canyon-underground-2nd-ed. (All last accessed 31 March 2026.)

1937 21.5138 Carnegie expedition tracks prehistoric giant sloth to its lair. *Life*, 3(12) (September 20): 48-50.

► Rampart Cave. See also Charles Amsden, "Sloth Hunting", letter to editor, 3(15) (October 11): 128 (ITEM NO. 21.5139).

1977 21.6237 Fossil fire. *National Park Service Newsletter*, 12(4) (April): 3.

► Rampart Cave fire.

1995 21.53 Bag of tricks. *Grand Canyon Field Notes* (Center for Resource Interpretation, Grand Canyon National Park), (7) (December 11): [2].

► Packrat middens.

1999 21.6072 Late Pleistocene vertebrate communities of the lower Grand Canyon: Rampart and Muav Caves. *Park Paleontology* (U.S. National Park Service), 5(4) (Fall): 2.

► Item signed "staff writer". Note on research conducted by Mary Carpenter and Jim Mead.

2002 21.4649 Did you know? *Park Paleontology* (U.S. National Park Service), 6(2) (Summer): 8.

► Fossil dung of *Nothrotheriops shastensis*, from Grand Canyon.

2009 21.4494 50 years ago from the Mohave County Miner. *Mohave Memories* (Mohave Museum of History and Arts, Kingman, Arizona), 1 (February): 3.

► Passing note of Shasta ground sloth in Rampart Cave.

A

Agenbroad, Larry D.

1997 21.7758 Quaternary resources: Interdisciplinary research in the Grand Staircase-Escalante National Monument. *In:* Hill, Linda M. (ed.) and Koselak, Janine J. (producer), *Learning from the Land : Grand Staircase-Escalante National Monument Science Symposium proceedings, November 4-5, 1997, Southern Utah University.* [No place]: U.S. Bureau of Land Management, Grand Staircase-Escalante National Monument, pp. 423-434. (Volume: BLM/UT/GI-98/006+1120.)

► Includes data from Grand Canyon region.

Agenbroad, Larry D., AND Mead, Jim I.

1987 21.59 Late Pleistocene alluvium and megafauna dung deposits of the central Colorado Plateau. *In:* Davis, George H., and VandenDolder, Evelyn M. (eds.), Geologic diversity of Arizona and its margins: Excursions to choice areas. Field-trip guidebook, Geological Society of America 100th Annual Meeting, Phoenix, Arizona, October 26-29, 1987. *Arizona Bureau of Geology and Mineral Technology, Geological Survey Branch, Special Paper 5*, pp. 68-84.

1995 21.5965 Documented Quaternary climate change on the Colorado Plateau: 40,000 yr B.P.-present. *In:* Waugh, W. J. (ed.), *Proceedings of the workshop : Climate Change in the Four Corners and Adjacent Regions: Implications for Environmental Restoration and Land-Use Planning, September 12-14, 1994, Campbell College Center, Mesa State College, Grand Junction, Colorado.* Grand Junction, Colorado: U.S. Department of Energy, Grand Junction Projects Office, pp. 3-8.

Agenbroad, Larry D.; Mead, Jim I.; AND Brunelle, Andrea J.

2004 21.4611 Quaternary paleontology of megamammals from national park units of the Colorado Plateau and Channel Islands of California [ABSTRACT]. *Geological Society of America, Abstracts with Programs*, 36(5): 53.

Amsden, Charles

1937 21.5139 Sloth hunting. *In:* Pictures to the Editors [SECTION]. *Life*, 3(15) (October 11): 128.

► Letter and photo in response to *Life* article, "Carnegie Expedition Tracks Prehistoric Giant Sloth to Its Lair", 3(12) (September 20): 48-50, which related to Rampart Cave (see Anonymous, 1937, ITEM NO. 21.5138). Amsden relates to work in Gypsum Cave, Nevada.

Anderson, R. Scott

1993 21.88 A 35,000 year vegetation and climate history from Potato Lake, Mogollon Rim, Arizona. *Quaternary Research*, 40: 351-359.

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Chure, Dan

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2011 21.6540 Late Quaternary precipitation seasonality of SW North America reconstructed from stable isotopes in fossil packrat pellets [ABSTRACT]. *American Geophysical Union, 2011 Fall Meeting, San Francisco, California, 5-9 December*, Abstract PP21A-1788.

► Includes Grand Canyon.

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Csotony, Julius

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1984 21.799 The Pleistocene dung blanket of Bechan Cave, Utah. *In:* Genoways, Hugh H., and Dawson, Mary R. (eds.), Contributions in Quaternary vertebrate paleontology: A volume in memorial to John E. Guilday. *Carnegie Museum of Natural History, Special Publication, 8*, pp. 267-282.

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2019 21.7807 Ancient mitogenomes reveal the evolutionary history and biogeography of sloths. *Current Biology*, 29, doi:10.1016/j.cub.2019.05.043, 12 pp. + Supplementary Information online, 14 pp.

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► Includes (p. 2357) Figure 2, "Packrat (*Neotoma*) midden sample from a rock shelter at Emery Falls, Grand Canyon, Arizona" (in-situ photo by Thomas Van Devender). Also includes discussions pertaining to middens of the Grand Canyon and lower Colorado River regions.

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► Includes (p. 675) Figure 2, "Packrat (*Neotoma*) midden sample from a rock shelter at Emery Falls, Grand Canyon, Arizona" (in-situ photo by Thomas Van Devender). Also includes discussions pertaining to middens of the Grand Canyon and lower Colorado River regions.

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1978 21.1010 Archaeological and paleobiological studies at Stanton's Cave, Grand Canyon National Park, Arizona—a report of progress. *National Geographic Society, Research Reports, 1969 Projects*, pp. 141-162.

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2022 21.8451 The brain of the North American cheetah-like cat *Miracinonyx trumani*. *iScience*, 25: 105671 (https://doi.org/10.1016/j.isci.2022.105671), 21 pp.

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Force, Chris P.

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Frost, Kayla, AND Foster, Jon

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G

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► See p. 23, Rampart Cave.

Grater, Russell K.

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► Rampart Cave.

Grayson, Donald K.

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1983 21.1292 Comment [on "Use of packrat middens to determine rates of cliff retreat in the eastern Grand Canyon, Arizona" by Kenneth L. Cole and Larry Mayer (1982, ITEM NO. 21.619).] *Geology*, 11: 315. [With Reply by Cole and Mayer, 316.]

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Hansen, Richard M.

1978 21.1329 Shasta ground sloth food habits, Rampart Cave, Arizona. *Paleobiology*, 4: 302-319.

Hansen, Richard M., AND Martin, Paul S.

1973 21.1330 Ungulate diets in the lower Grand Canyon. *Journal of Range Management*, 26: 380-381.

Harington, C. R. [Harington, Charles Richard]

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Harrington, M. R. [Harrington, Mark Raymond]

1936 21.1341 A new ground-sloth den. *Masterkey*, 10: 225-227.

► Rampart Cave.

Harris, Arthur H.

1990 21.6061 Fossil evidence bearing on southwestern mammalian biogeography. *Journal of Mammalogy*, 71(2): 219-229.

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Hay, Oliver P.

1921 21.1372 Descriptions of species of Pleistocene Vertebrata, types or specimens of most of which are preserved in the United States National Museum. *U.S. National Museum, Proceedings*, 59: 599-642.

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1927 21.1373 The Pleistocene of the western region of North America and its vertebrated animals. *Carnegie Institution of Washington, Publication 322B*, 346 pp.

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Heinrich, E. William

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► Begins with note of giant ground sloth, *Glossotherium harlani*, from Grand Canyon Caverns, Arizona [a "tourist cave" along Route 66 east of Peach Springs].

Hodnett, John-Paul M.; Mead, Jim; White, Richard; AND Carpenter, Mary

2010 21.7697 *Miracinonyx trumani* (Carnivora: Felidae) from the Rancholabrean of Grand Canyon, Arizona and its implications for the ecology of the "American cheetah" [ABSTRACT]. *In: Program and abstracts : 70th Anniversary Meeting, Society of Vertebrate Paleontology : David L. Lawrence Convention Center, East Lobby and Westin Convention Center Pittsburgh, Pittsburgh, Pennsylvania USA, October 10-13, 2010*, p. 106A.

► Remains noted from Rampart Cave, Next Door Cave, and Stanton's Cave.

Hodnett, John-Paul M.; White, Richard S.; Carpenter, Mary; Mead, Jim I.; AND Santucci, Vincent L.

2022 21.8450 *Miracinonyx trumani* (Carnivora; Felidae) from the Rancholabrean of the Grand Canyon, Arizona and its implications for the ecology of the "American cheetah". *In:* Morgan, Gary S., Baskin, Jon A., Czaplewski, Nicholas J., Lucas, Spencer G., McDonald, H. Gregory, Mead, Jim I., White, Richard S., Jr., and Lichtig, Asher J. (eds.),

Late Cenozoic vertebrates from the American Southwest: A tribute to Arthur H. Harris. *New Mexico Museum of Natural History and Science, Bulletin 88*, pp. 157-186.

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► See "Fossil Mammals in Arizona", pp. xiv, xvi-xviii.

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Also notes "Supplemental data are available at http://www.current-biology.com/supplemental"; however, the link was no longer valid when attempted 31 March 2009, and material not located on publisher's website. Supplemental material relocated 27 June 2023, associated with online posting of the paper, https://www.cell.com/current-biology/fulltext/S0960-9822(03)00642-0?_returnURL=https%3A%2F%2Flinkinghub.elsevier.com%2Fretrieve%2Fpii%2FS0960982203006420%3Fshowall%3Dtrue (last accessed March 22, 2026). However, the Supplemental material indicated in 2023 to be at https://www.cell.com/cms/10.1016/j.cub.2003.08.039/attachment/859ec2c6-ada0-43e9-a449-e0e88bd7831b/mmc1.pdf was not accessible in either 2023 or through the separate link on the paper's online webpage seen in 2026.

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Hunt, Adrian P., AND Lucas, Spencer G.

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► Summary review. In section, "Bromalites", see remarks on Pleistocene animal coprolites from Grand Canyon (pp. 29, 30), packrat middens and ringtail refuse deposits in Grand Canyon (p. 31).

2018 21.7794 The record of sloth coprolites in North and South America: implications for terminal Pleistocene extinctions. *New Mexico Museum of Natural History and Science, Bulletin 79*, pp. 277-298.

► Includes Rampart and Muav Caves, and names *Castrocopros martini*, new ichnogenus, new ichnospecies, from Rampart Cave.

Hunt, Adrian P.; Lucas, Spencer G.; Santucci, Vincent L.; AND Kenworthy, Jason P.

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Hunt, Adrian P.; Lucas, Spencer G.; AND Spielmann, Justin A.

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► Includes Rampart Cave, Grand Canyon National Park.

Hunt, Adrian P.; Santucci, Vincent L.; Tweet, Justin S.; AND Lucas, Spencer G.

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► Grand Canyon National Park, pp. 347-348, Figures 2H, I (p. 346), and unnumbered figures in volume (pp. 354, 378); Grand Canyon-Parashant National Monument, p. 349; Pipe Spring National Monument, p. 350.

Huntoon, Peter W.

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► *Neotoma*, cf. *N. cinerea*; *N. lepida*. "The packrat middens analyzed for this study were originally collected in 1979 from a cliff at 1770 m of elevation on the south arm of Poston Butte, just east of Chuar Valley in the Grand Canyon, Arizona (36° 10′ 27″ N.; 111° 54′ 5″ W)" (p. 4).

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2003 21.3963 Late Pleistocene faunas from caves in the eastern Grand Canyon, Arizona. *In:* Schubert, Blaine W., Mead, Jim I., and Graham, Russell William (eds.), *Ice age cave faunas of North America.* Bloomington and Indianapolis, Indiana: Indiana University Press, and [Denver]: Denver Museum of Nature and Science, pp. 64-86.

► See also volume dust jacket cover illustration.

Mead, Jim I.; Lawler, Mark C.; Meltzer, David J.; AND Vogel, John C.

1991 21.2326 Stable carbon and nitrogen isotope ratios of Late Pleistocene *Ovis* and *Oreamnos* from the Grand Canyon, Arizona [ABSTRACT]. *Arizona-Nevada Academy of Science, Journal*, 26(Proceedings Supplement): 48.

Mead, Jim I.; Martin, Paul S.; Euler, Robert C.; Long, Austin; Jull, A. J. T.; Toolin, Laurence J.; Donahue, Douglas J.; AND Linick, T. W.

1986 21.2327 Extinction of Harrington's mountain goat. *U.S. National Academy of Sciences, Proceedings*, 83: 836-839.

Mead, Jim I.; O'Rourke, Mary Kay; AND Foppe, Theresea M.

1986 21.8243 Dung and diet of the extinct Harrington's mountain goat (*Oreamnos harringtoni*). *Journal of Mammalogy*, 67(2) (May): 284-293.

► Includes Grand Canyon.

Mead, Jim I.; Swift, Sandra L.; Czaplewski, Nicolas J.; AND Cole, Kenneth L.

2025 21.8713 Middle Holocene flora and fauna from a ringtail (*Bassariscus*, Carnivora) den, western Grand Canyon, Arizona. *Journal of Cave and Karst Studies*, 87(4) (December): 225-238.

► Midden deposits at Weeping Cliffs, Lower Granite Gorge.

Mead, Jim I.; Thompson, Robert S.; AND Long, Austin

1978 21.2328 Arizona radiocarbon dates IX: Carbon isotope dating of packrat middens. *Radiocarbon*, 20: 171-191.

Mead, Jim I.; Tweet, Justin S.; Santucci, Vincent L.; Tobin, Benjamin; Chambers, Carol L.; Thomas, Shawn C.; AND Carpenter, Mary C.

2020 21.8038 Chapter 11. Pleistocene/Holocene cave fossils from Grand Canyon National Park. Ice Age (Pleistocene) flora, fauna, environments, and climate of the Grand Canyon, Arizona. *In:* Santucci, Vincent L., and Tweet, Justin S. (eds.), *Grand Canyon National Park : centennial paleontological resource inventory (non-sensitive version).* Fort Collins, Colorado: U.S. National Park Service, Natural Resource Stewardship and Science, pp. 403-463. (Volume: *Natural Resource Report NPS/GRCA/NRR—2020/2103*.)

2021 21.8262 Pleistocene/Holocene cave fossils from Grand Canyon National Park—Ice Age (Pleistocene) flora, fauna, environments, and climate of the Grand Canyon, Arizona. *In:* Santucci, Vincent L., and Tweet, Justin S. (eds.), Grand Canyon National Park centennial paleontological resource inventory; a century of fossil discovery and research. *Utah Geological Association, Special Publication 1*, pp. 220-240, A1-A27 (pagination is contiguous).

► Reset reprinting of Mead *et al.* (2020, ITEM NO. 21.8038).

Mehringer, Peter J., Jr.

1967 21.2330 The environment of extinction of the late-Pleistocene megafauna in the arid southwestern United States. *In:* Martin, P. S., and Wright, H. E., Jr. (eds.), *Prehistoric extinctions: The search for a cause.* New Haven, Connecticut: Yale University Press, pp. 247-266. (International Association of Quaternary Research, 8th Congress, Proceedings, Volume 6.)

Mikesic, David G., AND Chambers, Carol

2004 21.4615 Return of the bat mummy; a desert cave preserves a 10,000-year-old spotted bat. *Bats*, 22(4) (Winter): cover, inside front cover, 8-11.

► Article includes information on modern bats of Grand Canyon. This cave location not identified, but apparently in Marble-Grand Canyon area.

Miller, Anne E.; Steele, Nicholas; AND Tobin, Benjamin W.

2018 21.8244 Vulnerability and fragility risk indices for non-renewable resources. *Environmental Monitoring and Assessment*, 190: paper 373, 11 pp.

► Focus on cave paleontological resources in Grand Canyon National Park.

Miller, Anne E.; Tobin, Benjamin W.; Schenk, Edward R.; AND Henderek, Robyn L.

2016 21.7044 Paleontological resource significance and vulnerability in the Grand Canyon and environmental impact of the Transcanyon Pipeline replacement [ABSTRACT]. *Geological Society of America, Abstracts with Programs*, 48(7): Paper 96-2, doi:10.1130/abs/2016AM-281669.

Miller, Loye

1960 21.2374 Condor remains from Rampart Cave, Arizona. *The Condor*, 62(1): 70.

► See also "Correction", 62(4): 298.

1960 21.8442 Condors of Lake Mead. *National Parks Magazine*, 34(156) (September): 8-9.

► California condor remains from Rampart Cave, Grand Canyon.

Miller, Richard F., AND Tausch, Robin J.

2001 21.8562 The role of fire in juniper and pinyon woodlands: A descriptive analysis. *In:* Galley, Krista E. M., and Wilson, Tyrone P. (eds.), Proceedings of the Invasive Species Workshop: The Role of Fire in the Control and Spread of Invasive Species. Fire Conference 2000: The First National Congress on Fire Ecology, Prevention, and

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► Also includes discussion of early- to late-Holocene woodlands, including Grand Canyon.

Miller, Robert Rush, AND Smith, Gerald R.

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Minard, Anne

1999 21.2381 Paleontologist Jim Mead. *Flagstaff Live!*, 5(14) (April 8-14): 9.

Mizutani, Hiroshi; McFarlane, Donald A.; AND Kabaya, Yuko

1992 21.7016 Carbon and nitrogen isotopic signatures of bat guanos as record of past environments. *Mass Spectrometry Society of Japan, Journal*, 40(1) (February): 67-82.

► Incudes Bat Cave, Grand Canyon.

Moffitt, Steve

2002 21.3795 Digging in an elephant stable; Willis Evans, Rampart Cave, and the search for early man at Grand Canyon. *Nature Notes* (Grand Canyon National Park), (Summer): 1-3, 7, 12.

Montgomery, Kathy, AND Ward, Sam

2024 21.8474 To the bat cave!!! The Grand Canyon is best known for its broad panoramas, billion-year-old geology and backcountry adventure. Caves aren't on that list, but one cave in particular is about to make headlines—it contains something so rare that nothing like it has ever been seen anywhere else in the world. *Arizona Highways*, 100(1) (January): 38-43.

► Sam Ward's illustrations are paintings. The cave, "in a remote area of Grand Canyon National Park", was discovered by Jason Ballensky. It contains the well-preserved remains of bats that died between a century and more than 50,000 years ago.

Muleady-Mecham, Nancy Eileen

2004 21.3967 Paleourine analysis of packrat amberat. *In:* Riper, Charles van, III, and Cole, Kenneth L. (eds.), *The Colorado Plateau : cultural, biological, and physical research*. Tucson: University of Arizona Press, pp. 229-237. (Sixth Biennial Conference of Research on the Colorado Plateau.)

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Proceedings for 1993-2015. *U.S. Geological Survey, Open-File Report 2015-1115*, pp. 75-76.

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Naples, Virginia L.

1990 21.2436 Morphological changes in the facial region and a model of dental growth and wear pattern development in *Nothrotheriops shastense. Journal of Vertebrate Paleontology*, 10(3): 372-389.

Nations, J. Dale, AND Landye, J. Jerry

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Nelson, Lisa

1990 21.2450 *Ice Age mammals of the Colorado Plateau.* Flagstaff, Arizona: Northern Arizona University, 24 pp.

Nimmons, R. T.

1938 21.2483 In the lair of a prehistoric monster; exploring the Rampart caves for traces of the giant ground sloth. *Travel*, 71 (September): 20-23+.

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Olsen, John W., AND Olsen, Stanley J.

1984 21.2508 Zooarchaeological analysis of small vertebrates from Stanton's Cave, Arizona. *In:* Euler, Robert C. (ed.), The archaeology, geology, and paleobiology of Stanton's Cave, Grand Canyon National Park, Arizona. *Grand Canyon Natural History Association, Monograph 6*, pp. 47-57.

Olson, Edwin A., AND Broecker, Wallace S.

1961 21.2509 Lamont natural radiocarbon measurements VII. *Radiocarbon*, 3(1): 141-175.

► Rampart Cave.

O'Rourke, Mary Kay

1985 21.8588 *Pollen studies conducted in the Marble Canyon region, Grand Canyon, Arizona: a fiknal report.* Doctoral dissertation, University of Arizona.

► Paleontological pollen studies from four caves.

O'Rourke, Mary Kay, AND Mead, Jim I.

1985 21.2512 Late Pleistocene and Holocene pollen records from two caves in the Grand Canyon of Arizona, USA. *In:* Jacobs, Bonnie F.; Fall, Patricia L.; and Davis, Owen K. (eds.), Late Quaternary vegetation and climates of the American Southwest. *American Association of Stratigraphic Palynologists, Contributions Series*, no. 16, pp. 169-185.

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Parmalee, Paul W.

1969 21.2537 California condor and other birds from Stanton's Cave, Arizona. *Arizona Academy of Science, Journal*, 5: 204-206.

Patterson, Bruce D.

1984 21.2547 Mammalian extinction and biogeography in the southern Rocky Mountains. *In:* Nitecki, Matthew H. (ed.), *Exctinctions.* Chicago: University of Chicago Press, pp. 247-293.

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1930 21.2550 Imprints tell the story of ages long ago; Grand Cañon region teeming with possibilities for the man with scientific training. *Santa Fe Magazine*, 25(1) (December): 35-38.

Peabody, Frank E.

1956 21.2555 Gilmore's split-toed footprint from the Grand Canyon Hermit shale formation. *Plateau*, 29 (October): 41-43.

Peck, Stewart B.

1980 21.2560 Climatic change and the evolution of cave invertebrates in the Grand Canyon, Arizona. *NSS Bulletin* (National Speleological Society), 42(3): cover, inside front cover, 53-60.

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1976 21.2598 Packrats, plants, and the Pleistocene in the lower Grand Canyon of Arizona [ABSTRACT]. *American Quaternary Association, National Conference, Abstracts*, no. 4, pp. 70-71.

1977 21.2599 *Packrats, plants and the Pleistocene in the lower Grand Canyon.* Doctoral dissertation, University of Arizona, 137 pp.

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1974 21.2604 Pleistocene packrat middens from the lower Grand Canyon of Arizona. *Arizona Academy of Science, Journal*, 9: 117-119.

Potter, Tymbri, AND Prothero, Donald

2024 21.8572 Possible sexual dimorphism in the Pleistocene Shasta ground sloth (*Nothrotheriops shastense*) [ABSTRACT]. *Geological Society of America, Abstracts with Programs*, 56(5), abstract 29-11 (https://doi.org/10.1130/abs/2024AM-401585).

► Skulls examined include specimens from Rampart Cave.

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Rea, Amadeo M.

1980 21.2702 Late Pleistocene and Holocene turkeys in the Southwest. *In:* Campbell, Kenneth E., Jr. (ed.), Papers in avian paleontology honoring Hidegarde Howard. *Natural History Museum of Los Angeles County, Contributions in Science*, (330): 209-224.

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2001 21.3794 Packrat middens as a tool for reconstructing historic ecosystems. *In:* Egan, Dave, and Howell, Evelyn A. (eds.), *The historical ecology handbook : a restorationist's guide to reference ecosystems.* Washington, D.C., Covelo, California, and London: Island Press, pp. 257-292.

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1984 21.2778 Paleoecology of Stanton's Cave, Grand Canyon, Arizona. *In:* Euler, Robert C. (ed.), The archaeology, geology, and paleobiology of Stanton's Cave, Grand Canyon National Park, Arizona. *Grand Canyon Natural History Association, Monograph 6*, pp. 115-130.

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Rowland, Stephen M., AND Needham, Robert R.

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Rowland, Stephen M., AND Olsen, Dana

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► See "Grand Canyon National Park" (p. 110), "Parashant National Monument (Arizona)" [Grand Canyon-Parashant National Monument] (p. 112).

Santucci, Vincent L.; Kenworthy, Jason; AND Kerbo, Ron

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► See pp. 16-24, 28.

Savage, Donald E., AND Russell, Donald E.

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1937 21.2857 Gravigrade endentates in lower Grand Canyon, Arizona [ABSTRACT]. *Geological Society of America, Proceedings for 1936*, p. 399.

Schmidt, Gerald D.; Duszynski, Donald W.; AND Martin, Paul S.

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Scott, Linda J. *see also* Cummings, Linda Scott

1985 21.5913 *Macrofaunal analysis of selected samples from AZ I:1:17 in the Kaibab National Forest, Arizona.* Golden, Colorado: Palynological Analysts, *for* Arizona State Museum, Tucson, 15 pp.

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► See map, p. 174; and "The Colorado Plateau", p. 176.

Spamer, Earle E.

1993 21.3019 Late Pleistocene(?) land snails (Mollusca: Gastropoda) in "red earth" deposits of the Grand Canyon, Arizona. *The Mosasaur* (Delaware Valley Paleontological Society, Journal), 5: 47-58.

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1991 21.8722 *Mollusks of the Colorado River corridor, Grand Canyon, Arizona : including an overview of mollusks of the Grand Canyon region.* Philadelphia: Academy of Natural Sciences of Philadelphia, Department of Malacology, *for* [U.S. Bureau of Reclamation], Glen Canyon Environmental Studies [Flagstaff, Arizona], 40 pp. [December 1991.]

► This report was cited by Spamer and Bogan (1993, ITEM NO. 21.3021) as still "in press" *in* D. W. Blinn, L. E. Stevens, and J. P. Shannon, "The effects of Glen Canyon Dam on the aquatic food base in the Colorado River corridor in Grand Canyon, Arizona", U.S. National Park Service report, NPS cooperative agreement no. CA-8009-8-002. However, that report by Blinn *et al.* was not produced as such, and thus this GCES report was not included. *NOTE*: Spamer and Bogan (1993 , ITEM NO. 21.3021) published revised and updated data to those presented in this GCES report, but this 1991 report does include comparative and supporting data that are not available elsewhere. This report is accessible on the Grand Canyon Monitoring and Research Center website and at Spamer's Academia.edu account, https://www.academia.edu/36779915/ (URL valid as of March 2026). Includes occasional remarks on earlier records of "fossil or sub-fossil" material in Grand Canyon.

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1977 21.8317 Statement of W. Geoffrey Spaulding, Department of Geosciences, University of Arizona. *In: Wild Free-Roaming Horses and Burros Act : hearing before the Subcommittee on Public Lands and Resources of the Committee on Energy and Natural Resources, United States Senate, Ninety-fifth Congress, First Session, on oversight of the Wild Free-Roaming Horses and Burros Act of 1971, May 23, 1977 : Publication No. 95-60.* Washington, D.C.: U.S. Government Printing Office, pp. 120-125.

► Presentation of paleontological evidence from Rampart Cave, Grand Canyon, and Gypsum Cave, Nevada, with regard to the issue of the presence of Quaternary equids, in discussions of modern "feral" horses and burros.

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Spaulding, W. Geoffrey; Robinson; Stephen W.; AND Paillet, Frederick L.

1984 21.6074 Preliminary assessment of climatic change during Late Wisconsin time, southern Great Basin and vicinity, Arizona, California, and Nevada. *U.S. Geological Survey, Water-Resources Investigations Report 84-4328*, 40 pp., 3 plates.

► Includes Rampart Cave.

Steadman, David W.; Martin, Paul S.; MacPhee, Ross D. E.; Jull, A. J. T.; McDonald, H. Gregory; Woods, Charles A.; Itarralde-Vinent, Manuel; AND Hodgins, Gregory W. L.

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Strickland, Laura E.; Thompson, Robert S.; AND Anderson, Katherine H.

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Thompson, Robert S.; Whitlock, Cathy; Bartlein, Patrick J.; Harrisoni, Sandy P.; AND Spaulding, W. Geoffrey

1993 21.3169 Climatic changes in the western United States since 18,000 yr B.P. *In:* Wright, H. E., Jr., Kutzbach, J. E., Webb, T., III, Ruddiman, W. F., Street-Perrott, F. A., and Bartlein, P. J. (eds.), *Global climates since the last glacial maximum.* Minneapolis, Minnesota, and London: University of Minnesota Press, pp. 468-513.

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1977 21.3170 The great late Pleistocene extinction: a slothful tale. *Science News*, 112(24) (December 10): 396-398.

Tweet, Justin S.; Santucci, Vincent L.; AND Hunt, Adrian P.

2012 21.6898 An inventory of packrat (*Neotoma* spp.) middens in National Park Service areas. *In:* Hunt, Adrian P., Milàn, Jesper, Lucas, Spencer G., and Spielmann, Justin A. (eds.), Vertebrate coprolites. *New Mexico Museum of Natural History and Science, Bulletin 57*, pp. 355-368.

► Grand Canyon National Park, p. 361; Pipe Spring National Monument, p. 363; Grand Canyon-Parashant National Monument, p. 364.

U

U.S. National Park Service, Cave and Karst Program

NO DATE 21.4694 *Caves and karst in the U.S. National Park Service : nationwide.* U.S. National Park Service, 1 sheet.

► Poster. Includes Rampart Cave, with illustration.

U.S. National Park Service, Grand Canyon National Park

1977 21.3249 *Rampart Cave sloth dung fire, 1976-1977.* U.S. National Park Service, Grand Canyon National Park, 30 pp. + photographs.

V

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1994 21.3793 Trends in stomatal density and $^{13}C/^{12}C$ ratios of *Pinus flexilis* needles during last glacial-interglacial cycle. *Science*, 264: 239-243.

Van Devender, Thomas R.

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1971 21.3259 Late Pleistocene vegetational records in western Arizona. *Arizona-Nevada Academy of Science, Journal*, 6(4): 240-244.

Van Devender, Thomas R., AND Mead, Jim I.

1976 21.3260 Late Pleistocene and modern plant communities of Shinumo Creek and Peach Springs Wash, lower Grand Canyon, Arizona. *Arizona Academy of Science, Journal*, 11(1): 16-22.

Van Devender, Thomas R., AND Moodie, Kevin B.

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Van Devender, Thomas R., AND Spaulding, W. Geoffrey

1979 21.3262 Development of vegetation and climate in the southwestern United States. *Science*, 204: 701-710.

► Based on plant macrofossils in packrat middens.

Van Devender, Thomas R., AND Tessman, Norman T.

1974 21.8558 Late Pleistocene snapping turtles from southern Nevada [ABSTRACT]. *In:* Proceedings of the 18th Annual Meeting of the Arizona Academy of Science, April 19-20, 1974, Northern Arizona University, Flagstaff, Arizona. *Arizona Academy of Science, Journal*, 9 (April, Proceedings Supplement): 34-35.

► Regarding the Glendale fossil fauna from Clark County, Nevada, and the turtle *Chelydra serpentina*. Remarks that the "nearest population" of this species is east of the continental divide. Hypothetical dispersal routes include an alternative, "from the Green River (Utah) southward into the Colorado River, thorugh the Grand Canyon (Arizona), and into the Virgin and Muddy Rivers (southern Nevada)".

Van Devender, Thomas R.; Martin, Paul S.; Thompson, Robert S.; Cole, Kenneth L.; Jull, A. J. Timothy; Long, Austin; Toolin, Laurence J.; AND Donahue, Douglas J.

1985 21.3263 Fossil packrat middens and the tandem accelerator mass spectrometer. *Nature* (London), 317: 610-613.

Van Devender, Thomas R.; Mead, Jim I.; AND Rea, Amadeo M.

1991 21.3264 Late Quaternary plants and vertebrates from Picacho Peak, Arizona. *Southwestern Naturalist*, 36(3): 302-314. [See p. 310.]

Van Devender, Thomas R.; Phillips, Arthur M., III; AND Mead, Jim I.

1977 21.3265 Late Pleistocene reptiles and small mammals from the lower Grand Canyon of Arizona. *Southwestern Naturalist*, 22: 49-66.

W

Ware, John

2019 21.7870 Stanton's Cave: Another important Grand Canyon anniversary. *Boatman's Quarterly Review*, 32(3) (Fall): 9-11.

► 50th anniversary of the Stanton's Cave archaeological and paleobiological expedition under Robert C. Euler and Bruce Harrill.

Webb, Robert H.

1986 21.7238 Spatial and temporal distribution of radiocarbon ages on rodent middens from the southwestern United States. *Radiocarbon*, 28(1): 1-8.

Webb, Robert H., AND Betancourt, Julio L.

1990 21.3380 The spatial and temporal distribution of radiocarbon ages from packrat middens. *In:* Betancourt, Julio L., Van Devender, Thomas R., and Martin, Paul S. (eds.), *Packrat middens : the last 40,000 years of biotic change.* Tucson: University of Arizona Press, pp. 85-102.

Wells, Philip V.

1976 21.3390 Macrofossil analysis of wood rat (*Neotoma*) middens as a key to the Quaternary history of arid America. *Quaternary Research*, 6: 223-248.

1983 21.5746 Paleobiogeography of montane islands in the Great Basin since the last glaciopluvial. *Ecological Monographs*, 53(4) (December): 341-382.

► Data include western Grand Canyon and upper portion of lower Colorado River area.

Wells, Philip V., AND Berger, Rainer

1967 21.6075 Late Pleistocene history of coniferous woodland in the Mohave Desert; new evidence records pluvial expansion of the pinyon-juniper zone at the close of the Wisconsin glacial. *Science*, (March 31): 1640-1647.

► Includes Rampart Cave.

Weng, Chengyu

1998 21.3398 *Species differentiation of* Picea *in the Quaternary fossil record: Analysis and applications in the Pleistocene biogeography of the lower Mississippi Valley and the Holocene vegetation history of the southern Colorado Plateau.* Doctoral dissertation, University of Wyoming, 224 pp.

Weng, Chengyu, AND Jackson, Stephen T.

1997 21.8555 Late-glacial and Holocene vegetation history and paleoclimate of the Kaibab Plateau, northern Arizona [ABSTRACT]. *In:* Ecological Society of America, 1997 Annual Meeting jointly with The Nature Conservancy, 10-14 August 1997, Albuquerque, New Mexico; "Changing Ecosystems: Natural and Human Influences"; Abstracts. *Ecological Society of America Bulletin*, 78(4) (October, Supplement): 205.

► "Pollen and plant macrofossil analysis from an AMS dated sediment core from Bear Lake (2768 m)". Also, without specifics, relies on "Records from Fracas Lake (2512 m)".

1999 21.3939 Late glacial and Holocene vegetation history and paleoclimate of the Kaibab Plateau, Arizona. *Palaeogeography, Palaeoclimatology, Palaeoecology*, 153(1/4): 179-201.

Whitney, Smith, Elin

2008 21.4516 The evolution of an ecosystem: Pleistocene extinctions. *In:* Minai, Ali A., and Bar-Yam, Yaneer (eds.), *Unifying themes in complex systems, Volume IV : proceedings of the fourth International Conference on Complex Systems*. Berlin and Heidelberg: Springer, pp. 239-246. (New England Complex Systems Institute Book Series.)

► Includes Rampart Cave.

Wilbur, Sanford R.

1978 21.6084 The California condor, 1966-76: A look at its past and future. *U.S. Fish and Wildlife Service, North American Fauna, No. 72*, 136 pp.

► Status up to the time of species-jrecovery plans. Includes notices of fossil occurrences at Stanton Cave and Rampart Cave.

Williams, John W.; Grimm, Eric C.; Blois, Jessica L.; Charles, Donald F.; Davis, Edward B.; Goring, Simon J.; Graham, Russell W.; Smith, Alison J.; Anderson, Michael; Arroyo Cabrales, Joaquin; Ashworth, Allan C.; Betancourt, Julio L.; Bills, Brian W.; Booth, Robert K.; Buckland, Philip I.; Curry, B. Brandon; Giesecke, Thomas; Jackson, Stephen T.; Latorre, Claudio; Nichols, Jonathan; Purdum, Timshel; Roth, Robert E.; Stryker, Michael; AND Takahara, Hikaru

2018 21.7797 The Neotoma Paleoecology Database, a multiproxy, international, community-curated data resource. *Quaternary Research*, 89: 156-177.

► This is an introduction to the Neotoma Paleoecology Database (https://www.neotomadb.org, named for the woodrats or packrats of the genus *Neotoma* and not restricted to that taxon. The database "is a community-curated data resource that supports interdisciplinary global change research by enabling broad-scale studies of taxon and community diversity, distributions, and dynamics during the large environmental changes of the past." On this site, at www.neotomadb.org/explorer, users may use metadata- or map-based query screens to search for specific information.

Wilson, Robert W.

1941 21.3501 Preliminary study of fauna of Rampart Cave, Arizona [ABSTRACT]. *Geological Society of America, Bulletin,* 52: 1985.

1942 21.3502 Preliminary study of the fauna of Rampart Cave, Arizona. *In:* Contributions to paleontology. Studies of Cenozoic vertebrates of western North America and of fossil primates. *Carnegie Institution of Washington, Publication 530*, pp. 169-185.

Wright, Mary Jane

2009 21.4635 *Micro and macro paleoethnobotany in the Grand Canyon river corridor : the Palisades site.* Master's thesis, Northern Arizona University, 100 pp.

Wurster, Christopher M.; MacFarlane, Donald A.; Bird, Michael I.; Ascough, Philippa; AND Athfield, Nancy Beavan

2010 21.5299 Stable isotopes of subfossil bat guano as a long-term environmental archive: Insights from a Grand Canyon cave deposit. *Journal of Cave and Karst Studies*, 72(2) (August): 111-121.

► Bat Cave.

Wurster, Christopher M.; Patterson, William P.; McFarlane, Donald A.; Wassenaar, Leonard I.; Hobson, Keith A.; Athfield, Nancy Beavan; AND Bird, Michael I.

2008 21.4255 Stable carbon and hydrogen isotopes from bat guano in the Grand Canyon, USA, reveal Younger Dryas and 8.2 ka events. *Geology*, 36(9): 683-686 + Data Repository Item 2008175, 4 pp.

► Data Repository Item comprises Table DR1, "$\delta^{13}C$, δD, and C:N ratios from guano core 96-04, Bat Cave, Grand Canyon, AZ, USA" (3 pp.), and Table DR2, "14C-AMS dates used for the chronology of guano core" (1 p.).

Y

Yoshikawa, L. Keiko

1986 21.5916 Faunal analysis of five Grand Canyon sites. *In:* Jones, Anne Trinkle, A cross section of Grand Canyon archeology: Excavations at five sites along the Colorado River. *U.S. National Park Service, Western Archeological and Conservation Center, Publications in Anthropology*, (28): 201-254.

10. STRATIGRAPHICALLY OR GEOGRAPHICALLY COMPREHENSIVE PALEONTOLOGICAL PUBLICATIONS

Many publications embrace numerous (or all) of the Grand Canyon's formations, and those that are generally described as addressing the "geology" of the Grand Canyon or the region include substantial attention to paleontological subjects. The publications cited here are representatives of these broadly focused publications. There are more citations that might be added, particularly those that are broad stratigraphic, sedimentological, and paleogeological studies. Many of them should also contain references to fossils from portions or all of the Grand Canyon stratigraphic column, but only a careful rereading of all candidate titles can ascertain this. In any case, for a complete set of references to Grand Canyon geology refer to Part 21 in the far more comprehensive Grand Canyon bibliography, THE GRAND CANON (as noted in the Introduction herein).

See pp. 9-11 for Paleozoic and Proterozoic stratigraphic nomenclature.

A

Abel, Othenio

1935 21.4243 *Vorzeitliche Lebensspuren* [*transl.* 'Traces of prehistoric life']. Jena: Gustav Fischer, 644 pp. [In German.]

► See pp. 262-266.

Allmon, Warren D., AND Kissel, Richard A.

2016 21.7273 Fossils of the southwestern US. *In:* Swaby, Andrielle N., Lucas, Mark D., and Ross, Robert M. (eds.), *The Teacher-Friendly Guide to the earth science of the southwestern US.* Ithaca, New York: Paleontological Research Institution, pp. 89-157.

B

Breed, William J., AND Roat, Evelyn C.

1974 21.412 (EDS.) *Geology of the Grand Canyon.* Flagstaff, Arizona: Museum of Northern Arizona, and Grand Canyon Natural History Association, pp. 65-75. [2nd ed., 1976; 3rd ed., 1978.]

C

Codrington, Stephen

2005 21.5379 *Planet geography.* Sydney, Australia: Solid Star Press, 3rd ed., 279 pp.

► Grand Canyon, pp. 161, 254, 618.

Crampton, Henry Edward

1911 21.5617 *The doctrine of evolution : its basis and its scope.* New York: Columbia University Press, 311 pp. + advertisements. (Columbia University Lectures. The Hewitt Lectures, 1906-1907.).

► See in "The Evidence of Fossil Remains" (pp. 73-105); specifically, pp. 85, 90—Grand Canyon, *in passing*.

F

Fenton, Carroll Lane, AND Fenton, Mildred Adams

1958 21.1040 *The fossil book : a record of prehistoric life.* Garden City, New York: Doubleday and Co., Inc., 482 pp.

► See pp. 11, 72, 74.

1989 21.1041 *The fossil book : a record of prehistoric life.* (Revised and expanded by Patricia Vickers Rich, *Thomas* Hewitt Rich, and Mildred Adams Fenton.) New York, London, Toronto, Sydney, and Auckland: Doubleday, 740 pp.

► See pp. 9, 122, 124, 390. For a corrected republication of this ed. see Rich *et al.* (1996, ITEM NO. 21.2767).

G

Graham, John P.

2020 21.8156 *Grand Canyon National Park Geologic Resources Inventory report.* Fort Collins, Colorado: U.S. National Park Service, Natural Resource Stewardship and Science, 180 pp. (Natural Resource Report NPS/NRSS/GRD/NRR-2020/2195.)

H

Hollingsworth, J. Stewart; Sundberg, Frederick A.; AND Foster, John R.

2011 21.6362 (EDS.) Cambrian stratigraphy and paleontology of northern Arizona and southern Nevada; the 16th Field Conference of the Cambrian Stage Subdivision Working Group, International Subcommission on Cambrian Stratigraphy, Flagstaff, Arizona, and southern Nevada, United States. *Museum of Northern Arizona, Bulletin 67*, 321 pp., and "ISCS 16 Guidebook Errata Sheet", 7 pp. (ICSC Field Conference, Southwest U.S., 2011. Southwest United States, 2011, The 16th Field Conference of the Cambrian Stage Subdivision Working Group, International Subcommission on Cambrian Stratigraphy, [International Commission on Stratigraphy], Flagstaff, Arizona, and southern Nevada, United States, 12-20 June 2011.)

M

MacDonald, Jerry

1994 21.2001 *Earth's first steps : tracking life before the dinosaurs.* (Foreword by Martin Lockley, introduction by Nicholas Hotton, III.) Boulder, Colorado: Johnson Books, 290 pp.

Margulis, Lynn

1982 21.2046 *Early life.* Boston: Science Books International, Inc., 160 pp.

► See p. 30.

McKee, Edwin D.

1931 21.2135 *Ancient landscapes of the Grand Canyon region : the geology of Grand Canyon, Zion, Bryce, Petrified Forest, and Painted Desert.* [No imprint] (printed by Lockwood-Hazel Co., Atchison, Kansas], 50 pp. [1st ed.]

► Title and subtitle cited from title-page. Cover title: *Ancient landscapes of the Grand Canyon region : illustrated : the geological story of Zion, Bryce, Petrified Forest, Painted Desert, and Grand Canyon*.

With significant attention to paleontological subjects. Numerous eds., reprintings through 1985; also later reprintings from various unstated eds. as on-demand publications. For a complete listing of editions and reprintings, refer to Appendix IV in Volume 1/Part B of *THE GRAND CANON* series, or see Appendix IV in *The Grand Canyon Bibliography* (both accessible as downloadable PDFs through Raven's Perch Media, https://ravensperch.org).

1933 21.2177 The Coconino sandstone—its history and origin. *In:* Papers concerning the palaeontology of California, Arizona, and Idaho. *Carnegie Institution of Washington, Publication 440*, pp. 77-115.

1938 21.2190 The environment and history of the Toroweap and Kaibab formations of northern Arizona and southern Utah. *Carnegie Institution of Washington, Publication 492*, 268 pp.

1939 21.2194 Paleozoic stratigraphy and palaeontology of Grand Canyon [delivered by J. C. Merriam]. *In:* Reports on investigations; palaeontology, early man, and historical geology. *Carnegie Institution of Washington, Year Book 38*, p. 303.

1945 21.2204 Stratigraphy and ecology of the Grand Canyon Cambrian. *In:* McKee, E. D., and Resser, C. E., Cambrian history of the Grand Canyon region. *Carnegie Institution of Washington, Publication 563*, Part 1, pp. 3-168.

1948 21.2212 Fossil life of the canyon country. *In:* Peattie, Roderick (ed.), *The inverted mountains—canyons of the West.* New York: Vanguard Press, pp. 67-82.

1982 21.2248 The Supai Group of Grand Canyon. *U.S. Geological Survey, Professional Paper 1173*, 504 pp.

1982 21.2253 Distribution and age of fauna and flora. *In:* McKee, Edwin D., The Supai Group of Grand Canyon. *U.S. Geological Survey, Professional Paper 1173*, Chapter E, pp. 75-112.

McKee, Edwin D., AND Gutschick, Raymond C.

1969 21.2278 History of the Redwall Limestone of northern Arizona. *Geological Society of America, Memoir 114*, 726 pp.

N

Nelson, W. John, AND Lucas, Spencer G.

2011 21.6804 Carboniferous geologic history of the Rocky Mountain region. *In:* Sullivan, Robert M., Lucas, Spencer G., and Spielmann, Justin A. (eds.), Fossil Record 3. *New Mexico Museum of Natural History and Science, Bulletin 53*, pp. 115-142.

Norris, A. W.

1979 21.2497 Devonian in the western hemisphere. *In:* Robison, Richard A., and Teichert, Curt (eds.), *Treatise on invertebrate paleontology. Part A. Introduction : fossilization (taphonomy), biogeography, and biostratigraphy.* Boulder, Colorado: Geological Society of America, and Lawrence, Kansas: University of Kansas, pp. A218-A253.

► See pp. A219-A222, A224-A225, A226, A228-A229, A233, A235-A238, A241, A244-A245.

P

Peters, Shanan E., AND Gaines, Robert R.

2012 21.5906 Formation of the "Great Unconformity" as a trigger for the Cambrian explosion. *Nature* (London), 484(7394) (April 19): cover, 285, 363-366, and Supplementary Information (Figures S1-S8, Tables S1-S3, 17 pp., http://www.nature.com/nature/journal/v484/n7394/extref/nature10969-s1.pdf).

► Cover tease: "Life Force. Did the Formation of the Great Unconformity Trigger the Cambrian Explosion?"

Pierce, Walter H.

1979 21.2608 Biostratigraphy of the Upper Carboniferous (Pennsylvanian) in the Virgin Mountains of southern Nevada and northwestern Arizona. *In:* Beus, Stanley S., and Rawson, Richard R. (eds.), Carboniferous stratigraphy in the Grand Canyon country, northern Arizona and southern Nevada. 9th International Congress of Carboniferous Stratigraphy and Geology, Field Trip no. 13. *American Geological Institute, AGI Selected Guidebook Series, no. 2*, pp. 127-131.

Poole, Forrest G., AND Sandberg, Charles A.

1991 21.2619 Mississippian paleogeography and conodont biostratigraphy of the western United States. *In:* Cooper, John D., and Stevens, Calvin H. (eds.), *Paleozoic paleogeography of the western United States—II. Volume 1.* Los Angeles: Society of Economic Paleontologists and Mineralogists, Pacific Section, pp. 107-136.

R

Ratkevich, Ron

1979 21.2689 *Field guide to Arizona fossils.* Alamogordo, New Mexico: Dinograph Southwest, Inc., 114 pp.

Raymond, Percy E.

1939 21.3800 *Prehistoric life.* Cambridge, Massachusetts: Harvard University Press, 324 pp.

► See pp. 30, 31, 33.

Rich, Patricia Vickers; Rich, Thomas Hewitt; Fenton, Mildred Adams; AND Fenton, Carroll Lane

1996 21.2767 *The fossil book : a record of prehistoric life.* Mineola, New York: Dover Publications, Inc., 740 pp.

► Unabridged and corrected republication of the 1989 revised and expanded ed. (see Fenton and Fenton, 1989, ITEM NO. 21.1041).

Romans, Robert C.

1973 21.2798 A history of paleobotany in Arizona. *Plateau*, 45: 93-101.

Roy, Sharat K.

1927 21.2818 *How old are fossils?* Field Museum of Natural History, Geology Leaflet 9, 12 pp., 4 plates.

Rumery, Joyce V.

1980 21.2824 Fossils of Arizona: A selected bibliography. *Arizona Bureau of Geology and Mineral Technology, Open-File Report 80-3*, 46 pp.

► Preliminary.

S

Sadler, Christa J.

1993 21.2835 Life in stone; fossils of the Southwest. *Plateau*, 64(3), 32 pp. [entire number].

2005 21.4128 *Life in stone : fossils of the Colorado Plateau.* Grand Canyon, Arizona: Grand Canyon Association, 72 pp.

2006 21.4129 *Life in stone : fossils of the Colorado Plateau.* Grand Canyon, Arizona: Grand Canyon Association, revised ed., 72 pp.

2006 21.4168 Deep time; the long and extraordinary life of the Colorado Plateau. *Sojourns* (Peaks, Plateaus and Canyons Association), 1(1) (Winter/Spring): 38-45.

Santucci, Vincent L., AND Tweet, Justin S.

2020 21.8027 (EDS.) *Grand Canyon National Park : centennial paleontological resource inventory (non-sensitive version).* Fort Collins, Colorado: U.S. National Park Service, Natural Resource Stewardship and Science, 603 pp. (Natural Resource Report NPS/GRCA/NRR-2020/2103.) https://npshistory.com/publications/grca/nrr-2020-2103-nsv.pdf

► Individually authored chapters , plus appendices to volume without authors noted: "Appendix A. Fossil Taxa Named From GRCA" (pp. 505-520), "Appendix B. Fossil Taxa Potentially Named From GRCA" (pp. 521-523), "Appendix C. Stratigraphic Tables of GRCA Paleozoic Taxa" (pp. 525-589), "Appendix D. Outside Repositories of GRCA Fossils" (pp. 591-594), "Appendix E. Paleontological Resource Law and Policy" (pp. 595-601), "Appendix F. Geologic Time Scale", "Modified from 1999 Geological Society of America Timescale" and "Dates and additional information from International Commission on Stratigraphy update 2019/05 . . . and USGS Fact Sheet 2007-3015" (p. 603). [The appendices are rearranged in the 2021 reprinting, appended to individual papers.]

NOTE: The "sensitive version", not publicly available, is Natural Resource Report NPS/GRCA/NRR-2020/2095.

2021 21.8249 (EDS.) *Grand Canyon National Park centennial paleontological resource inventory : a century of fossil discovery and research.* Utah Geological Association, Special Publication 1, 343 pp. + interleaved separately paginated appendices [466 pp. total].

► Published by the Utah Geological Association, Salt Lake City, in cooperation with U.S. National Park Service, Washington, D.C. Reset reprinting of Santucci and Tweet (2020, ITEM NO. 21.8027). Individually authored chapters and appendices, with original cover art by Julius Csotonyi.

This is State 1, available as an electronic-only document (PDF).[1] It also can be distinguished from State 2 by its uncorrected text in the foreword (p. v), which is mistitled,

[1] https://www.utahgeology.org/publications/special-publications. Published with copyright notice, "Copyright © 2021 by the Utah Geological Association; all rights reserved." The volume online is now posted with a "Public Domain Mark 1.0 Universal" link (https://creativecommons.org/publicdomain/mark/1.0/) and the notice, "Because

"Forward", which mentions "Dr. Earl Spammer" [*sic*]. The PDF version was officially released on Earth Day 2021 (April 22).

2021 21.8275 (EDS.) *Grand Canyon National Park centennial paleontological resource inventory; a century of fossil discovery and research.* Utah Geological Association, Special Publication 1, 343 pp. + interleaved separately paginated appendices [466 pp. total].

► Published by the Utah Geological Association, Salt Lake City, in cooperation with U.S. National Park Service, Washington, D.C.) Reset reprinting of Santucci and Tweet (2020, ITEM NO. 21.8027). Individually authored chapters and appendices (cited separately herein), with original cover art by Julius Csotonyi.

This is State 2, in print format only, which was produced as a one-off job by the U.S. Government Printing Office as arranged by the U.S. National Park Service (but not so indicated anywhere in the publication); 200 copies. It also can be distinguished from State 1 by the corrected title of the "Foreword" (p. v), which there mentions "Dr. Earle Spamer" (correctly spelled but the title "Dr." is retained). The print version was first mailed on May 18, 2021.

Savage, Donald E., AND Russell, Donald E.

1983 21.2850 *Mammalian paleofaunas of the world.* Reading, Massachusetts: Addison-Wesley Publishing Co., Advanced Book Program/World Science Division, 432 pp.

Scharff, Robert Francis

1912 21.5129 *Distribution and origin of life in America.* New York: Macmillan Co., 497 pp.

Schmidt, Jeremy

1993 21.2865 *Grand Canyon National Park : a natural history guide.* Boston and New York: Houghton Mifflin Co., 246 pp.

Sigler, John W., AND Sigler, William F.

1994 21.2954 Fishes of the Great Basin and the Colorado Plateau: past and present forms. *In:* Harper, Kimball T., St. Clair, Larry L., Thorne, Kaye H., and Hess, Wilford M. (eds.), *Natural history of the Colorado Plateau and Great Basin.* Niwot, Colorado: University Press of Colorado, pp. 163-208.

Skipp, Betty A. L.

1979 21.2965 Great Basin region. *In:* Craig, L. C., and Connor, C. W. (coordinators), Paleotectonic investigations of the Mississippian System in the United States. Part 1. Introduction and regional analyses of the Mississippian System. *U.S. Geological Survey, Professional Paper 1010-P*, pp. 273-328.

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the authors and editors are employees of the U.S. National Park Service, this work (Grand Canyon National Park Centennial Paleontological Resources Inventory, by Vincent L. Santucci, Justin S. Tweet), identified by Utah Geological Association, is free of known copyright restrictions."

Spamer, Earle E.

1984 21.3007 Paleontology in the Grand Canyon of Arizona: 125 years of lessons and enigmas from the late Precambrian to the present. *The Mosasaur* (Delaware Valley Paleontological Society, Journal), 2: 45-128. (https://ravensperch.org/wp-content/uploads/2026/04/EES_GCpaleo125.pdf)

Sturdevant, Glen E.

1927 21.3104 Fossils. *Grand Canyon Nature Notes*, 1(9) (January 10): 1-4.

1928 21.28 Fossils collected. *Grand Canyon Nature Notes*, 3(1) (June 30): 4.

T

Thayer, Dave

2009 21.4772 *An introduction to Grand Canyon fossils.* Grand Canyon, Arizona: Grand Canyon Association, 64 pp.

Tidwell, William D.

1975 21.3173 *Common fossil plants of western North America.* Provo, Utah: Brigham Young University Press, 197 pp.

1998 21.3174 *Common fossil plants of western North America.* Washington, D.C.: Smithsonian Institution Press, 2nd ed., 299 pp.

U

U.S. Bureau of Land Management, AND U.S. National Park Service

NO DATE 21.8606 *Grand Canyon-Parashant National Monument, Arizona, Science Plan.* [No place]: U.S. Bureau of Land Management, and U.S. National Park Service, 68 pp. [2023.]

► Includes section on "Paleontology".

W

Wagner, Oscar Emil, Jr.

1932 21.3311 *The paleontology and stratigraphy of the Kaibab limestone.* Doctoral dissertation, University Illinois at Urbana-Champaign, 108 pp.

Welsh, John Elliott

1959	21.3392	*Biostratigraphy of the Pennsylvanian and Permian Systems of southern Nevada.* Doctoral dissertation, University of Utah, 215 pp.

Whitney, Stephen R.

1982	21.3476	*A field guide to the Grand Canyon.* New York: Quill, 320 pp.
1996	21.3477	*A field guide to the Grand Canyon.* Seattle, Washington: The Mountaineers, 2nd ed., 269 pp.

11. PUBLICATIONS WITH EDUCATIONAL PERSPECTIVES, RESOURCES MANAGEMENT APPLICATIONS, AND HISTORICAL SUBJECTS

Unsigned

1998 21.4811 Disney World displays Grand Canyon fossils. *Park Paleontology* (U.S. National Park Service), 4(1) (Winter): 4.

2018 21.8082 Grand Canyon fossils. *Stoney Statements* (Clear Lake Gem and Mineral Society, Houston, Texas), 44(3) (March): 7-9.

A

Abel, Othenio

1935 21.4243 *Vorzeitliche Lebensspuren* [*transl.* 'Traces of prehistoric life']. Jena: Gustav Fischer, 644 pp. [In German.]

► See pp. 262-266.

Allmon, Warren D., AND Kissel, Richard A.

2016 21.7273 Fossils of the southwestern US. *In:* Swaby, Andrielle N., Lucas, Mark D., and Ross, Robert M. (eds.), *The Teacher-Friendly Guide to the earth science of the southwestern US.* Ithaca, New York: Paleontological Research Institution, pp. 89-157.

B

Beus, Stanley S.

1991 21.251 Reconstructing ancient life communities from fossil beds — a field investigation for secondary science students [ABSTRACT]. *Arizona-Nevada Academy of Science, Journal*, 26(Proceedings Supplement): 36.

Boudreau, Diana M.

2019 21.7966 *Grand Canyon National Park : 2019 Paleontology Project After Action Report.* [Grand Canyon, Arizona]: U.S. National Park Service, iii, 55 pp. [Page iii should be page 1.]

► Accessible at https://npshistory.com/publications/grca/paleo-aar-2019.pdf (last accessed 29 March 2026).

Boudreau, Diana M.; Colvin, Ronnie; AND Spamer, Earle

2019 21.7834 The grand history of interpreting paleontological resources at Grand Canyon National Park [ABSTRACT]. *Geological Society of America, Abstracts with Programs*, 51(5): Paper No. 96-13 (https://gsa.confex.com/gsa/2019AM/meetingapp.cgi/Paper/340594).

Boudreau, Diana M.; Santucci, Vincent L.; Widrig, Klara; Nebel, Mark; Miller, Anne; Colvin, Ronnie; Besom, Kim; AND Hyde, Colleen

2020 21.8039 Chapter 12. Grand Canyon National Park paleontological resources management and protection. *In:* Santucci, Vincent L., and Tweet, Justin S. (eds.), *Grand Canyon National Park : centennial paleontological resource inventory (non-sensitive version).* Fort Collins, Colorado: U.S. National Park Service, Natural Resource Stewardship and Science, pp. 465-503. (Volume: *Natural Resource Report NPS/GRCA/NRR—2020/2103*.)

2021 21.8263 Grand Canyon National Park paleontological resources management and protection. *In:* Santucci, Vincent L., and Tweet, Justin S. (eds.), Grand Canyon National Park centennial paleontological resource inventory; a century of fossil discovery and research. *Utah Geological Association, Special Publication 1*, pp. [unpaginated page facing 241], 241-266, A1-A2, B1 (pagination is contiguous).

► Reset reprinting of Boudreau *et al.* (2020, ITEM NO. 21.8039).

Braver, Grace

2024 21.8573 High-precision handheld phtogrammetry integration for non-invasive paleontological and geological studies [ABSTRACT]. *Geological Society of America, Abstracts with Programs*, 56(5), abstract 213-4 (https://doi.org/10.1130/abs/2024AM-401587).

► "[A]pplications include studies conducted at Grand Canyon-Parashant National Monument where a trace-fossil covered rock was located" (specific locale not indicated).

Breithaupt, Brent H., AND Matthews, Neffra A.

2010 21.7696 An Early Jurassic desert ichnofauna: Paleontological resources in the Vermilion Cliffs National Monument and Paria Canyon-Vermilion Cliffs Wilderness [ABSTRACT]. *In: Program and abstracts : 70th Anniversary Meeting, Society of Vertebrate Paleontology : David L. Lawrence Convention Center, East Lobby and Westin Convention Center Pittsburgh, Pittsburgh, Pennsylvania USA, October 10-13, 2010*, p. 64A.

2011 21.6026 Paleontological resources in the Vermilion Cliffs National Monument and Paria Canyon-Vermilion Cliffs Wilderness: The use of photogrammetric ichnology in the 21st century [ABSTRACT]. *In:* Olstad, Tyra, and Aase, Arivd K. (eds.), Proceedings of the Ninth Conference on Fossil Resources. *Brigham Young University, Geology Studies*, 49(A): 5.

Brinkerhoff, Riley

2021 21.8252 Utah Geologic Association President's message. *In:* Santucci, Vincent L., and Tweet, Justin S. (eds.), Grand Canyon National Park centennial paleontological resource inventory; a century of fossil discovery and research. *Utah Geological Association, Special Publication 1*, p. viii.

C

Calhoun, Jeanne A.

2021 21.8251 Forward [*sic*]; paleontology of Grand Canyon National Park. *In:* Santucci, Vincent L., and Tweet, Justin S. (eds.), Grand Canyon National Park centennial paleontological resource inventory; a century of fossil discovery and research. *Utah Geological Association, Special Publication 1*, p. vi.

Chambers Consultants and Planners

1980 21.7656 *Paleontological resource inventory of the Lower Colorado River region : final report.* Stanton, California: Chambers Consultants and Planners, *for* U.S. Bureau of Reclamation, 98 pp. + appendices. (Sponsored in part by Water and Power Resources Service, Boulder City, Nevada.)

► Coverage divided into regions: Grand Canyon; Lake Mead; Davis Dam to International Boundary; and Salton Sea.

Colbert, Edwin H.

1954 21.605 Paleontology of the Museum of Northern Arizona. *Plateau*, 26: 89-94.

Connors, Timothy B.; Tweet, Justin S.; AND Santucci, Vincent L.

2020 21.8030 Chapter 3. Stratigraphy of Grand Canyon National Park. *In:* Santucci, Vincent L., and Tweet, Justin S. (eds.), *Grand Canyon National Park : centennial paleontological resource inventory (non-sensitive version).* Fort Collins, Colorado: U.S. National Park Service, Natural Resource Stewardship and Science, pp. 45-74. (Volume: *Natural Resource Report NPS/GRCA/NRR—2020/2103*.)

2021 21.8255 Stratigraphy of Grand Canyon National Park. *In:* Santucci, Vincent L., and Tweet, Justin S. (eds.), Grand Canyon National Park centennial paleontological resource inventory; a century of fossil discovery and research. *Utah Geological Association, Special Publication 1*, pp. 33-54.

► Reset reprinting of Connors *et al.* (2020, ITEM NO. 21.8030).

Conservation Legacy

2016 21.7665 Stewards Individual Placement Program. *In: Conservation Legacy annual report : 2016.* Durango, Colorado: Conservation Legacy, pp. 9-10.

► Includes brief notes and illustration of Robyn Henderek and her archaeological and paleontological work in Grand Canyon caves and assistance in monitoring hydrologic system of the Kaibab Plateau.

E

Ellsworth, Lincoln

1935 21.953 *Exploring today.* New York: Dodd, Mead and Co., 194 pp.

► See "Fossils in the Grand Canyon", pp. 97-101.

G

Graham, John P.

2020 21.8156 *Grand Canyon National Park Geologic Resources Inventory report.* Fort Collins, Colorado: U.S. National Park Service, Natural Resource Stewardship and Science, 180 pp. (Natural Resource Report NPS/NRSS/GRD/NRR-2020/2195.)

Gregory, W. K.; Merrill, E. D.; Vaughan, T. W.; White, David; AND Howell, W. H.

1933 21.4899 Marsh Fund. *In: Report of the National Academy of Sciences : Fiscal Year 1931-1932.* Washington, D.C.: U.S. Government Printing Office, pp. 17-18.

► Includes item of payment of $100 to Edwin D. McKee "for a study of palaeozoic and precambrian faunas in the Grand Canyon", completing payment of a $150 grant to Glen E. Sturdevant in 1926; and note that McKee "proposes to make a systematic study of the Devonian rocks of northern Arizona and the sedimentation and fossil features of Kaibab limestone." (p. 17)

H

Henderek, Robyn L.; Emslie, Steven D.; Tobin, Benjamin W.; AND Schenk, Edward R.

2015 21.6817 Grand Canyon split twig figurine complex and the role of fossil remains at archaeological sites [ABSTRACT]. *Geological Society of America, Abstracts with Programs*, 47(7), Session 233, Paper 233-14.

Henderek, Robyn L.; Tobin, Benjamin W.; Wood, John R.; AND Schenk, Edward R.

2015 21.6823 Using photogrammetry to document and monitor cave paleontological and archaeological sites in Grand Canyon National Park [ABSTRACT]. *Geological Society of America, Abstracts with Programs*, 47(7): 516.

Hodnett, John-Paul M., AND Elliott, David K.

2020 21.8033 Chapter 6. Paleozoic vertebrate paleontology of Grand Canyon National Park: Research history, resources, and potential. *In:* Santucci, Vincent L., and Tweet, Justin S. (eds.), *Grand Canyon National Park : centennial paleontological resource inventory (non-sensitive version).* Fort Collins, Colorado: U.S. National Park Service, Natural Resource Stewardship and Science, pp. 237-256. (Volume: *Natural Resource Report NPS/GRCA/NRR—2020/2103*.)

2021 21.8258 Paleozoic vertebrate paleontology of Grand Canyon National Park: Research history, resources, and potential. *In:* Santucci, Vincent L., and Tweet, Justin S. (eds.), Grand Canyon National Park centennial paleontological resource inventory; a century of fossil discovery and research. *Utah Geological Association, Special Publication 1*, pp. [unnumbered page facing 105], 105-118.

► Reset reprinting of Hodnett and Elliott (2020, ITEM NO. 21.8033).

K

Keable, Ed [Keable, Edward T.]

2021 21.8270 [Field briefing.] *In:* Explorations with Ed [SECTION]. *Canyon Views* (Grand Canyon Conservancy), 28(1) (Spring/Summer): 5.

► Grand Canyon National Park Superintendent's paleontology hike on Hermit Trail with Science and Resource Management staff. Written for a general audience.

L

Lesser, Samantha; Santucci, Vincent L.; AND Jorstad, Thomas

2012 21.7698 National Park Service vertebrate collections at the Smithsonian: Collaboration to support science and stewardship [ABSTRACT]. *In: Program and abstracts : 72nd Annual Meeting, Society of Vertebrate Paleontology : Raleigh Convention Center, Raleigh, NC, USA, October 17-20, 2012 : Supplement to the online Journal of Vertebrate Paleontology, October 2012*, p. 127.

► Pilot project to inventory and photograph three collections, including "Charles Gilmore's Paleozoic vertebrate ichnofossils from Grand Canyon National Park".

2013 21.6195 A Smithsonian Institution and National Park Service collaboration to manage paleontological resources [ABSTRACT]. *Geological Society of America, Abstracts with Programs*, 45(7): 429.

Lyons, Paul C., AND Morey, Elsie Darrah

1995 21.1997 David White (1862-1935): American paleobotanist and geologist. *In:* Lyons, Paul C., Morey, Elsie Darrah, and Wagner, Robert H. (eds.), Historical perspective of early twentieth century Carboniferous paleobotany in North America; in memory of William Culp Darrah. *Geological Society of America, Memoir 185*, pp. 135-148.

2006 21.4303 David White (1862-1935): Pioneer in coal, petroleum, and paleobotanical studies. *GSA Today* (Geological Society of America), (June): 54-55. ["Rock Stars" feature.]

M

Mead, Jim I.

1998 21.2317 NAU participates in team effort to preserve cave fossils. *Northern Arizona University, EnviroNews*, (April): 6.

Merriam, Charles W.

1928 21.8563 Analogy of past and present life. *Grand Canyon Nature Notes*, 3(2) (July 31): 3-4.

► Life zones in Grand Canyon compared to the stratigraphic record of fossils.

Merriam, John Campbell

1927 21.2339 Exhibit of research results in the Grand Canyon [ABSTRACT]. *Science*, New Series, 65: 479-480.

1930 21.2340 The past as living. *Scientific Monthly*, 31(4) (October): 340-343.

► Text of radio address presented under auspices of Science Service over Columbia Broadcasting System, New York, May 23, 1930.

1930 21.2341 The past as living. *Carnegie Institution of Washington, News Service Bulletin*, 2(11) (October 26): 78-82.

► Reprint of Merriam (1930, ITEM NO. 21.2340).

1930 21.2342 *The living past.* New York: Charles Scribner's Sons.

► See Chapter 5, "An abyss in time", pp. 73-92; and see Chapter 6, "Footprints on the path of history", pp. 95-110, which is a slightly revised, expanded reprint of Merriam's (1926, ITEM NO. 21.2338) "Ancient footprints in the Grand Canyon".

1938 21.2343 The past as living. *In:* Published papers and addresses of John Campbell Merriam, Volume 3. *Carnegie Institution of Washington, Publication 500*, pp. 1941-1944.

► Reprint of Merriam (1930, ITEM NO. 21.2340). The text of this reprinting is not applicable to the Grand Canyon, but three figures of interest are positioned between pp. 1944-1945.

1939 21.2345 Paleozoic stratigraphy and palaeontology of Grand Canyon, Edwin D. McKee. *In:* Reports on investigations; palaeontology, early man, and historical geology. *Carnegie Institution of Washington, Year Book 38*, p. 303.

1941 21.2346 Recent research on major problems of the Grand Canyon area. *In:* Paleontology, early man, and historical geology. *Carnegie Institution of Washington, Year Book 40*, pp. 330-331.

1942 21.2347 Research on major problems of the Grand Canyon. *In:* Paleontology, early man, and historical geology. *Carnegie Institution of Washington, Year Book 41*, pp. 293-294.

1943 21.2348 Investigation of major problems in geology and paleontology of the Grand Canyon. *In:* Paleontology, early man, and historical geology. *Carnegie Institution of Washington, Year Book 42*, pp. 196-197.

Merriam, John Campbell, *et al.*

1936 21.2349 Continuation of palaeontological researches. *Carnegie Institution of Washington, Year Book 35*, pp. 316-319.

1937 21.2350 Continuation of palaeontological researches. *Carnegie Institution of Washington, Year Book 36*, pp. 332-334.

Miller, Anne E.; Steele, Nicholas; AND Tobin, Benjamin W.

2018 21.8244 Vulnerability and fragility risk indices for non-renewable resources. *Environmental Monitoring and Assessment*, 190: paper 373, 11 pp.

► Focus on cave paleontological resources in Grand Canyon National Park.

Miller, Anne E.; Tobin, Benjamin W.; Schenk, Edward R.; AND Henderek, Robyn L.

2016 21.7044 Paleontological resource significance and vulnerability in the Grand Canyon and environmental impact of the Transcanyon Pipeline replacement [ABSTRACT]. *Geological Society of America, Abstracts with Programs*, 48(7): Paper 96-2, doi:10.1130/abs/2016AM-281669.

Minard, Anne

1999 21.2381 Paleontologist Jim Mead. *Flagstaff Live!*, 5(14) (April 8-14): 9.

Muller, Seth

2005 21.4104 Christa Sadler; shell, bone and track; true loves of a fossil hunter. *In:* Talking with Flagstaff's geologists [FEATURE]. *Northern Arizona's Mountain Living Magazine*, (September): 20-21, 26-27.

N

Nelson, Clifford M., AND Yochelson, Ellis L.

1980 21.2449 Organizing Federal paleontology in the United States, 1858-1907. *Society for the Bibliography of Natural History, Journal*, 9: 607-618.

Newberry, John Strong

1861 21.2455 Geological report. *In:* Ives, J. C., Report upon the Colorado River of the West, explored in 1857 and 1858. *U.S. 36th Congress, 1st Session, Senate Executive Document [no number], Serial 1058*, Part 3, 154 pp. [separately paginated part in volume], with two geographical maps and with two added geological maps in volume pocket.

► Includes a section on paleontology, including new species, with plates (which comprise the first paleontological investigation of the Grand Canyon, conducted principally along Peach Springs Wash on today's Hualapai Indian Reservation).

The Ives volume was also released as *House Executive Document 90*; identical to the Senate version but omitting the two geological maps.

1969 21.2459 Geological report. *In:* Ives, J. C., Report upon the Colorado River of the West, explored in 1857 and 1858. New York: Da Capo Press, 154 pp. [separately paginated part in volume], with two maps in volume pocket.

► Volume is a facsimile reprint of Ives (1861) Senate Executive Document variant, including colored plates, but fold-outs and maps are reduced in size.

Nichols, R. L.

1930 21.2465 Fossils and what they tell. *Grand Canyon Nature Notes*, 4(9) (July 31): 59-60.

O

Osburn, Annie

1997 21.2514 Stories from deep time; fossils. To hike down the base of the Grand Canyon is to travel through time, layer by layer, a parade of fossils marking your progress. *Lapidary Journal*, 51(2): 310-.

P

Pattison, Halka

1948 21.2548 Life in an ancient Arizona sea. *Plateau*, 21(1): 1-6.

R

Rothpletz, August

1915 21.7962 Über die systematische Deutung und die stratigraphische Stellung der ältesten Versteinerungen Europas und Nordamerikas mit besonderer Berücksichtigung der Cryptozoen und Oolithe. I. Teil: Die Fauna der Beltformation bei Helena in Montana. [*transl.* 'On the systematic interpretation and stratigraphic [osition of the oldest fossils of Europe and North America, with special reference to cryptozoa and polites. Part I: The fauna of the Belt Formation near Helena, Montana.'] *Königlich Bayerischen Akademie der Wissenschaften* (Mathematisch-physikalische Klasse) (München), 18(1), 46 pp., 2 plates. [In German.]

► See "Vorbemerkung zum I. Teil" ['Preliminary note to Part I'] (pp. 3-4), which relates to the author's participation in the 1913 International Geological Congress and his intent to do field studies that included mounting an expedition to study the paleontology of the Chuar Group of Grand Canyon, following the footsteps of Charles D. Walcott. He intended to use the Grandview Hotel as a base of operation, but he discovered that there was no boat to ferry him to the north side of the Colorado River. Instead he focused on the Unkar Group on the south side of Grand Canyon, realizing that any expedition to the Chuar would require bringing pack animals in from the north.

S

St. John, Orestes, AND Worthen, A. H.

1883 21.5125 Descriptions of fossil fishes. *From:* St. John, Orestes, and Worthen, A. H., Part II. Palaeontology of Illinois. Section I. Descriptions of fossil vertebrates. *In: Illinois Geological Survey, Volume VII. Geology and palaeontology.* Published by authority of the Legislature of Illinois, pp. [55]-264.

► See pp. 154-156, and Plate 10, figure 1; description of *Deltodus powellii*, new species. "The unique example above described was obtained by Maj. Powell's expedition to the Grand cañon of Colorado [*sic*], from the Carboniferous limestone." (p. 155). "*Geological position and locality*: Carboniferous limestone, probably of the age of the Coal Measures; Grand cañon of the Colorado, Utah territory." (p. 156). Precise locality unknown, though not from the Grand Canyon–proper. Cited here for the nomenclatural data conveyed.

Santucci, Brianna; Moneymaker, Carol A.; Lisco, John F.; AND Santucci, Vincent L.

2021 21.8352 An overview of paleontological resources preserved within prehistoric and historic structures. *In:* Lucas, Spencer G., Hunt, Adrian P., and Lichtig, Asher J. (eds.), Fossil Record 7. *New Mexico Museum of Natural History and Science, Bulletin 82*, pp. 347-356.

► See "Bright Angel Lodge—Grand Canyon National Park, Arizona" (pp. 350-351, 353-354) and "Park Headquarters Plaza—Grand Canyon National Park, Arizona" (p. 354).

Santucci, Vincent L.

2005 21.7414 Historical perspectives on biodiversity and geodiversity. *George Wright Forum*, 22(3): 29-34.

► See p. 32, brief remarks on the Abert and Kaibab squirrels in the context of mountain building and orogeny.

2015 21.6834 National Park Service paleontological resources management, research and collections: Historical perspectives [ABSTRACT]. *Geological Society of America, Abstracts with Programs*, 47(7): 479.

2017 21.7413 Preserving fossils in the national parks: A history. *Earth Sciences History*, 36(2): 245-285.

► Grand Canyon, see pp. 254-256, 259, 262, 265. Grand Canyon-Parashant National Monument, see p. 275.

2020 21.8028 Chapter 1. Introduction and summary: The paleontological heritage of Grand Canyon National Park. *In:* Santucci, Vincent L., and Tweet, Justin S. (eds.), *Grand Canyon National Park : centennial paleontological resource inventory (non-sensitive version).* Fort Collins, Colorado: U.S. National Park Service, Natural Resource Stewardship and Science, pp. 1-10. (Volume: *Natural Resource Report NPS/GRCA/NRR—2020/2103*.)

2020 21.8131 Reflecting back in time to uncover the rich fossil record of Grand Canyon National Park. *Canyon Views* (Grand Canyon Conservancy), 27(2) (Fall/Winter): 4-17.

2021 21.8253 The paleontological heritage of Grand Canyon National Park. *In:* Santucci, Vincent L., and Tweet, Justin S. (eds.), Grand Canyon National Park centennial paleontological resource inventory; a century of fossil discovery and research. *Utah Geological Association, Special Publication 1*, pp. 1-10.

► Reset reprinting of Santucci (2020, ITEM NO. 21.8028).

Santucci, Vincent L., AND Knight, Cassi

2013 21.6200 An inventory of paleobotanical resources from National Park Service areas [ABSTRACT]. *Geological Society of America, Abstracts with Programs*, 45(7): 65.

Santucci, Vincent L., AND Koch, Alison L.

2003 21.6234 Paleontological resource monitoring strategies for the National Park Service. *Park Science* (U.S. National Park Service), 22(1) (Fall): 22-25.

► See in Figure 1 (p. 22), illustration of late Paleozoic reptilian or amphibian tracks in Grand Canyon National Park.

Santucci, Vincent L., AND Tweet, Justin S.

2020 21.8027 (EDS.) *Grand Canyon National Park : centennial paleontological resource inventory (non-sensitive version).* Fort Collins, Colorado: U.S. National Park Service, Natural Resource Stewardship and Science, 603 pp. (Natural Resource Report NPS/GRCA/NRR-2020/2103.)
https://npshistory.com/publications/grca/nrr-2020-2103-nsv.pdf

► Individually authored chapters, plus appendices to volume without authors noted: "Appendix A. Fossil Taxa Named From GRCA" (pp. 505-520), "Appendix B. Fossil Taxa Potentially Named From GRCA" (pp. 521-523), "Appendix C. Stratigraphic Tables of GRCA Paleozoic Taxa" (pp. 525-589), "Appendix D. Outside Repositories of GRCA Fossils" (pp. 591-594), "Appendix E. Paleontological Resource Law and Policy" (pp. 595-601), "Appendix F. Geologic Time Scale", "Modified from 1999 Geological Society of America Timescale" and "Dates and additional information from International Commission on Stratigraphy update 2019/05 . . . and USGS Fact Sheet 2007-3015" (p. 603). [The appendices are rearranged in the 2021 reprinting, appended to individual papers.]

NOTE: The "sensitive version", not publicly available, is Natural Resource Report NPS/GRCA/NRR-2020/2095.

2021 21.8249 (EDS.) *Grand Canyon National Park centennial paleontological resource inventory : a century of fossil discovery and research.* Utah Geological Association, Special Publication 1, 343 pp. + interleaved separately paginated appendices [466 pp. total].

► Published by the Utah Geological Association, Salt Lake City, in cooperation with U.S. National Park Service, Washington, D.C. Reset reprinting of Santucci and Tweet (2020, ITEM NO. 21.8027). Individually authored chapters and appendices, with original cover art by Julius Csotonyi.

This is State 1, available as an electronic-only document (PDF).[1] It also can be distinguished from State 2 by its uncorrected text in the foreword (p. v), which is

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mistitled, "Forward", which mentions "Dr. Earl Spammer" [*sic*]. The PDF version was officially released on Earth Day 2021 (April 22).

2021 21.8275 (EDS.) *Grand Canyon National Park centennial paleontological resource inventory; a century of fossil discovery and research.* Utah Geological Association, Special Publication 1, 343 pp. + interleaved separately paginated appendices [466 pp. total].

► Published by the Utah Geological Association, Salt Lake City, in cooperation with U.S. National Park Service, Washington, D.C.) Reset reprinting of Santucci and Tweet (2020, ITEM NO. 21.8027). Individually authored chapters and appendices (cited separately herein), with original cover art by Julius Csotonyi.

This is State 2, in print format only, which was produced as a one-off job by the U.S. Government Printing Office as arranged by the U.S. National Park Service (but not so indicated anywhere in the publication); 200 copies. It also can be distinguished from State 1 by the corrected title of the "Foreword" (p. v), which there mentions "Dr. Earle Spamer" (correctly spelled but the title "Dr." is retained). The print version was first mailed on May 18, 2021.

Santucci, Vincent L., AND Wood, John R. "Jack"

2015 21.7417 Application of new technologies supporting paleontological resource inventory and monitoring in Intermountain Region parks. *Crossroads in Science* (U.S. National Park Service, Intermountain Region), (3): 73-81. [Grand Canyon National Park, p. 77.]

Santucci, Vincent L.; Hodnett, John-Paul; Seiser, Patricia; Tweet, Justin S.; AND Wood, John "Jack"

2023 21.8716 National Park Service cave paleontology: 2002-2023. *Journal of Cave and Karst Studies*, 87(4) (December): 108-116.

► See "Grand Canyon National Park" (p. 110), "Parashant National Monument (Arizona)" [Grand Canyon-Parashant National Monument] (p. 112).

Santucci, Vincent L.; Kenworthy, Jason; AND Kerbo, Ron

2001 21.3731 An inventory of paleontological resources associated with National Park Service Caves. [Lakewood, Colorado?]: *U.S. National Park Service, Geologic Resources Division Technical Report NPS/NRGRD/GRDTR-01/02*, 50 pp. (NPS D-2231.)

► See pp. 16-24, 28.

Santucci, Vincent L.; Tweet, Justin S.; AND Connors, Timothy B.

2018 21.7972 The paleontology synthesis project and establishing a framework for managing National Park Service paleontological resource archives and data. *In:* Fossil Record 6. *New Mexico Museum of Natural History and Science, Bulletin 79*, pp. 589-601.

Santucci, Vincent L.; Tweet, Justin S.; AND Kenworthy, Jason P.

2012 21.6233 Paleoblitz: Uncovering the fossil record of the national parks. *Park Science* (U.S. National Park Service), 29(1) (Spring/Summer): 29-32.

Santucci, Vincent L.; Tweet, Justin S.; Nebel, Mark; Miller, Anne; Boudreau, Diana; Widrig, Klara; AND Hodnett, John-Paul

2019 21.7958 Celebrating the paleontological heritage of Grand Canyon National Park during the park's centennial [ABSTRACT]. *In:* 11th North American Paleontological Convention : NAPC : program with abstracts : June 23-27, 2019, Riverside, California. *PaleoBios*, 36 (Supplement 1): 311-312.

Science Service

1927 21.2893 Fossil footprints in the Grand Canyon. *In:* Science News [SECTION]. *Science*, New Series, 65 (March 11, Supplement): x.

1927 21.2894 Fossil-bearing rocks of the Grand Canyon. *In:* Science News [SECTION]. *Science*, New Series, 65 (April 29, Supplement): xii.

1930 21.2895 Fossil species of the Grand Canyon. *In:* Science News [SECTION]. *Science*, New Series, 71 (March 7, Supplement): x, xii.

Skwara, Theresa

1992 21.2968 *Old bones and serpent stones : a guide to interpreted fossil localities in Canada and the United States. Volume 2: Western states.* Blacksburg, Virginia: McDonald and Woodward Publishing Co., 301 pp.

► See cover, pp. 63, 102, 217-222.

Spamer, Earle E.

NOTE: As of 2019, Geological Society of America Microform Publications were made available commercially as PDFs online through https://pubs.geoscienceworld.org/books/.

1983 21.3004 Geology of the Grand Canyon: An annotated bibliography, 1857-1982, with an annotated catalogue of Grand Canyon type fossils. (Foreword by Edwin D. McKee.) *Geological Society of America, Microform Publication 13*, 543 [544] pp. on six 98-frame fiche.

1984 21.3005 Geology of the Grand Canyon: An annotated bibliography, with an annotated catalogue of Grand Canyon type fossils. Volume 2. Supplement to the annotated bibliography (1857-1983), Supplement and revisions to the annotated catalogue. *Geological Society of America, Microform Publication 14*, 229 pp. on three 98-frame fiche.

1989 21.3009 The development of geological studies in the Grand Canyon; prepared for the 28th International Geological Congress Colorado River field trips through the Grand Canyon, Lees Ferry to Temple Bar, Lake Mead, Arizona, June/July 1989. *Tryonia* (Academy of Natural Sciences of Philadelphia, Department of Malacology, Miscellaneous Publications), no. 17, 87 pp. (Contribution of the Invertebrate Paleontology Section, no. 1.)

► 300 copies printed; first distributed gratis to members of the field trips. The trips, incidentally, ended at Pearce Ferry, not at Temple Bar as originally planned).

1988 21.3008 Geology of the Grand Canyon: An annotated bibliography, with an annotated catalogue of Grand Canyon type fossils. Volume 3. Second supplement (to 1987) with an annotated bibliography of the world literature on the Grand Canyon type fossil *Chuaria circularis* Walcott, 1899, an index fossil for the late Proterozoic. *Geological Society of America, Microform Publication 17*, 343 [355] pp. on four 98-frame fiche.

1990 21.3011 Geology of the Grand Canyon: An annotated bibliography, with an annotated catalogue of Grand Canyon type fossils. Volume 4. Third supplement (to 1989), with supplement to the annotated bibliography of the world literature on the Grand Canyon type fossil *Chuaria circularis* Walcott, 1899. *Geological Society of America, Microform Publication 20*, 178 pp. on two 98-frame fiche.

1992 21.3015 Geology of the Grand Canyon: An annotated bibliography, with an annotated catalogue of Grand Canyon type fossils. Volume 5. Fourth supplement (to 1991) with second supplement to the annotated bibliography of the world literature on the Grand Canyon type fossil *Chuaria circularis* Walcott, 1899. *Geological Society of America, Microform Publication 23*, 234 pp. on three 98-frame fiche.

1992 21.3016 The Grand Canyon fossil record; a source book on paleontology of the Grand Canyon and vicinity, northwestern Arizona and southeastern Nevada. Bibliography; indexes to taxa, stratigraphic records, localities, and repositories of type, figured, and cited specimens. *Geological Society of America, Microform Publication 24*, 1,008 pp. on eleven 98-frame fiche.

1992 21.3017 Computerized database on Grand Canyon paleontology [ABSTRACT]. *National Park Service Paleontological Research Abstract Volume, 3rd Fossil Resources Conference, Fossil Butte National Monument, Wyoming, September 1992*, p. 42.

1993 21.6321 Computerized database on Grand Canyon paleontology [ABSTRACT]. *In:* Santucci, Vincent L. (ed.), National Park Service paleontological research, Volume 1. *U.S. National Park Service, Technical Report NPS/NRPEFO/NRTR-93/11*, pp. 37-38.

1993 21.3018 GCPALEO: A computerized database on Grand Canyon paleontology. *In:* News and Notes [SECTION]. *Academy of Natural Sciences of Philadelphia, Proceedings*, 144: 342-343.

1995 21.3020 Sublime stone; Grand Canyon geology after Powell. *Canyon Legacy* (Dan O'Laurie Museum), (24): 16-26, back cover.

2020 21.8029 Chapter 2. History of paleontological work at Grand Canyon National Park. Up and down the long federal and NGO trails of paleontology in Grand Canyon National Park, 1858-2019. *In:* Santucci, Vincent L., and Tweet, Justin S. (eds.), *Grand Canyon National Park : centennial paleontological resource inventory (non-sensitive version).* Fort Collins, Colorado: U.S. National Park Service, Natural Resource Stewardship and Science, pp. 11-44. (Volume: *Natural Resource Report NPS/GRCA/NRR—2020/2103*.) [NGO: Non-Government Organization.]

2021 21.8254 History of paleontological work at Grand Canyon National Park—up and down the long federal and NGO trails of paleontology in Grand Canyon National Park, 1858-2019. *In:* Santucci, Vincent L., and Tweet, Justin S. (eds.), Grand Canyon National Park centennial paleontological resource inventory; a century of fossil discovery and research. *Utah Geological Association, Special Publication 1*, pp. 11-32.

► Reset reprinting of Spamer (2020, ITEM NO. 21.8029).

T

Tweet, Justin S.

2021 21.8264 (COMPILER) Grand Canyon National Park paleontological supplemental information: Part A. Fossil taxa named from GRCA. *In:* Santucci, Vincent L., and Tweet, Justin S. (eds.), Grand Canyon National Park centennial paleontological resource inventory; a century of fossil discovery and research. *Utah Geological Association, Special Publication 1*, pp. [unpaginated page facing 267], 267-281.

2021 21.8265 (COMPILER) Grand Canyon National Park paleontological supplemental information: Part B. Fossil taxa potentially named from GRCA. *In:* Santucci, Vincent L., and Tweet,

Justin S. (eds.), Grand Canyon National Park centennial paleontological resource inventory; a century of fossil discovery and research. *Utah Geological Association, Special Publication 1*, pp. 282-283.

2021 21.8266 (COMPILER) Grand Canyon National Park paleontological supplemental information: Part C. Stratigraphic tables of GRCA Paleozoic taxa. *In:* Santucci, Vincent L., and Tweet, Justin S. (eds.), Grand Canyon National Park centennial paleontological resource inventory; a century of fossil discovery and research. *Utah Geological Association, Special Publication 1*, pp. 284-337.

Tweet, Justin S., AND Santucci, Vincent L.

2021 21.8351 From microfossils to megafauna: An overview of the taxonomic diversity of National Park Service fossils. *In:* Lucas, Spencer G., Hunt, Adrian P., and Lichtig, Asher J. (eds.), Fossil Record 7. *New Mexico Museum of Natural History and Science, Bulletin 82*, pp. 437-452.

► Includes Grand Canyon National Park.

2024 21.8534 The collected paleontological heritage of the National Park Service [ABSTRACT]. *In:* Wilson, Jeffrey A. Mantilla, and Friedman, Matt (eds.), 12th North American Paleontological Convention, University of Michigan, 17-21 June 2024; Program with abstracts. *University of Michigan, Papers on Paleontology*, (39): 419.

Tweet, Justin S.; Kenworthy, Jason P.; AND Santucci, Vincent L.

2009 21.4679 An inventory of paleontological resources from National Park Service areas in the southern Colorado Plateau [ABSTRACT]. *Geological Society of America, Abstracts with Programs*, 41(7): 366.

Tweet, Justin S.; Santucci, Vincent L.; AND Connors, Tim

2016 21.7075 An updated inventory of paleontological resources from the National Park Service's Mojave Desert Inventory and Monitoring Network [ABSTRACT]. *Geological Society of America, Abstracts with Programs*, 48(7): Paper 96-10, doi:10.1130/abs/2016AM-283270.

► Mentions Grand Canyon-Parashant National Monument.

Tweet, Justin S.; Santucci, Vincent L.; AND Hunt, Adrian P.

2012 21.6898 An inventory of packrat (*Neotoma* spp.) middens in National Park Service areas. *In:* Hunt, Adrian P., Milàn, Jesper, Lucas, Spencer G., and Spielmann, Justin A. (eds.), Vertebrate coprolites. *New Mexico Museum of Natural History and Science, Bulletin 57*, pp. 355-368. [Grand Canyon National Park, p. 361; Pipe Spring National Monument, p. 363; Grand Canyon-Parashant National Monument, p. 364.]

Tweet, Justin S.; Santucci, Vincent L.; AND McDonald, H. Gregory

2016 21.7102 Name-bearing fossil type specimens and taxa named from National Park Service areas. *In:* Sullivan, Robert M., and Lucas, Spencer G. (eds.), Fossil record 5. *New Mexico Museum of Natural History and Science, Bulletin 73*, pp. 277-288.

► Text and illustrations include Grand Canyon National Park.

U

U.S. National Academy of Sciences

1928 21.6510 Marsh Fund. *In: Report of the National Academy of Sciences : fiscal year 1926-1927.* Washington, D.C.: U.S. Government Printing Office, p. 21.

► Grants awarded include: "November, 1926: A. A. Stoyanow, University of Arizona, Tucson, Ariz., $150. Study of Paleozoic faunas of the Grand Canyon in Colorado [*sic*]."; "November, 1926: G. E. Sturdevant, Grand Canyon National Park, Ariz., $150. Study of Paleozoic and pre-Cambrian faunas and formations of the Grand Canyon under direction of the committee of the section of geology and paleontology on research and educational use of outstanding features in earth history." (ENTIRE NOTE)

U.S. National Park Service, Geologic Resources Division; AND American Geosciences Institute

2015 21.8720 *Paleontology guide.* Denver, Colorado: U.S. National Park Service, Geologic Resources Division; and Washington, D.C.: American Geosciences Institute, 55 pp.

► Educational guide to paleontology in the national parks. Includes Grand Canyon, *passim*.

U.S. National Park Service, Grand Canyon National Park

NO DATE 21.7939 [Fossil trading cards.] U.S. National Park Service, Grand Canyon National Park, 9 cards. [2019.]

► Set of 9 numbered cards illustrating Grand Canyon fossils, with explanatory text on verso with QR code to allow users with smart phones to access an interactive 3D model online. Produced and distributed to commemorate National Fossil Day 2019; issued in plastic snap-lid container.] [Cards: 1) "Tetrapod Trackway" (*Ichniotherium sphaerodactylum*, Permian Coconino Sandstone); 2) "Shasta Ground Sloth" (*Nothrotherium shastensis*, Ice Age cave deposits); 3) "Dragonfly Wing" (*Typus whitei*, Permian Hermit Formation); 4) "Trilobite" (*Dolichotetopus productus*, Cambrian Bright Angel Shale); 5) "Stromatolite" (*Collenia*, Precambrian Grand Canyon Supergroup), 6) "Seed Fern" (*Pteridospermaphyta*, Permian Hermit Formation); 7) "Brachiopods" (*Peniculauris bassi*, Permian Kaibab Limestone); 8) "Burrows" (*Scoyenia gracilis*, Permian Hermit Formation); 9) "Crinoid Columnal" (Crinoidea, Mississippian Redwall Formation).

W

Weaver, Charles E.

1955 21.3379 Invertebrate paleontology and historical geology from 1850 to 1950. *In:* Kessel, Edward L. (ed.), *A century of progress in the natural sciences, 1853-1953 : published in celebration of the centennial of the California Academy of Sciences.* San Francisco: California Academy of Sciences, pp. 689-745.

► See p. 717.

White, David

1929 21.3469 Interpreting the Grand Canyon. *Science*, New Series, 69: 671-672.

Wood, John R.; Bozek, Michael A.; Milner, Andrew R. C.; Mims, Alison L.; Frost, Forest; AND Santucci, Vincent L.

2021 21.8349 Structure from motion photogrammetry enhances paleontological resource documentation, research, preservation and education efforts for National Park Service areas. *In:* Lucas, Spencer G., Hunt, Adrian P., and Lichtig, Asher J. (eds.), Fossil Record 7. *New Mexico Museum of Natural History and Science, Bulletin 82*, pp. 513-523.

► See "Case Study #3—Use of 3D Data for Enhanced Visitor Engagement and Outreach" (pp. 520-521), which features "a virtual museum to showcase the palentological resources of Grand Canyon National Park (https://www.nps.gov/articles/series.htm?id=A9E62040-AC6F-A6D7-BE564A036F1D6146)" (accessed *here*, 7 November 2021; reaccessed 24 March 2026).

Woodbury, Angus M.

1937 21.3522 An evolutionary time scale. *Evolution* (Society for the Study of Evolution), 4(1) (June): cover, 7-8.

Y

Yochelson, Ellis L.

1998 21.3544 *Charles Doolittle Walcott, paleontologist.* Kent, Ohio, and London: Kent State University Press, 510 pp.

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12. PUBLICATIONS WITH CREATIONIST PERSPECTIVES

Publications that relate to creationist and young-earth perspectives of Grand Canyon paleontology are included here with the understanding that this is an ongoing, sometimes turbulent, field of study that contrasts ideas of faith with the tenets and methodologies of empirical and falsifiable science. Accordingly, some users of this bibliography may object to including creationist research with science-based works of geology and paleontology. However, these are *topically* identical so they are not excluded though here relegated to their own informative section.[1]

See pp. 9-11 for Paleozoic and Proterozoic stratigraphic nomenclature.

Unsigned

1981	*21.49*	Update on pollen in Grand Canyon. *Bible-Science Newsletter*, 19(6): 5-6.
1989	*21.3809*	Fossil pollen in Grand Canyon overturns plant evolution. *Creation Ex Nihilo*, 12(1): 38-39.
2001	*21.3896*	In search of nautiloids. *Acts and Facts* (Institute for Creation Research), 30(8) (August): 3-4.
2003	*21.8432*	ICR geologist presents discovery at geologic society meeting. *Acts and Facts* (Institute for Creation Research), 32(1) (January): 1. ► Steven Austin presents finding pertaining to orthocone nautiloid layer in the Redwall Limestone in Marble Canyon.
2003	*21.5263*	Footprints in stone. *Creation Resources Trust, Fact Sheet 28*, 2 pp. (Creation Resources Trust, Yeovil, United Kingdom.)
2005	*21.6280*	Coconino Sandstone. *Creation News Update* (Crying Rocks Ministry, Sedona, Arizona), 2(6) (December): 1-2.

[1] A more complete bibliography for all Grand Canyon–focused creationist works (earth science, generally speaking) is available through Raven's Perch Media, comprising Parts 5 and 6 in *Contrary Canyon: A Bibliographical Guide to the Grand Canyon's Unconventional Past* (2nd edition, 2025). Part 5 of that work is "Young-Earth Creationism"; Part 6 is "Counterpoints to Young-Earth Creationism, Old-Earth Creationism Alternatives, and Historical Perspectives." Access PDF at https://ravensperch.org/wp-content/uploads/2025/01/Contrary-Canyon_2nd-ed.pdf; a flipbook format is at https://online.fliphtml5.com/ryvqb/ypiq/, and an archived copy is available through the Internet Archive online, https://archive.org/details/contrary-canyon-2nd-ed.

2021 *21.8619* Tiny time bombs. [Untitled tract] (Berean Baptist Church, London, Ontario), (January 24).

► Article comprises full-panel remarks introduced thusly: "The discovery of tiny pollen grains in rock shows just how inflated the billions of years claimed by evolutionists really are." Refers to Burdick (1981, ITEM NO. 21.8618). Apparently reprinted in various venues over time. Compare Unsigned (2024, ITEM NO. 21.8620).

2024 *21.8620* Tiny time bombs. *Friday Church News Notes* (Way of Life Literature, Fundamental Baptist Information Service, Port Huron, Michigan), 25(13) (March 29): 4.

► Credited to "CreationMoments.com, Jan. 26, 2024". Remarks introduced thusly: "The discovery of tiny pollen grains in rock shows just how inflated the billions of years claimed by evolutionists really are." Refers to Burdick (1981, ITEM NO. 21.8618). Apparently reprinted in various venues over time. Compare Unsigned (2021, ITEM NO. 21.8619).

A

Austin, Steven A.

2000 21.4233 The pre-Flood/Flood boundary: Correcting significant misunderstandings. CEN Technical Journal (Creation Ex Nihilo Technical Journal), 14(2): 59-63.

► Critique of paper by Carl R. Froede, Jr. (1999); see also reply by Froede (2000).

2003 *21.4444* Nautiloid mass kill and burial event, Redwall Limestone (Lower Mississippian), Grand Canyon region, Arizona and Nevada. *In:* Ivey, Robert L. (ed.), *Proceedings of the Fifth International Conference on Creationism : held August 4-9, 2003, Pittsburgh, Pennsylvania, USA : technical symposium sessions.* Pittsburgh: Creation Science Fellowship.

2003 *21.7471* [Remarks on nautiloids.] *From:* Grand Canyon; the fossils [SECTION]. *In:* Vail, Tom, *Grand Canyon : a different view.* Green Forest, Arkansas: Master Books, pp. 52-53.

2018 *21.7472* [Remarks on nautiloids.] *From:* Grand Canyon; the fossils [SECTION]. *In:* 湯姆 韦尔 [Vail, Tom], 大峡谷 : 一个非凡的视野 [Dà xiágǔ : yīgè fēifán de shìyě]. Green Forest, Arkansas: Master Books, pp. 52-53. [In Chinese.]

► In the translation of Vail's (2003) *Grand Canyon : a different view*.

Austin, Steven A., AND Wise, Kurt P.

1995 *21.119* Nautiloid mass-kill event at a hydrothermal mound within the Redwall Limestone (Mississippian), Grand Canyon, Arizona [ABSTRACT]. *Geological Society of America, Abstracts with Programs*, 27(6): A-369.

B

Baldwin, John T.

2007 *21.7405* Grand Canyon reveals nautiloid mass kill event. *In:* Faith and Science Update [SECTION]. *Perspective Digest* (Adventist Theological Society, Barrien Springs, Michigan), 12(3): 50-52.

Brand, Leonard R.

1977 *21.385* Coconino Sandstone (Permian) fossil vertebrate footprints; paleoecological implications [ABSTRACT]. *American Association of Petroleum Geologists, Bulletin*, 61: 771.

1978 *21.386* Footprints in the Grand Canyon. *Origins*, 5(2): 64-82.

1979 *21.387* Field and laboratory studies on the Coconino Sandstone (Permian) vertebrate footprints and their paleoecological implications. *In:* Sarjeant, W. A. S. (ed.), *et al.*, Trace fossils. *Palaeogeography, Palaeoclimatology, Palaeoecology*, 28(1/2): 25-38.

1989 *21.388* Coconino Sandstone (Permian) fossil footprints: The influence of the depositing medium on print characteristics [ABSTRACT]. *Geological Society of America, Abstracts with Programs*, 21(6): A111.

1992 *21.389* Reply [to comments by Martin G. Lockley (1992) and David B. Loope (1992) on "Fossil vertebrate footprints in the Coconino Sandstone (Permian) of northern Arizona: Evidence for underwater origin" by Brand and Tang (1991).] *Geology*, 20: 668-669, with combined references cited, pp. 669-670.

1996 *21.390* Variations in salamander trackways resulting from substrate differences. *Journal of Paleontology*, 70(6): 1004-1010.

Brand, Leonard R., AND Florence, James

1982 *21.3914* Stratigraphic distribution of vertebrate fossil footprints compared with body fossils. *Origins*, 9(2): front cover, 67-74, back cover.

Brand, Leonard R., AND Kramer, J.

1996 *21.4456* Underprints of vertebrate and invertebrate trackways in the Permian Coconino Sandstone in Arizona. *Ichnos*, 4(3): 225-230.

Brand, Leonard R., AND Tang, Thu

1991 *21.391* Fossil vertebrate footprints in the Coconino Sandstone (Permian) of northern Arizona: Evidence for underwater origin. *Geology*, 19: 1201-1204 + Appendix 1 as "Supplementary Data 9135" [Data Repository item].

► See also comments by Martin G. Lockley (1992) and David B. Loope (1992), and reply by Brand (1992).

Burdick, Clifford L.

1966 *21.468* Microflora of the Grand Canyon. *Creation Research Society Annual*, 3(1) (May): 38-50.

1972 *21.469* Progress report on Grand Canyon palynology. *Creation Research Society Quarterly*, 9(1): 25-30.

1981 *21.8618* Pine pollen in the Grand Canyon. *Bible-Science Newsletter*, (June): 1.

1982 *21.3911* Re: Chadwick: Precambrian Pollen in the Grand Canyon—A Reexamination (Origins 8: 7-12). *In:* Reactions [SECTION]. *Origins*, 9(1): 7-9.

► Comment on Chadwick (1981, ITEM NO. 21.528).

C

Chadwick, Arthur V.

1981 *21.528* Precambrian pollen in the Grand Canyon—a reexamination. *Origins*, 8(1): cover, 7-12.

► See also comments by Clifford L. Burdick and by W. H. Rusch, Sr., *Origins*, 9(1): 7-9 (1982, ITEM NOS. 21.3911, 21.3912, respectively).

Chadwick, Arthur V.; DeBord, P.; AND Fisk, L. H.

1973 *21.529* Grand Canyon palynology—a reply. *Creation Research Society Quarterly*, 9(4): 238.

Clendenon, Cedric, AND Brand, Leonard

2024 *21.8540* Trackways of scorpions, tarantulas, and crayfish produced experimentally in subaerial and subaqueous conditions compared with *Paleohelcura* and *Octopodichnus* [ABSTRACT]. *In: ICHNIA 2024—The 5th International Congress on Ichnology : celebrating one ichnology! : Florianópolis, Brazil, April 14-19th, 2024 : abstract book*, pp. 69-71.

► Relates to ichnofossils of the Coconino Sandstone, supporting Brand's creationist perspectives. See also publications by Brand. (See also discussions of taxonomic nomenclature by Clendenon and Brand under "Ichnology" in the present bibliography.)

Coffin, Harold

1975 *21.8129* The fossil record attests Creation; the sudden appearance in the fossil record of complex animals disproves the theory of progressive evolution. *Advent Review and Sabbath Herald* (Seventh-day Adventists, Washington, D.C.), 152(16) (April 17): 8-10.

► Text begins with remarks on Grand Canyon.

Covey, Jon

2014 *21.6371* Stratigraphic ranges of fossils continue to expand with new discoveries. (Anita Millen, ed.) *Creation in the Crossfire* (South Bay Creation Science Association, Torrance, California), (March): 1-5.

D

Duff, R. Joel [Duff, Joel]

2016 *21.6984* Tiny plants—big impact; pollen, spores, and plant fossils. *In:* Hill, Carol A., Davidson, Gregg, Helble, Tim, and Ranney, Wayne (eds.), *The Grand Canyon : monument to an ancient earth : can Noah's Flood explain the Grand Canyon?* Grand Rapids, Michigan: Kregel Publications; and Tulsa, Oklahoma: Solid Rock Lectures, pp. 144-151.

2016 *21.6988* Life in the canyon; packrats, pollen, and giant sloths. *In:* Hill, Carol A., Davidson, Gregg, Helble, Tim, and Ranney, Wayne (eds.), *The Grand Canyon : monument to an*

ancient earth : can Noah's Flood explain the Grand Canyon? Grand Rapids, Michigan: Kregel Publications; and Tulsa, Oklahoma: Solid Rock Lectures, pp. 178-183.

F

Ferrell, Vance

1996 *21.4505* *The evolution handbook.* Altamont, Tennessee: Harvestime Books, [144] pp. (The Evolution Disproved Series—Book 23.)

► Grand Canyon, pp. [77], [93]-[94].

Froede, Carl R., Jr.

1999 *21.4223* Precambrian metazoans within a young-earth Flood framework. *CEN Technical Journal* (Creation Ex Nihilo Technical Journal), 13(2): 90-95.

► See also Comment by Steven A. Austin, and rejoinder by Froede (2000).

1999 *21.3869* Precambrian plant fossils and the Hakatai Shale controversy. *Creation Research Society Quarterly*, 36(3) (December): 106-113.

2000 *21.4224* The pre-Flood/Flood boundary: scholarship and clarification. CEN Technical Journal (Creation Ex Nihilo Technical Journal), 14(2): 63-68.

► Reply to critique by Steven A. Austin (2000).

G

Garton, Michael

1996 *21.5868* The pattern of fossil tracks in the geological record. *CEN Technical Journal* (Creation Ex Nihilo Technical Journal), 10(1): 82-100.

► Grand Canyon, see pp. 91-92, 93, 94, 96.

Gish, Duane T.

2003 *21.7469* [Remarks on fossils.] *From:* Grand Canyon; the fossils [SECTION]. *In:* Vail, Tom, *Grand Canyon : a different view.* Green Forest, Arkansas: Master Books, pp. 50-51.

2018 *21.7470* [Remarks on fossils.] *From:* Grand Canyon; the fossils [SECTION]. *In:* 湯姆 韦尔 [Vail, Tom], 大峡谷 : 一个非凡的视野 [Dà xiágǔ : yīgè fēifán de shìyě]. Green Forest, Arkansas: Master Books, pp. 50-51. [In the translation of Vail's (2003) *Grand Canyon : a different view*.] [In Chinese.]

H

Ham, Ken

2003 *21.7471* [Remarks on nautiloids.] *From:* Grand Canyon; the fossils [SECTION]. *In:* Vail, Tom, *Grand Canyon : a different view.* Green Forest, Arkansas: Master Books, pp. 52-53.

2003 *21.7475* [Remarks on fossils.] *From:* Grand Canyon; the fossils [SECTION]. *In:* Vail, Tom, *Grand Canyon : a different view.* Green Forest, Arkansas: Master Books, p. 55.

2018 *21.7472* [Remarks on nautiloids.] *From:* Grand Canyon; the fossils [SECTION]. *In:* 湯姆 韦尔 [Vail, Tom], 大峡谷 ：一个非凡的视野 [Dà xiágǔ：yīgè fēifán de shìyě]. Green Forest, Arkansas: Master Books, pp. 52-53. [In the translation of Vail's (2003) *Grand Canyon : a different view*.] [In Chinese.]

2018 *21.7476* [Remarks on fossils.] *From:* Grand Canyon; the fossils [SECTION]. *In:* 湯姆 韦尔 [Vail, Tom], 大峡谷 ：一个非凡的视野 [Dà xiágǔ：yīgè fēifán de shìyě]. Green Forest, Arkansas: Master Books, p. 55. [In the translation of Vail's (2003) *Grand Canyon : a different view*.] [In Chinese.]

Howe, George F.

1986 *21.4235* Creation Research Society studies on Precambrian pollen: Part I—A review. *Creation Research Society Quarterly*, 23 (December): 99-104. [For Part II see Lammerts and Howe (1987, ITEM NO. 21.4236); Part III, Howe *et al.* (1988, ITEM NO. 21.4237).]

Howe, George F.; Williams, Emmett L.; Matzko, George T.; AND Lammerts, Walter E.

1986 *21.3761* Pollen research update. *Creation Research Society Quarterly*, 22: 181-182.

1988 *21.4237* Creation Research Society studies on Precambrian pollen, Part III: A pollen analysis of Hakatai Shale and other Grand Canyon rocks. *Creation Research Society Quarterly*, 24 (March): 173-182.

► For Part I see Howe (1986, ITEM NO. 21.4235); Part II, Lammerts and Howe (1987, ITEM NO. 21.4236).

L

Lammerts, Walter E., AND Howe, George F.

1987 *21.4236* Creation Research Society studies on Precambrian pollen—Part II: Experiments on atmospheric pollen contamination of microscope slides. *Creation Research Society Quarterly*, 23 (March): 151-153.

► For Part I see Howe (1986, ITEM NO. 21.4235); Part III, Howe *et al.* (1988, ITEM NO. 21.4237).

Lang, Walter

1974 *21.4483* (ED.) *Lessons taught by minifossils in the Grand Canyon.* Minneapolis, Minnesota: Bible-Science Association, tract.

Lockley, Martin G.

1992 *21.1887* Comment [on "Fossil vertebrate footprints in the Coconino Sandstone (Permian) of northern Arizona: Evidence for underwater origin" by Brand and Tang (1991).] *Geology*, 20: 666-667.

► See also reply by Brand (1992), pp. 668-669; with combined references cited, pp. 669-670.

M

Malone, Bruce

2006 *21.6764* Grand Canyon mystery solved. *In:* Malone, Bruce, *Search for the truth : changing the world with the evidence for creation.* Midland, Michigan: Search for the Truth, revised, expanded 3rd ed., p. 48.

► Nautiloid evidence for the Flood, in Redwall Limestone.

Monastersky, Richard

1992 *21.2393* Wading newts may explain enigmatic tracks. *Science News*, 141 (January 4): 5.

► Fossil footprints in Coconino Sandstone; reporting on research by L. R. Brand and T. Tang.

N

Neall, Randolph E.

1977 *21.6792* C-14 dating may be wrong before 2000 B.C. *The Ministry* (Seventh-day Adventists, Ministerial Association, Washington, D.C.), 50(9) (September): 7-9.

► Rampart Cave, see p. 9.

R

Robinson, Steven J.

1996 *21.4498* Can Flood geology explain the fossil record? *Creation Ex Nihilo Technical Journal*, 10(1): 32-69.

► Includes Grand Canyon.

Rusch, W. H., Sr.

1982 *21.3912* Re: Chadwick: Precambrian Pollen in the Grand Canyon—A Reexamination (Origins 8: 7-12). *In:* Reactions [SECTION]. *Origins*, 9(1): 7-9.

► Comment on Chadwick (1981, ITEM NO. 21.528).

Ryland, Kenneth

2006 *21.6683* Seven preposterous claims of evolution. *The Sabbath Sentinel* (Bible Sabbath Association, Gillette, Wyoming), 58(4) (July/August): 7-8, 18-19.

► See p. 18, comments on Grand Canyon stratigraphy and paleontology.

S

Snelling, Andrew A.

2008 *21.4445* High and dry sea creatures; flood evidence number one. *Answers*, 3(1) (January/March): 92-95.

2008 *21.4446* The world's a graveyard; flood evidence number two. *Answers*, 3(2) (April/June): 76-79.

Snelling, Andrew A., AND Austin, Steven A.

1992 *21.3808* Grand Canyon: Startling evidence for Noah's Flood; footprints and sand "dunes" in a Grand Canyon sandstone! *Creation Ex Nihilo*, 15(1) (December): 46-50.

Stearley, Ralph

2012 *21.6326* Rocks, fossils and geologic time. *In:* Haarsma, Deborah, and Hoezee, Scott (eds.), *Delight in creation: Scientists share their work with the church.* Grand Rapids, Michigan: Center for Excellence in Preaching, pp. 183-197.

2016 *21.6983* Fossils of the Grand Canyon and Grand Staircase. *In:* Hill, Carol A., Davidson, Gregg, Helble, Tim, and Ranney, Wayne (eds.), *The Grand Canyon : monument to an ancient earth : can Noah's Flood explain the Grand Canyon?* Grand Rapids, Michigan: Kregel Publications; and Tulsa, Oklahoma: Solid Rock Lectures, pp. 130-143.

T

Thomas, Brian

2009 *21.4774* Did plant growth require vast ages? *Acts and Facts* (Institute for Creation Research), (March): 14.

► Includes mention of pollen in Hakatai Shale of Grand Canyon.

V

Vail, Tom

2003 *21.4071* *Grand Canyon : a different view.* Green Forest, Arkansas: Master Books, 104 pp.

► "Written and compiled by Tom Vail. Contributions by: Steve Austin, John Baumgardner, Ken Cumming, Duane Gish, Werner Gitt, Ken Ham, Bill Hoesch, Russ Humphreys, Alex Lalomov, John MacArthur, Henry Morris, John Morris, Terry Mortenson, Mike Oard, Gary Parker, Scott Rugg, Andrew Snelling, Keith Swenson, Larry Varidman, Tas Walker, John Whitcomb, Carl Weiland, Kurt Wise." [Principal photographer] Charly Heavenrich.)

2018 *21.7430* 大峡谷：一个非凡的视野 [Dà xiágǔ：yīgè fēifán de shìyě]. Green Forest, Arkansas: Master Books, 104 pp. [In Chinese.]

► Translation of *Grand Canyon : a different view* (Vail, 2003, ITEM NO. 21.4071). Author's name in Chinese orthography: 湯姆 韦尔. From the 2003 citation: "Written and compiled by Tom Vail. Contributions by: Steve Austin, John Baumgardner, Ken Cumming, Duane Gish, Werner Gitt, Ken Ham, Bill Hoesch, Russ Humphreys, Alex Lalomov, John MacArthur, Henry Morris, John Morris, Terry Mortenson, Mike Oard, Gary Parker, Scott Rugg, Andrew Snelling, Keith Swenson, Larry Varidman, Tas Walker, John Whitcomb, Carl Weiland, Kurt Wise. [Principal photographer] Charly Heavenrich."

W

Walker, Tas [Валкер, Тас]

NO DATE *21.6742* Пласты Лольшого Каньона роказывают, что геологическое время вымышленное [Plasty Bol'shogo Kan'ona pokazyvayut, chto geologicheskoye vremya vymyshlennoy; svidetel'stva global'nogo potopa] [*transl.* 'Fossils of the Grand Canyon show that the geological time scale is false']. *Разумный Замысел* [*Razumnyy Zamysel*] [Intelligent Design], (5): 6. [In Russian.]

► Original English article not located.

Wise, Kurt P.

2003 *21.7473* [Remarks on fossils.] *From:* Grand Canyon; the fossils [SECTION]. *In:* Vail, Tom, *Grand Canyon : a different view.* Green Forest, Arkansas: Master Books, p. 54.

2018 *21.7474* [Remarks on fossils.] *From:* Grand Canyon; the fossils [SECTION]. *In:* 湯姆 韦尔 [Vail, Tom], 大峡谷：一个非凡的视野 [Dà xiágǔ：yīgè fēifán de shìyě]. Green Forest, Arkansas: Master Books, p. 54. [In the translation of Vail's (2003) *Grand Canyon : a different view*.] [In Chinese.]

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13. CRYPTOPALEONTOLOGY

While this section of the Grand Canyon paleontological bibliography is admittedly somewhat whimsical, there is substantially a lot of passing interest to the subject of putative paleontological sightings, which thus should be addressed in a comprehensive work such as this one. The ephemeral nature of such publications is obvious, but the opportunity is taken here to also focus on the sensational, and unrelentingly resurfacing, story of the Indigenous rock art in Havasu Canyon that purports to illustrate a dinosaur.

Unsigned

The three "Unsigned" items are interrelated; the text for each is reprinted in its entirety.

1884 21.3802 [Discovery of "footprints".] *Harper's Weekly*, 28(1414) (January 26): 63.

► "Two miners report finding a series of foot-prints in Grand Cañon, Arizona. The prints are in the basin of the cañon, which was a sand-bed thousands of years ago, but which is now solid rock. In form they are such as would be made by a bare human foot, but each one, the miners say, is twenty-six inches long and twelve inches wide, and the depth of the imprint at the ball of the foot is six inches. Say that a twelve-inch foot goes to a six-foot man, which is the draughtsman's rule, the man who made these imprints must have been thirteen feet in height. The imprints are evenly eighteen feet apart, which would indicate that he was fairly bounding along. The miners will return and cut out the stone in which these foot-prints are contained, and will exhibit them to public gaze." (ENTIRE ITEM)

1884 21.5047 Ancienne race humaine [*transl.* 'Ancient human race']. *In:* Nouvelles de Tous les Points du Globe [SECTION]. *L'Exploration* (Paris), 17: 728. [In French.]

► "On lit dans le *Champion* de Peach Springs (territoire de l'Arizona), que MM. Spencer et Ridenour, de retour récemment de leurs mines de cuivre, ont fait une découverte presque incroyable.

"Dans le bas fond de la gorge conduisant à l'Utah, qui était autrefois une couce de sable et formait probablement, il y a des milliers d'années, une vaste plaine unie (mais dont l'étroit passage est aujourd'hui bordé de chaque côté d'une barrière de rouchers de 118 pieds de haut), ils ont recontré sur le roc sablonneux une empreinte pasreille à celle d'un pied nu, dont les doigts, le cou de pied et le talon étaient nettement marqués à ne pas s'y méprendre. L'empreinte avait 26 pouces de long et 12 de large; presque partout elle avait 4 pouces de profondeur, et 6 à la plante du pied. Plusieurs de ces empreintes étaient visibles sur un certain parcours de long du bord du défilé; elles étaient distinctement et uniformément à la distance de 18 pieds les unes des autres ce qui indiquerait le grand espace qu'un individu de cette race de taille prodigiense pouvait franchir d'une seule enjambée.

"Lorsqu'ills firent cette découverte, les voyageurs n'avaient avec eux deux mules de somme et des outils de mineurs, et ils n'ont pu enlever le morceau de rocher sur lequel se tourvait l'empreinte; mais ils se proposent de retourner sur le lieux et de la rapporter.

(continued)

"Un indien qui se trouvait avec eux a dit: «C'est là que sont entassés les *ancêtres grands* depuis des années.»" (ENTIRE ITEM)

[*transl.*: 'We read in the *Champion* of Peach Springs (Arizona Territory) that Messrs. Spencer and Ridenour, having recently returned from their copper mines, have made an almost incredible discovery.

['In the depths of the gorge leading to Utah—which was once a bed of sand and likely formed, thousands of years ago, a vast, unbroken plain (though its narrow passage is today flanked on either side by a barrier of rocks 118 feet high)—they encountered, upon the sandy rock, an imprint resembling that of a bare foot, in which the toes, the instep, and the heel were so distinctly marked as to be unmistakable. The footprint was 26 inches long and 12 wide; almost everywhere it was 4 inches deep, and 6 at the sole of the foot. Several such imprints were visible along a certain stretch of the gorge's edge; they were distinctly and uniformly spaced 18 feet apart—a fact suggesting the immense distance that an individual of this race, of prodigious stature, could traverse in a single stride.

['When they made this discovery, the travelers had with them only two pack mules and some miners' tools; consequently, they were unable to remove the piece of rock bearing the imprint, but they intend to return to the site and bring it back.

['An Indian who was with them said: "That is where the *great ancestors* have been piled up for years." ']

1901 21.5596 Early American giants. *The Christian Work*, 71 (August 15): 239.

► "Does anybody believe that there ever has been a race of giants in the world? Does anybody believe that a race of gigantic men, who were from twelve to twenty feet high, ever lived in these United States of America? And yet the proof that such a race of people did live in this country is to be found in the Grand Canyon of the Colorado River in northern Arizona. This proof consists of, first: Footprints in the red sandstone. Footprints that appear to have been made by the maccasined feet of gigantic men. Men whose tracks measured twenty inches in length and who stepped five feet at a stride.

"The second proof is that there is the petrified body of a man, likewise in the red sandstone of the Grand Canyon district. This body was that of a living, breathing man, but after death the flesh was replaced by lime or silica, held in solution in the water. There is ample evidence that nature was able to perform this feat, as the petrifying process is being carried on in the canyon to this day.

"The third fact is that there is and was a strong and almost universal tradition among the ancient people of Mexico and Peru that such a race of giants lived in their country.

"Perhaps it is too much to call this proof, but it is at least corroborative testimony.

"Last June I visited the Grand Canyon as a tourist, taking the Atlantic and Pacific Railroad to Flagstaff, thence by stage seventy miles to the brink of the Hance trail on the brink of the gorge. There I met Mr. Hull, who was acting as guide into the canyon, and who was a pioneer of northern Arizona. He told me the following story, and, with apologies for my credulity, I believe him:

"Three years ago he and a companion named Jim Lavelle had been prospecting this part of the country. They found a ledge which they thought was valuable, and had started out of the canyon with samples of the ore, expecting to return in a few days. One of the Indians was with them. Mr. Hull speaks the Indian language fluently, and the Indians have a great admiration for him. The Indian said, 'Have you ever seen the big Indian up here?' volunteering to show it. They followed him up a foot trail which led through a crevice in the red wall, thence on to the bench-like formation above, but still in the midst of the red sandstone.

"They came to a place where a projecting rock formed a shelter over a sloping table-like slab of stone which was covered with a white incrustation of lime. Outstretched on this slab was the body of a gigantic man turned to stone. The body was entirely nude and lay face downward. They estimated his height to be eighteen

or twenty feet. The left arm was out at full length, while the right arm was doubled under his head. The left leg was perfect, but the foot was jammed into a crack in the slab. The right leg was broken off just below the knee, and the broken part was missing. They looked at it ten or fifteen minutes, and then continued their journey, intending to return and make a more complete investigation. Plans changed, and they failed to return.

"Mr. Hull told the story to several people, but they either disbelieved him or discouraged him, so it happened that he had never been back there, and that he had never tried to do anything with his discovery.

"He also told me that reliable Indians had described to him tracks of both men and animals in the solid rock not far from this body, and in the same formation. These he had never seen, but he had no doubt of their existence.

"This was startling information, but I had been in a measure prepared for it. In the first place, it had always seemed reasonable to me that the prehistoric, primeval hunting savages should have been of large stature. Gregory tells us that there was a period in the history of the world called the Tertiary or Mammalian age that was peculiarly favorable to animal life. It is the age of the mammoth, the great cave bear, the cave lion, the woolly rhinoceros, the primeval ox, the great Irish elk, the gigantic sloths and other familiar animals that were far larger then than now. Was man to be left out entirely amid all this list of giants?" (ENTIRE ITEM)

B

Becker, Helmar G.

2010 21.7159 *Entzauberte Kugeln und phycodische Strukturen in Gesteinen* [*transl.* 'Mystical spheres and phycode structures in rocks']. Münster: Verlagshaus Monsenstein und Vannerdat OHG, 243 pp. [In German.]

► See under "Merkwürdige Objekte": "Gigasphären, Kugelschalen im Kilometerbereicht" [*transl.* 'Strange Objects': 'Gigaspheres—Spherical Shells in the Kilometer Range']. A peculiar exposé in fossil phycology, on "spherical rock shells" of up to 1 km in diameter, often in limestones, which briefly takes note (p. 169) of the example of the Kaibab Plateau, which exhibits multiple ball-shaped shells in areas of "scant vegetation".

[? Likely evidence actually, at least on the Kaibab Plateau, of karst topography and/or breccia pipe exposures in the plateau surface.]

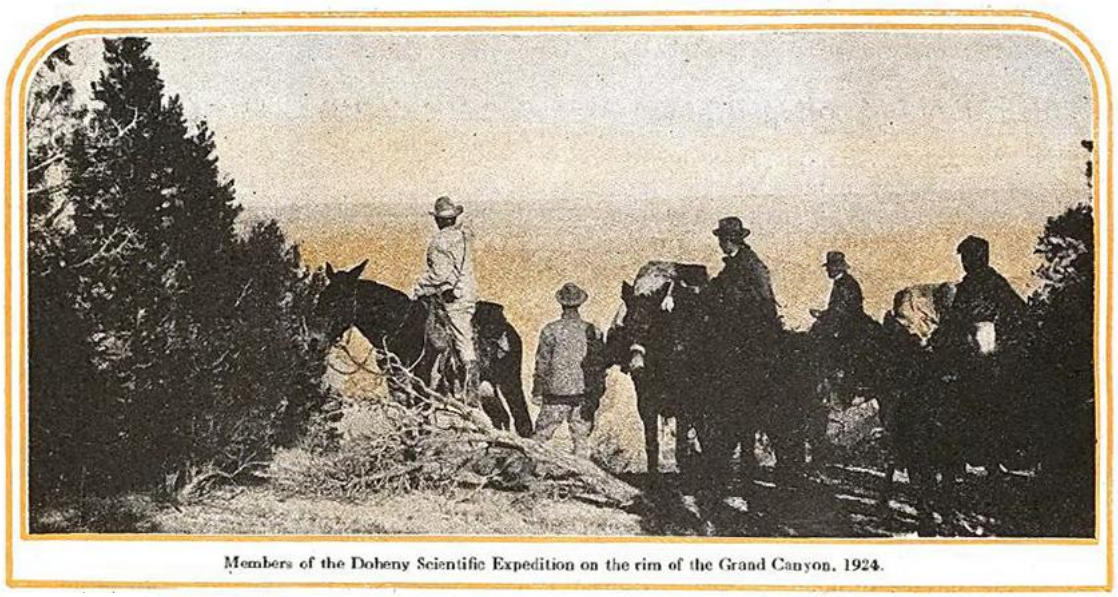
J

Jones, C. Irwin

1913 21.5205 The Navajo Indian and his ways. *The New Age Magazine* (Ancient and Accepted Scottish Rite of Freemasonry of the Southern Jurisdiction, U.S.A., Supreme Council, 33°), 18(2) (February): 146-152.

► "The land where lives the Navajo is the most forlorn I ever saw. It seems to have been an inland sea at one time for I have found different kinds of shells and have seen on the desert petrified alligators which have every appearance of having lived in a land of moisture. There seems to have been an earthquake or an erosion of the earth which cracked the mountains where the Grand Canyon is located, the sea being carried away through this canyon." (ENTIRE NOTE)

"The Doheny Scientific Expedition to the Hava Supai Canyon" [1]

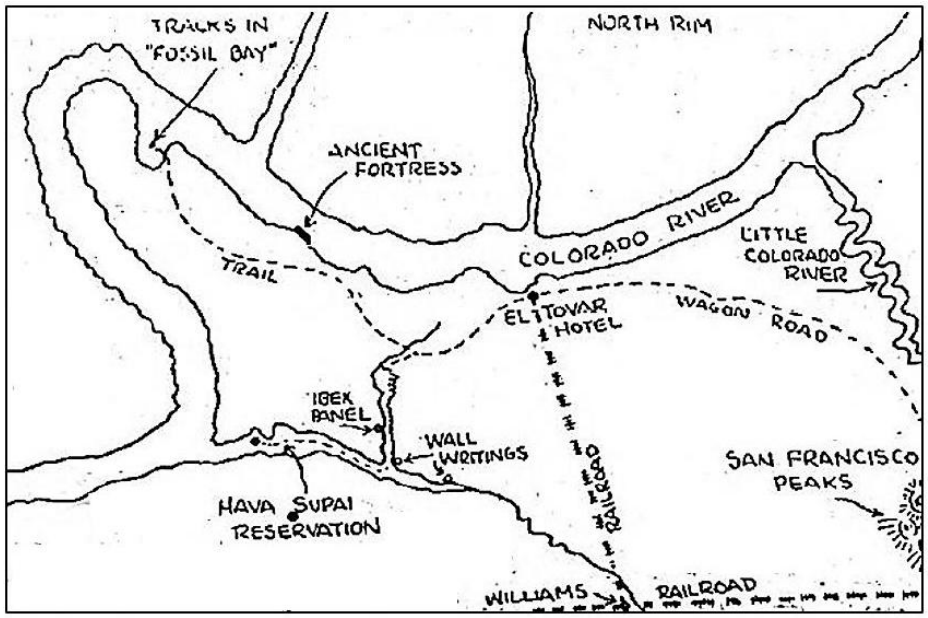


Colored illustration from *The Dearborn Independent* (1926, p. 12).

WELL-KNOWN TO Grand Canyon aficionados and others is the report a century ago of Native American rock art in Havasu Canyon that was interpreted to exhibit animals—among them a dinosaur—that putatively showed creatures that once cohabited with humans. The dinosaur, in particular, has been repeatedly referred to, and occasionally reillustrated, by those with creationist attentions, though solely from the original literature (including a persistent repetition of only the expedition's 1920s reference to "Hava Supai Canyon," ignoring the true geographical name, "Havasu Canyon").

Late in 1924, Samuel Hubbard of the Oakland Museum in California led an expedition into Havasu Canyon sponsored by museum patron Edward Laurence Doheny. The so-called Doheny Scientific Expedition to the Hava Supai Canyon "was organized for the express purpose of bringing before the scientific world, certain discoveries relating to prehistoric man made by [Doheny], in three previous visits to this isolated region." Doheny, once a miner, had been with the ill-fated James Mooney, who in 1880 fell to his death at the Havasu Creek waterfall later named for him. In 1924 Doheny was a wealthy oil baron in Los Angeles when he underwrote a small expedition to find again and study what he had seen. The results of the expedition were printed in a pamphlet, *The Doheny Scientific Expedition to the Hava Supai Canyon* (see Hubbard in the bibliography that follows). It featured reproductions and interpretations of various rock art panels. Some of these drawings were interpreted as depicting an elephant and ibexes, neither of

[1] Introductory notes edited and expanded from Earle E. Spamer, "About That Dinosaur in Havasu Canyon . . .", *The Ol' Pioneer* (Grand Canyon Historical Society), Vol. 26, no. 3 (Summer 2015), pp. 10-12. [Ellipsis is part of title.] Additional illustrations appear here.



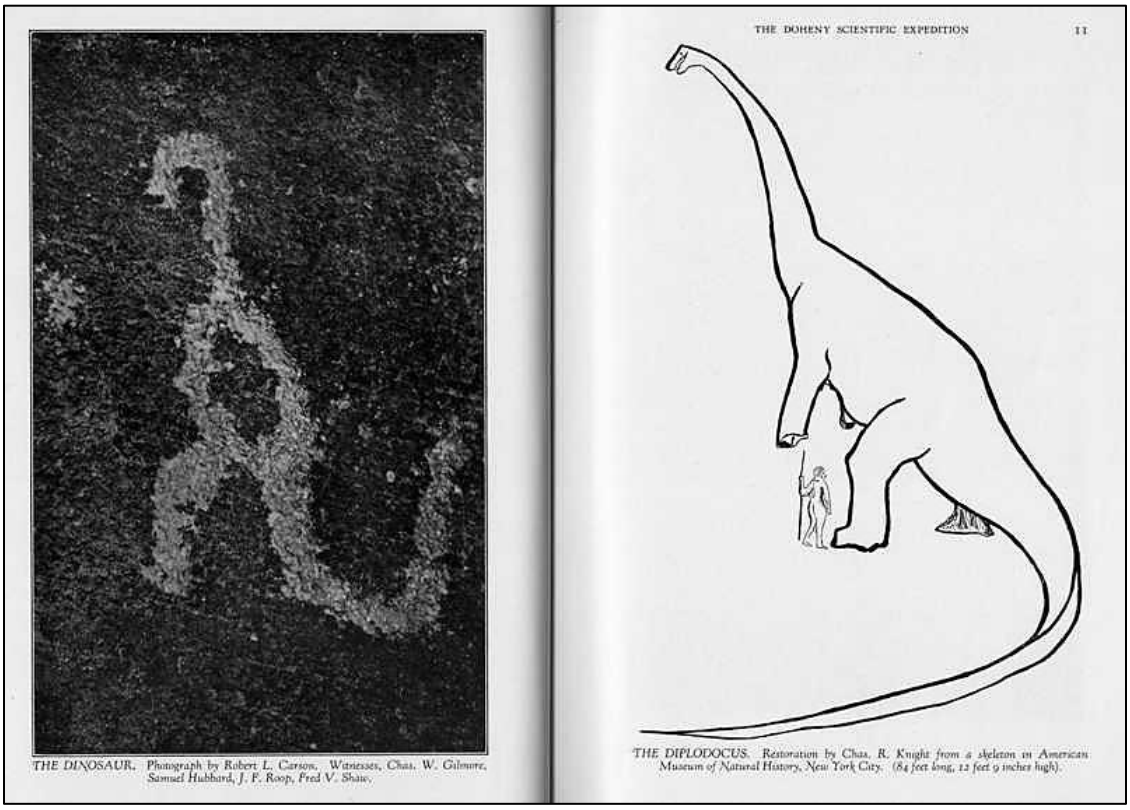
Detail from rough sketch map of Doheny Expedition locales in *The Dearborn Independent* (1926, p. 12). (Regarding the "Ancient Fortress" see also note accompanying Unsigned (1925) in the bibliography farther below.)

which of course live there. Most remarkable among the Havasu drawings was the singular petroglyph of a "dinosaur"—a bipedal, traditionally tail-dragging dinosaur.

A cachet of scientific credibility for the expedition, and hence also its interpretations, was the pamphlet's listing on the title-page of the personnel of the expedition, which included the "Scientist," Charles W. Gilmore, a Smithsonian paleontologist whose expertise was in studying fossil footprints and trackways, who at that time had been working in the Grand Canyon and the Painted Desert. (Gilmore, incidentally, never said that this was a picture from encounters, nor that it was a dinosaur.)

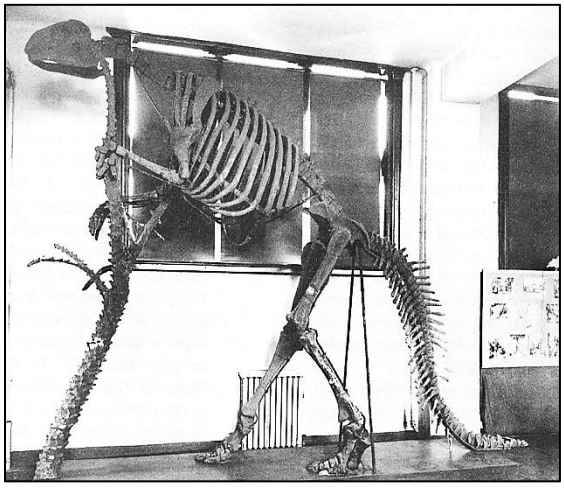
To many, the image was instantly recognizable. After all, the great contemporary paleontological artist Charles R. Knight, and many other artists whose work appeared in late-19th and early-20th century museums and publications, showed bipedal dinosaurs. These beasts tail-dragged their ways in paintings and as restored skeletons in the halls of the greatest natural history museums.[2] Despite such widespread

[2] The great 19th century paleontologist, Joseph Leidy, of the Academy of Natural Sciences of Philadelphia (since 2012 the Academy of Natural Sciences of Drexel University), was the first to recognize that some dinosaurs walked on two legs. The mode of bipedalism was interpreted not so much because of the animals' short "arms" but because the pelvic structure of these dinosaurs more resembles that of birds, with legs attached vertically, while the quadrupedal dinosaurs have reptilian pelvic structures, with legs splayed out (like crocodiles, for example). The dinosaur he studied was also the first reasonably complete dinosaur found in America, uncovered in the Cretaceous marls of Haddonfield, New Jersey, in 1858. He named it *Hadrosaurus foulkii* for William Parker Foulke, the man who brought the first bones to him. (The genus *Hadrosaurus* is not named for Haddonfield but means, in Latin, "bulky lizard", thus "Foulke's bulky lizard.") Its bones also were the first dinosaur remains ever to have been photographed, as seen in homemade stereoviews made under Leidy's direction about 1858. For a brief, illustrated historical review of the photographs and the first skeletal mount of *Hadrosaurus foulkii,* created by Benjamin



Double-page spread from *The Doheny Scientific Expedition* [1927?] depicting the bipedal dinosaur petroglyph of Havasu Canyon and an interpretive drawing using the quadrupedal *Diplodocus* as a model (with a human "cave man" as staffage, further improbably comparing the sizes of the two dinosaurs).

use of classic paleontological art, the Doheny report crafted its own rough diagram to helpfully interpret the dinosaur petroglyph. But it showed a quadrupedal (four-legged) dinosaur, the huge *Diplodocus,* rearing up on its hind legs *(above right)*. Nonetheless, it was conveniently in the same pose as that depicted in the Havasu Canyon petroglyph and in then-modern museum exhibits of bipedal dinosaurs *(left)*.



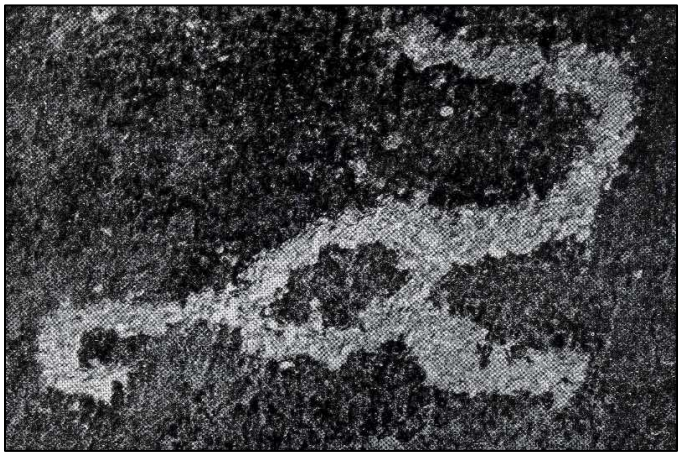
◀ Benjamin Waterhouse Hawkins's tail-draging mount of *Hadrosaurus foulkii* after its removal from exhibit in the main hall of the Academy of Natural Sciences of Philadelphia, 1930s. It incorporated actual bones and plaster interpreted bones before being dismantled and its plaster portions discarded. (The plaster head, contrived from a scaled-up iguana skull and painted green, survives.) *(Academy of Natural Sciences Archives)*

Waterhouse Hawkins in 1868 with the consultation of Leidy, see Earle E. Spamer, "The Great Extinct Lizard: *Hadrosaurus foulkii,* 'First Dinosaur of Film and Stage'," *The Mosasaur,* Vol. 7 (2004), pp. 109-126 (access at https://www.academia.edu/36777959/).

Paleontologists today understand that the dinosaurs never did routinely drag their tails on the ground. Why would they abrade their skins that way? It's neither effective nor comfortable. In fact, some bipedal dinosaurs' skeletons preserve evidence that the tails of fully-developed adults became less mobile, held horizontally with the body like counterbalances that would aid greatly in locomotion and agility; and accordingly more modern museum mounts reflect this. So one might also question how in the world had the original Havasu Canyon artist portrayed a bipedal dinosaur dragging its tail on the ground? Even if this petroglyph really was based on a visual observation or oral tradition, the tail-dragging pose is a *modern mistake* that originated in the 19th century in studied interpretations by paleontologists and the artists who worked with them.

This interpretation of a work of art as validating a fabulous time when humans and dinosaurs roamed the earth together was also meant to discredit the idea of evolution. A second printing of the pamphlet included a "Supplement," enlarging the product to booklet format. The Supplement devolved the otherwise semi-scientific presentation into a tract that opposed traditional teachings of evolution. It was very timely, appearing just when the celebrated "Scopes Monkey Trial" was taking place in Tennessee. The tract favored the co-existence of humans and dinosaurs and put forth the idea of prehistoric incursions into the American Southwest by animals from the Old World (like the elephant and the ibexes, via a conveniently lost trans-Atlantic land bridge). It supposed as well a "Mongol Invasion of America" by humans.

Less subjective perspectives have been taken, too, but sparingly. Ekkehart Malotki, a linguist and paleoart researcher, and archaeologist Henry D. Wallace, have written a paper chiefly about Columbian petroglyphs from the San Juan River in Utah that depict mammoths, in which they mention the Havasu dinosaur, too. Phil Senter wrote on "More 'Dinosaur' and 'Pterosaur' Rock Art That Isn't," in which the Havasu petroglyph is reinterpreted as a "stylized bird." Earle Spamer suggested that not all rock art had to have been drawn in the "up" position, and that the Havasu petroglyph may be even better recognized as an organism truly common to Havasu Canyon—a scorpion.



A design can be interpreted as what one believes it to be, whether one is an Indigenous artist (drawing a dinosaur, or something) or a non-Indigenous observer (seeing in the artwork a dinosaur, a bird, or an attacking scorpion). Some Indigenous artwork, it has been argued, might even have been the work of idle moments (that is, doodles). If, however, it is neither an actual record nor an idle work, it may still be a part of story- or legend-telling that are also pastimes of significant importance among many peoples. And one may further speculate that the conveniently modern tail-dragging dinosaur could have been added to existing rock art at the time of the Dohney Expedition; but if so, which party did so would likely never be known.

BIBLIOGRAPHY RELATING TO DOHENY EXPEDITION CRYPTOPALEONTOLOGY

In order to consolidate the historical record of publications that pertain to the Doheny Expedition, and more particularly to the "dinosaur," the following bibliography of Doheny Expedition cryptopaleontology compiles with minor edits citations selected from *Contrary Canyon* (Raven's Perch Media, 2nd ed., 2025), which provides a sampling of widespread attention to the features noted here.[3] Creationism-focused publications are incorporated into this list not to offer corroboration of their views but to maintain that the subject is restricted to rock art interpretation by non-Indigenous people.

The notation "[CREATIONIST PERSPECTIVE]" is inserted to indicate which publications have creationist perspectives or which contribute to later uses by creationism-focused authors.

Unsigned

NO DATE Indians' dinosaur carvings. *Our World* (The Children's Creation Paper) (Creation Resources Trust, Yeovil, Somerset, United Kingdom), (77): [1].

► [CREATIONIST PERSPECTIVE] A footnote, "OW-77", is the only indication of issue; no. 77, undated. A quarterly creationism-focused serial. This is a brief note regarding the putative "dinosaur" petroglyph in "Hava Supai Canyon". Of additional interest because the photo of the petroglyph includes a person's hand for scale, which is not seen in other reproductions.

1925 Put man's age back ten million years. Scientists so interrpret rude drawings of long-extinct dinosaurs found in Arizona. Maybe reptiles survived. Their continuance till age of man also uggested by Doheny Expedition's find. *The New York Times*, (April 20): 5.

► [CREATIONIST PERSPECTIVE] Regarding the Doheny Scientific Expedition to Havasu Canyon; with extensive quotation of Samuel L. Hubbard. Includes doubts expressed by others, but of course journalistically focuses on the sensational implications of the observations.

1925 Mystery of the "dinosaur" cut into the canyon wall. *American Weekly* (New York), _____: 4-5.

► Seen as an imperfect copy; specific date not determined. Unclear as to whether this pertains to the Havasu Canyon petroglyph. This item is illustrated with a photo, "The Ruined Fortress Upon the Verge of

[3] Earle E. Spamer, *Contrary Canyon: A Bibliographical Guide to the Grand Canyon's Unconventional Past* (2nd edition, 2025). Access PDF at https://ravensperch.org/wp-content/uploads/2025/01/Contrary-Canyon_2nd-ed.pdf; a flip-book format is at https://online.fliphtml5.com/ryvqb/ypiq/, and an archived copy is available through the Internet Archive online, https://archive.org/details/contrary-canyon-2nd-ed.

the Grand Canyon", which actually is a view on the Hopi Indian Reservation. [Regarding the "fortress" see the sketch map farther above.]

1926 Mankind's story adds new paragraphs daily. Archaeologists digging in many lands uncover relics that fit into the puzzle of the human race—Man's age is still undetermined. *The New York Times*, (March 7), Sect. XX, p. 24.

► Includes note of Doheny Scientific Expedition to Havasu Canyon.

Butt, Kyle, AND Lyons, Eric

2008 Physical evidence for the coexistence of dinosaurs and humans (Part I). *Reason and Revelation* (Apologetics Press, Montgomery, Alabama), 28(3) (March): 17-23.

► [CREATIONIST PERSPECTIVE] See "The Dinosaur of Northern Arizona" (pp. 22-23), which pertains to the putative "dinosaur" petroglyph in Havasu Canyon.

Eberhart, George M.

2002 *Mysterious creatures : a guide to cryptozoology.* Santa Barbara (California), Denver, and Oxford: ABC-CLIO.

► See "Mystery Dinosaurs", pp. 134-136, which includes note of putative rock art noticed in Havasu Canyon by the Doheny Scientific Expedition; and see "Stiff-Legged Bear", pp. 521-524, which also notes the Havasu Canyon art.

Gish, Duane T.

1992 *Dinosaurs by design.* (Gloria Clanin, ed. Illustrated by Earl and Bonita (Bonnie) Snellenberger.) El Cajon, California: Creation-Life Publishers, 88 pp.

► [CREATIONIST PERSPECTIVE] Young-reader title. Grand Canyon, see "How Long Ago Did Dinosaurs Live?" (pp. 14-15). Later printings with imprint Master Books, Green Forest, Arkansas.

NO DATE *Dinosaurusi neverovatna otkrića* [*transl.* 'Dinosaur amazing discoveries']. Beograd: Metaphysica, *u saradnji sa* Centrom za prirodnjačke studije, 88 [89] pp. [In Bosnian.]

► [CREATIONIST PERSPECTIVE] Young-reader title. Grand Canyon, see "Kada su živeli dinosaurusi?" [*transl.* ' When did the dinosaurs live?'] (pp. 14-15). Apparently a translation of Gish (1992), *Dinosaurs by Design*.

Harrub, Brad, AND Thompson, Bert

2003 Walking amidst the dinosaurs. *Reason and Revelation* (Apologetics Press, Montgomery, Alabama), 23(2) (February): 9-15.

► [CREATIONIST PERSPECTIVE] See under "Evidence That Humans and Dinosaurs Coexisted", "The Doheny Expedition", pp. 11-12. Regarding the petroglyph in Havasu Canyon.

Hinson, William A.

2012 *Discovering ancient giants : evidence of the existence of ancient human giants.* Long Island City, New York: Seaburn Publishing Group, 343 pp. [An on-demand publication.]

► In a chapter on "Egyptian Giants" see "Explorations in Grand Canyon. The Phoenix Gazette [*sic*]. April 5, 1909" (pp. 157-167) [which relates to a putative "Egyptian Cave" found in the Grand Canyon[4]]. Also mixes in the Doheny Scientific Expedition to Havasu Canyon, 1924.

[4] This is a persistently enduring story in the "alternative" literature of the Grand Canyon, one that began probably as editorial filler in the *Arizona Gazette* published in Phoenix on April 5, 1909. The editor's journalistic exercise in

Hubbard, Samuel L.

[1925] (DIRECTOR OF EXPEDITION) *The Doheny Scientific Expedition to the Hava Supai Canyon, northern Arizona, October and November, 1924.* Oakland, California: Oakland Museum, 20 pp. [No date of publication.]

► [CREATIONIST PERSPECTIVE] This item features the rock art that is interpreted to show humans coexisting with Old World and (traditionally) extinct animals, including the putative dinosaur petroglyph.

1925 On the trail of the dinosaur. *The Wide World* (London), 56(333) (December): 185-196.

► [CREATIONIST PERSPECTIVE] With numerous illustrations and sketch map from the expedition.

1926 African lions roamed in Hollywood; discoveries that indicate prehistoric game trail once extended from Old World to New. *The Dearborn Independent*, 26(35) (June 19): 12-13, 22-23.

► [CREATIONIST PERSPECTIVE] Regarding the finds and interpretations of indigenous artwork in Havasu Canyon.

[1927?] (DIRECTOR OF EXPEDITION) *Discoveries relating to prehistoric man by the Doheny Scientific Expedition in the Hava Supai Canyon, northern Arizona : with supplement.* San Francisco: Sunset Press, 38 [39] pp. [No date of publication.]

► [CREATIONIST PERSPECTIVE] Cover title is cited. Title-page: *The Doheny Scientific Expedition to the Hava Supai Canyon, northern Arizona, October and November, 1924. Compliments of Oakland,* [comma, thus] *Museum, Oakland, California. Sponsor and patron, E. L. Doheny. Director of Expedition, Samuel Hubbard . . . : Scientist, Charles W. Gilmore . . . : Photographer, Robert L. Carson : Sculptor, Joseph F. Roop : Assistants, Fred V. Shaw, Arthur Metszer : Guide and Packer, Bud Clawson.*

This printing also reproduces (pp. 1-20) the "little pamphlet" of "two years" earlier (*i.e.*, Hubbard, no date [1925]), to which here is appended the "Supplement" (pp. 21-39). The Supplement is essentially a creationist tract against traditional teachings of evolution, favoring the co-existence of humans and dinosaurs; it supports the idea of prehistoric incursions into southwestern America both by Old World animals (via trans-Atlantic land bridge) and by humans, in a "Mongol Invasion of America". The Supplement mentions the Grand Canyon (Havasu Canyon) only on pp. 36-37, and p. 39 is a photograph in Havasu Canyon with legend, "The abutment of a white sandstone cliff in the Hava Supai Canyon, bearing a striking resemblance to the Parthenon on the Acropolis at Athens. Figure suggestion Sphinx on left." The photo is accompanied by lines from the Samuel Taylor Coleridge verse, "The Temple of Kubla Khan".

1929 The dinosaurs of the Southwest; rock carvings ten million years old—some mighty beasts of prehistoric America. *Travel*, (October): 35-36, 46.

► [CREATIONIST PERSPECTIVE] Includes Havasu Canyon.

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newspaper sales began first in the March 12th issue, where it was reported that one G. E. Kinkaid—a real person, ostensibly, from Idaho—had come down the Colorado River to Yuma, supposedly all the way through the Grand Canyon (there is no such record). The April 5th issue then blew open the door to what now is more than a century of objective and subjective clamor, if not candor, about Kinkaid's most fantastic discovery—a cave in the canyon filled with marvelous Egyptian relics. The story is repeated, even with accusations of a government cover-up as to its existence; and it has been the source material for several adventure novels. Regarding the "Egyptian cave" see Chapter 2 in Earle E. Spamer, *Contrary Canyon: A Bibliographical Guide to the Grand Canyon's Unconventional Past* (2nd edition, 2025) (volume cited in *note 3* above).

Jezebel Productions

2010 *No dinosaurs in heaven.* (Andrea Weiss, producer, ed.; music by Paul Winter; Greta Schiller, writer, producer, director, narrator; features Eugenie C. Scott.) [New York]: Jezebel Productions/ New Day Films, video. 54:00.

► Counter-creationist, educational perspective. Features a trip on the Colorado River through Grand Canyon.

Lyons, Eric

2008 Did the ancients base their dinosaur drawings on fossils? *In:* R&R Resources [SECTION]. *Reason and Revelation* (Apologetics Press, Montgomery, Alabama), 7(4) (April): 12-R, 14-R, 16-R.

► [CREATIONIST PERSPECTIVE] Includes note (p. 14-R) of putative "dinosaur-like artwork" (petroglyph) along with that of an elephant, human, and ibex in "Havasupai Canyon".

2008 A goat, an elephant, and . . . a dinosaur!!! *Discovery* (Scripture and Science for Kids) (Montgomery, Alabama), 19(9) (September): 68. [Ellipsis is part of title.]

► [CREATIONIST PERSPECTIVE] Young-reader title. Includes note of "dinosaur" pictograph with that of an elephant, human, and ibex in "Havasupai Canyon".

Malotki, Ekkehart, AND Henry D. Wallace

2011 Columbian mammoth petroglyphs from the San Juan River near Bluff, Utah, United States. *Rock Art Research*, 28(2): 143-152.

► The Havasu Canyon petroglyph is noted briefly. [Regarding Columbian cohabitation, humans did coexist with mammoths; not only have Ice Age drawings of mammoths been found widely, but some bones have even been found with spear points and butchery marks.]

Menkes, Dove [Menkes, Elchanan Dov]

2007 Giants and dinosaurs in the Grand Canyon; Samuel Hubbard and the 1924 Doheny Scientific Expedition. *Journal of Arizona History*, 48(1) (Spring): 53-84.

► A historical overview of the expedition to Havasu Canyon and its findings. Cites a comment made by the great anthropologist Aleš Hrdlicka that this particular petroglyph could, "by a long stretch of the imagination, be construed as intended to represent one species of dinosaur, although . . . it might represent a chicken, or any other animal, or no animal at all." (credited to the *Washington* (D.C.) *Evening Star,* November 9, 1926).

Michaels, Denver

2021 *Detours into the paranormal : canyon country.* [No imprint], 118 pp. [An on-demand publication.]

► Alternative perspectives on archaeology, including the putative dinosaurs in rock art, etc.

Pires, Celio João

2019 *O Dilúvio: Impactos de asteroides, extinções em massa, as glaciações, a formação do Atlântico e a Arca de Noé* [*transl.* 'The Flood: Asteroid impacts, mass extinctions, glaciations, Atlantic formation, and Noah's Ark']. Curitiba, Paraná, Brasil: Edição do Autor, 856 pp. [In Portuguese.]

► [CREATIONIST PERSPECTIVE] See "Capítulo 8—Dinossauros, humanos e a Bíblia: Sua interação pós-Dilúvio" (*transl.* 'Chapter 8—Dinosaurs, humans, and the Bible: Their post-Flood interaction'); specifically, p. 164, which illustrates and superficially notes the putative dinosaur petroglyph in "Havasupai Canyon". It does not cite the original—and otherwise profusely cited—production of the Doheny Scientific Expedition of

1924 in Havasu Canyon (see Hubbard, no date [1925]), but instead cites an online rock-art blog (reference is on p. 822).

Reyer, Heinz-Ulrich

2022 Kryptozoologie oder: Wie tot sind die Saurier? [*transl.* 'Cryptozoology or: How dead are the dinosaurs?']. *Vierteljahrsschrift* (Naturforschenden Gesellschaft in Zürich), 167(February): cover, 4-7. [In German.]

► [CREATIONIST PERSPECTIVE] In the discussion on "Kryptozoologische Methoden" ['Cryptozoological Methods'] (pp. 4-5), makes reference to figure 4 (p. 6), "Felszeichnung im Havasupai Canyon in Nord-Arizona (USA), von einigen Kryptozoologen als Tyrannosaurus auf zwei Beinen mit Schwanz als Stütze gedeutet. (Bild: genesispark.com)" [*transl.* 'Rock art in Havasupai Canyon in northern Arizona (USA), interpreted by some cryptozoologists as a Tyrannosaurus on two legs with a tail for support. (Image: genesispark.com)']. This illustrates the putative dinosaur rock art in Havasu Canyon.

Scoyen, Eivind T.

1951 Were there giants in those days? *Arizona Highways*, 27(7) (July): 36-39.

► Havasu Canyon. Historical overview regarding the rock art investigated by the Doheny expedition.

Senter, Phil

2012 More "dinosaur" and "pterosaur" rock art that isn't. *Palaeontographica Electronica*, 15(2, 22A), 14 pp.

► Includes a reinterpretation of the Havasu Canyon petroglyph as a "stylized bird".

Spamer, Earle E.

2015 About that dinosaur in Havasu Canyon . . . *The Ol' Pioneer* (Grand Canyon Historical Society), 26(3) (Summer): 10-12. [Ellipsis is part of title.]

► Pertaining to the "dinosaur" pictograph in Havasu Canyon. Spamer reinterprets it as possibly representing a scorpion.

Taylor, Paul S.

1989 *The great dinosaur mystery and the bible.* Colorado Springs, Colorado: David C. Cook; Paris, Ontario: David C. Cook Distribution Canada; Eastbourne, East Sussex, England: Kingsway Communications, 61 pp.

► [CREATIONIST PERSPECTIVE] Young-reader title. Includes note of putative "dinosaur" petroglyph in Havasu Canyon (p. 39).

Thompson, Bert, AND Harrub, Brad

2003 *Lesson 5. Dinosaurs, science, and the Bible.* Montgomery, Alabama: Apologetics Press, 7, 3 pp. (Apologetics Press Advanced Christian Evidences Correspondence Course.)

► [CREATIONIST PERSPECTIVE] Includes note (p. 4) on the petroglyph that putatively depicts a dinosaur "in the Hava Supai Canyon in Arizona" (Havasu Canyon).

Vaccariello, Linda

2009 And on the sixth day, God created paleontologists. Last summer, two busloads of scientists were schooled in Young Earth creationism, dinosaur storage on Noah's Ark, and the tempting possibility

that dragons existed. Were they convinced? No. Impressed? You bet. *Cincinnati Magazine*, (November): 84-87, 125-128.

► See p. 125, note of Grand Canyon display in the Creation Museum, Petersburg, Kentucky.

Whitmore, John H.

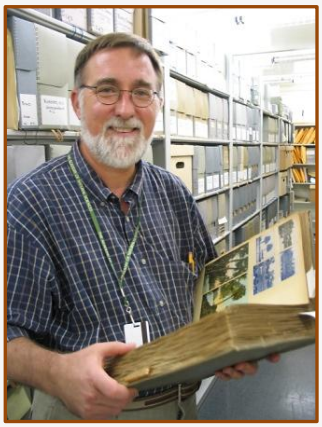
2006 What happened to the dinosaurs? *In:* Malone, Bruce, *Search for the truth : changing the world with the evidence for creation.* Midland, Michigan: Search for the Truth, revised, expanded 3rd ed., p. 45.

► [CREATIONIST PERSPECTIVE] Includes note of the putative "cave drawings" (*sic*, cliff petroglyph) that "closely resembled a duck-billed dinosaur" in Grand Canyon, found by the Doheny Scientific Expedition.

The RAVEN'S PERCH MEDIA colophon recalls this bird's habit of gathering and caching objects. Derived from original artwork by Balduin Möllhausen, it is a fine detail from the lithograph delineated by J. J. Young that is "General Report Plate VII" in Joseph C. Ives' *Report Upon the Colorado River of the West, Explored in 1857 and 1858* (Washington, 1861), which depicts a wintry camp just south of the Grand Canyon. The scene was sketched and described by Möllhausen on April 10, 1858, while he was perched in a nearby tree. He noted (in translation here), "a couple of ravens [*paar Raben*] croaked morosely on the bare branches of a dried-up fir tree as they waited impatiently for our departure, so that they could scout around the abandoned campsite for fat morsels." (Möllhausen, *Reisen in die Felsengebirge Nord-Amerikas bis zum Hoch-Plateau von Neu-Mexico, unternommen als Mitglied der im Auftrage der Regierung der Vereinigten Staaten ausgesandten Colorado-Expedition*. Hermann Costenoble, Leipzig, 1861, Vol. 2, p. 83.) Möllhausen's original watercolor painting is now in the Amon Carter Museum of American Art (Fort Worth, Texas; https://www.cartermuseum.org/collection/character-high-table-lands-1988146).

Raven's Perch Media was created in 2010 (the website in 2018), but Möllhausen's remarks on this very scene were not discovered until the translation was made for *Balduin Möllhausen's Grand Canyon*, another Raven's Perch Media production (2022).

About the Author . . .



My first field of study was geology at Rutgers University in the 1970s. For several years afterward I was in commercial publishing, writing about computer technology — before personal computers. In the early '80s I began an established period of employment in natural history study collections, first at the New Jersey State Museum, then in the Academy of Natural Sciences of Philadelphia. My 18 years in the Academy's employ began in 1986; before that I had been for 12 years a student research assistant and volunteer there. While on staff I was at various times a collection manager in several departments and collections — invertebrate paleontology, paleobotany, mineralogy, malacology, general modern invertebrates (a collection of organisms other than mollusks, insects and arachnids), diatoms, and modern botany; and continued to volunteer in vertebrate paleontology. My publications have embraced each of these fields — as well as historical and bibliographical topics about the Grand Canyon and Colorado River regions. Concurrently, for seven years I was editor and managing editor of the Scientific Publications branch of the Academy, which publishes peer-reviewed articles and monographs from authors around the globe in America's oldest uninterrupted line of serials on natural history, from 1817. My last five years at the Academy was as its Archivist, for which I had studied in the graduate program of Temple University's Department of History. On leaving the Academy in 2005 I continued my affiliation as an elected Research Associate. For the next 14 years I was Reference Archivist in the research library of the American Philosophical Society, a polymathic institution in Philadelphia founded in 1743 by Benjamin Franklin, whose staff supports the society's membership, visiting researchers from around the world, and graduate level researchers on society fellowships. Since November 2018 I am enjoying an active retirement continuing all of these interests.

Following two visits to the Grand Canyon in 1974 that included my first canyon hikes, I began work on a bibliography of the canyon and the lower Colorado River country. In 1981, the Grand Canyon Natural History Association (now the Grand Canyon Conservancy) published the first edition as a part of its new Monograph series of scholarly publications. A second edition appeared in 1990, with a supplement in 1993. In January 2000, a completely revised bibliography was placed on the Association's website, with its own URL, as a searchable database. Frequently updated, it was discontinued in 2021 due to technological limitations. In 2012, I privately published the first edition of *THE GRAND CANON*, a much-embellished resurrection of the print monograph, in digital format (PDF) that can be viewed in book layout on-screen or printed to paper. The fifth edition (2025), significantly revised, embraces the 16th to 21st centuries and now cites 111,000 items in 115 languages. The separate *Cartobibliography* includes citations for maps of this period, with extensive chorographical notations. A *Cumulative Supplement* now continues these bibliographies.

In 1989, the 28th International Geological Congress convened in Washington, D.C., which also offered an ambitious series of field trips across the United States, two of them on the Colorado River through Grand Canyon. My first river trip was as a passenger with an IGC group. In 1990, I began working as a geology interpreter on yearly summer trips in Grand Canyon with a Colorado River outfitter, continuing this until 2001. I participated in two scientific study trips through the canyon under the Glen Canyon Environmental Studies program administered by the U.S. Bureau of Reclamation, on one of which I prospected for living mollusks, the first such investigation ever to have been made along this canyon river. In 1994, I had attended a Penrose Conference sponsored by the Geological Society of America, "From the Inside and the Outside: Interdisciplinary Perspectives on the History of Earth Science." This conference for the first time brought earth scientists and historians together to discuss how each group approaches research in these complementary fields; from it I developed new perspectives in my research activities, which extended into revisions of the Grand Canyon–Lower Colorado River bibliography. In 2000, I attended a geology symposium at Grand Canyon on "The Colorado River: Origin and Evolution," the proceedings of which were edited by Richard A. Young and me. In 2012 I was honored with the annual Pioneer Award from the Grand Canyon Historical Society. Among many affiliations I hold life memberships with the Grand Canyon Conservancy, the Grand Canyon River Guides, and the Arizona–Nevada Academy of Science.

EARLE E. SPAMER

(pronunciation: *Spah*-mer)

RAVEN'S PERCH MEDIA