

AGI PUBLISHES FOURTH EDITION OF GLOSSARY OF GEOLOGY

The fourth edition of *Glossary of Geology*, just published by the American Geological Institute (AGI), reflects the dramatic technological changes affecting the earth-science profession. Editor Julia A. Jackson invited more than 100 geoscience experts to review and update terms and definitions for the latest edition of the *Glossary*, including an NSS team of speleologists headed by our AGI representative, Harvey DuChene. As a result, approximately 3,400 new entries have been added and another 9,000 definitions have been updated in the fourth edition, bringing the number of entries to 37,000.

The revision applies to nearly every discipline in the geosciences, including active fields such as carbonate sedimentology, environmental geology and geophysics, geographic information systems, global positioning systems, sequence stratigraphy, hydrogeology and hydraulics, marine and coastal geology, organic geochemistry, and paleoecology. The number of definitions for traditional fields such as seismology, stratigraphy, speleology and karst, structural geology and tectonics, paleontology, and igneous petrology has expanded as well.

The fourth edition of the *Glossary of Geology* can be ordered from AGI's Publications Center, P.O. Box 205, Annapolis Junction, MD, 20701. Telephone: 301-953-1744; fax: 301-206-9789. ISBN 0-922152-34-9, Hardbound, 800 pages. List price is \$110.00 but NSS members may buy it for \$88.00, plus postage and handling.

REVIEW OF FOURTH EDITION OF GLOSSARY OF GEOLOGY. JULIA A. JACKSON (ED.)

The American Geological Institute issues a new edition of the *Glossary of Geology* about every 10 years. This edition contains 37,000 terms in all fields of geology. Members of the National Speleological Society have traditionally reviewed the cave terms. William E. Davies began with the 1960 edition, and Harvey R. DuChene was the chief reviewer of this edition. Other acknowledged contributors to speleology and karst terms in this edition were Donald G. Davis, William R. Halliday, John E. Mylroie, Arthur N. Palmer, George Veni, and William B. White.

This edition of the *Glossary* contains 544 terms in the cave categories; a significant percentage has been revised, and 140 are new. Some additional cave terms beyond those in the cave categories appear in categories such as archaeology, surveying, soils, geochemistry, and environmental geology. For example, the book includes definitions of the biologic terms troglobite, troglophile, and troglone, which define the degree of adaptation of animals to caves. The book retains some obsolete words for their historical value, but it has dropped 31 rarely used cave terms that appeared in the 3rd edition (1987).

During the updating of the book, the editor could print out 31 subject categories and numerous subcategories separately from the book's computer file, so that the reviewers for each

could compare the words easily and make certain that the cross references are correct.

Readers of this review will applaud and smile at the newly augmented definition of spelunker: A journalistic term for caver; what a noncaver calls a caver.

Dictionaries generally reflect a perception of current usage, but sometimes compilers cannot resist nudging usage a bit. Cave coraloid has replaced cave coral. I'll be the last to resist this if it takes hold, but the adjective "cave" of the former usage probably was sufficient to make clear that the term does not refer to reef animals. The word coraloid without the adjective is offered as a synonym of cave coraloid, and perhaps those with nimble tongues will find it a useful abbreviation.

I am less enamored of a couple of other changes: Cave bubbles have become calcite bubbles, and cave rafts have become calcite rafts. These revisions make little sense, inasmuch as those speleothems, although usually composed of calcite, are in some caves also composed of aragonite, iron minerals, and phosphate minerals. Similar structures occur in noncave environments, and in those places an ad hoc term such as calcite bubble may be appropriate for the specific case. But as designations for two important classes of speleothems, cave bubbles and cave rafts seem more appropriate general terms.

For a work of this size, remarkably few misspellings and errors in transferring the reviewers' intentions have crept in. An exception, however, applies to the term guano. In improving the discussion of cave guano, surficial guano was inadvertently dropped, even though the word itself comes from the fossil seabird guano of northern South America, an important fertilizer material there and on many oceanic islands.

The numbers of terms in each of the cave categories are Speleology, 301; Karst, 225; and Volcanic Caves, 18. This book is the most exhaustive and authoritative dictionary of terms in physical speleology and in geology in general. Although the price is high, it will amortize well for geologists, because the next edition will not appear until 2007. Those without a need for the entire volume will find a library's copy to be a valuable reference to cave terms.

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REVIEW: CAVE MINERALS OF THE WORLD, SECOND EDITION (1997). CAROL HILL AND PAOLO FORTI.

The new edition of *Cave Minerals of the World* looks about the same size as the 1986 version. Inside, however, are nearly twice as many pages, in smaller print that allows nearly 50% more material per page. This reflects the explosive increase in knowledge of cave features since then.

Soon after the 1986 edition was published, it was clear that new speleothem discoveries in Lechuguilla Cave alone would merit a significant revision. But that was just the start. Accomplished cave mineralogists in places as varied as Brazil, Australia, South Africa, and (with the end of the Cold War) eastern Europe and Asia - facilitated by increasing ease of

communication via the Internet - have expanded the cosmopolitan perspective that began with the earlier edition. We can now, for example, compare Lechuguilla Cave with the Cupp-Coutunn system in Turkmenistan, which has both remarkable similarities and puzzling differences in its deposits.

Trevor Shaw's fascinating historical introduction has been republished largely unchanged from the 1986 one, but extended by the addition of a section covering non-carbonate minerals.

The text is somewhat differently organized in the new edition. In the earlier version, deposits were arranged first by mineral class - carbonates, halides, nitrates, etc. - with speleothems treated as subcategories under each chemical class. The 1997 book instead treats speleothems first, alphabetically by morphological "type," "subtype," and "variety," followed by a section on the mineral classes, for each of which the speleothem types known for that mineral are listed. This system is not a universal standard (some speleologists cited from the former Soviet Union prefer very different categorizations based on internal structure), but it is a practical, if somewhat arbitrary, approach that aids cavers without laboratory access to recognize and compare features in cave and book.

The "Special Topics" section has been expanded from 12 to 19 subjects-including, for example, archeology and microbiology as related to cave minerals-and some of the original topics, including color and luminescence of speleothems, have been re-written by experts in those fields to bring them up to date.

In a new section, "Top Ten Caves," speleologists from around the world describe the mineralogy of exceptional caves. This is not, as the layman might expect, the same thing as "The Ten Most Beautiful Caves in the World." Some, like Lechuguilla, are spectacular, but others, such as Australia's Skipton Lava Cave and Italy's Alum Cave, are remarkable less for beauty than for the rarity of their minerals, which may be manifested only as nondescript crusts or powders.

"The Blue Cave, France," one of these "Top Ten," seems a rather odd selection. It is an ancient copper mine in dolomitic limestone: "...the age of the speleothems...is known with certainty, as the Romans...mined the ore and so all of the speleothems...have grown since that time (during the last 2000 yrs)." While the blue-stained aragonite in this site is certainly interesting, its inclusion seems to contradict the book's introduction (p. 13), which restricts "caves" to natural subterranean cavities, and says that "minerals located in vugs, veins, mines or shelters do not qualify as 'cave' under our definition." Perhaps it would more fittingly have been considered in the section "Related Forms/Formations in Artificial Caves."

In an earlier review of *Cave Minerals of the World, 2nd Edition* on the Internet (Cavers Digest 5478, Sept. 18, 1997), Bill Mixon said that "the terms they're using are just common names, which means they are not at all analogous to things like binomial names in biology or mineral names, which are governed by international committees and rules of precedence. Common speleothem names mean what people use them to mean..." As a case in point, he criticizes the authors for using

"'frostwork' for what most people call 'anthodites'." He does not mention that this is a change from the usage in the 1986 edition, adopted specifically because people were using "anthodite" in conflicting ways. Hill and Forti's re-definition is an effort to get consistent usage and to conform better to original definitions and precedents; that is, to make speleological terminology more like formal scientific nomenclature. I approve of that.

Another of Mixon's criticisms: "There can be little reason except showing off to list 99 references on goethite or 235 references about stalactites...I doubt if even a professional mineralogist would bother to seek out the vast majority of the references, because most of the total of nearly forty-five hundred are in literature so gray as to be practically black and obtainable, if at all, through inter-library loan from Mars." Here I disagree with Mixon completely. The authors point out that *Cave Minerals of the World, 2nd Edition* is a book for both cavers and mineralogists. Readers of either class can skip the references if they want to. But for those who do want to research a specific feature in depth, this chain of sources is a priceless treasure, all the more so because much of the literature is rare. Hill and Forti were able to cite so much of it because they encouraged input from the contemporary cavers who are making the observations. In another generation, it would be much harder for anyone to learn about all of these obscure publications. To posterity, the reference list may well be the most valuable part of *Cave Minerals of the World, 2nd Edition*.

What faults do I find with the book? Well, the photos are mostly smaller than those in the 1986 edition, and distressingly few have any scale shown. (On the other hand, there are many more, all in color this time, and the authors advertised to get the best ones they could for each feature.) Fig. 315 seems to be upside down, and may also be mis-captioned (it is supposed to show a pinnacle of dolomite, but appears to be iron-mineral dripstone). Fig. 31's caption is factually wrong: it is said to illustrate subaqueous coralloids in Lechuguilla Cave, but the actual features shown (which I have visited personally) are a re-flooding line below which corrosion residue was washed off, and below it, an air-stratification level with evaporative subaerial coralloids beneath.

There are occasional questionable interpretations or contradictions. For example, we read on p. 45 that "an anthodite is believed to form by solutions moving along its outer surface." On p. 47, however: "Anthodites are thought to grow by thin films moving by capillary action over the surface of needle stalks and/or through the central tubes..." This particular conflict arose because the first statement was held over from *Cave Minerals of the World, 1st Edition*, and applied to those "anthodites" which are now termed frostwork. The second applies to anthodites as treated in *Cave Minerals of the World, 2nd Edition*. Also, there are significantly more typos, misspellings and grammatical glitches than in *Cave Minerals of the World, 1st Edition*. These kinds of problems resulted at least partly from the pressure felt by the authors and publisher

to have the book ready for the 1997 International Congress of Speleology. I would personally have preferred to see a little more care taken, even if that deadline had been missed.

Such quibbles aside, *Cave Minerals of the World, 2nd Edition* is an achievement in cave science whose equal I would be very surprised to see the NSS produce for many years. If the Society had never published another thing, this book alone, in my opinion, would entitle the NSS to respect as a scientific organization.

Donald G. Davis

UPCOMING MEETINGS

From Karst Landscapes to Karstic Geosystems: karst dynamics, structures, and indicators. Provence, France, 10-15 September 1999. France. For more information write: Colloque European-Karst 99, Universite de Provence, Institut de Geographie, 29 Avenue Robert Schuman, 13621, Aix en Provence, Cedex 1, France, telephone 0033-442-95-3870, fax 0033-442-95-0420, e-mail: martincl@aixup.univ-aix.fr.

Natural Caves Under Cities and Urban Areas. Budapest Hungary, 5-10 October 1998. For information contact: Magyar Karszt-es Barlangkutato Tarsulat, H-1027 Budapest Fou. 68. Telephone: 361-224-1427, Fax: 361-201-9423. E-mail: mkbt@mail.matav.hu.

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Graham Proudlove