

LETTER TO THE EDITOR

Dear Kent,

Warren Peck's article (ACKMA Journal 71, June 2008) seeks to summarize the 'comprehensive' research relating to the age of Jenolan Caves. We would like to point out that this article reflects the work published by only one research group which, whilst the study reports interesting data, does require further examination and validation before being fully embraced by guides and karst managers. A number of observations by us raise doubt about the findings that 'Jenolan is the oldest caves in the world' as reported. For example....

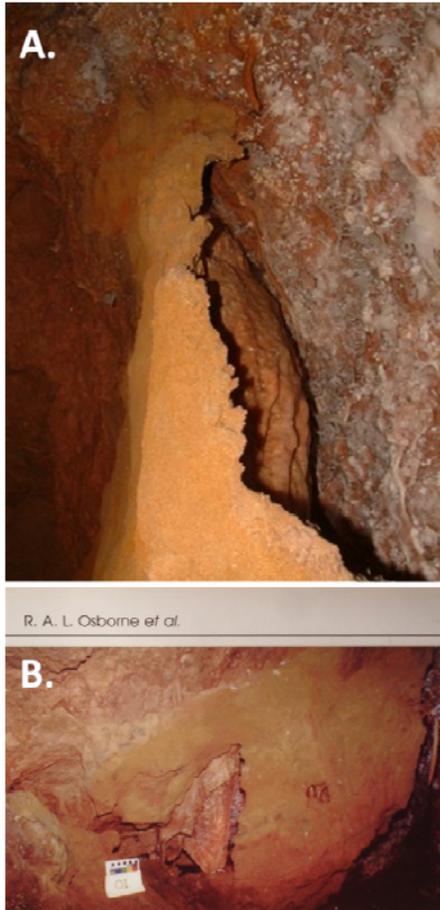


Figure 1 – (A) N-S view of same clay bedding in 'The Jungle', Orient Cave (B) same bedding viewed from E-W orientation as published by Osbourne et al, Australian Journal of Earth Sciences (2006) 53, 377ff

(1) The clayey sand layer deposited in The Jungle, Orient Cave, is as near to vertical as any other bedding in the Jenolan Caves, not horizontal as if a result of a 'cave-filling event'. Comparison of photograph Figure 1A, shows the bedding from the South looking North which is clearly vertical whereas West-East views published thus far (e.g. Figure 1B ref.) do not adequately capture this orientation. Similar extensive vertical bedding with vertically set stone inclusions has also been observed on the north side caves (Figure 2).

(2) The dates published rely on only eight primary samples. Of the eight sites, only one was chosen for the dating of zircon grains, and that site, at 'River Lethe', is potentially the one most likely to contain zircons of much younger age. Interestingly, a date for just one of the eleven grains analysed gave a date of 512.0 +/-152.5 Ma but was ignored for statistical reasons. Analysis of further samples from through out the cave system are then required to enhance the statistical robustness of the present study.

(3) Fossils of presumably the same age as the limestone (420Ma) have been found in the clays which lie as inter-beds among the limestone layers (Figure 3 and 4).

The presence of Silurian fossils in clays dated as Carboniferous is contradictory and indicates further investigation is required before the dates are considered accurate.



Figure 2



Figure 3

4) A serious proportion of 'rounded' stones, which are foreign to coral reef material but commonly found throughout the cave system, exhibit their longer axes pointing downwards, as if they had also become rotated by 90–120 degrees during the episodes of folding experienced by the limestone (Figure 5). Furthermore, these stones may be shown en masse as near vertical layers (red lines in Figure 6). The impact such observations pose on the 'cave filling theory', that was widely reported in the media and discussed by Mr Peck, need to be considered.



Figure 4

(5) Similar vertical beds, including such stones embedded in dolomite/silica/illite mix clays are found throughout the Jenolan system including the more northern caves. For example Figure 7 shows typical wall and roof decoration in the Jubilee Cave. Perhaps the observation by Mr. Peck, of 'gravel' left in the wall of Victoria Bower would be a similar example. Such observations indicate a common feature of the entire Jenolan system and needs to be interpreted as a general phenomenon and not peculiar to a local region or cave.

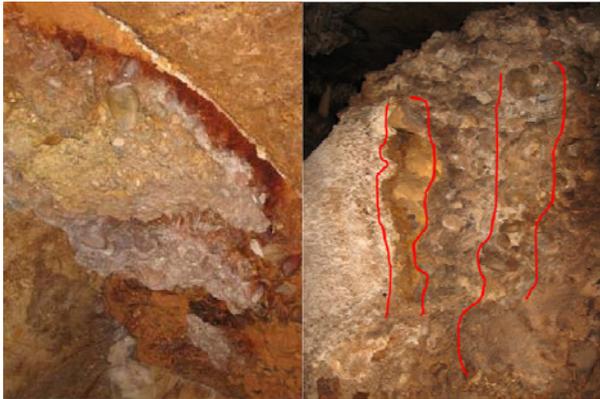


Figure 5

Figure 6

We would fully endorse Mr. Peck's final comment that management enthusiastically support research of this kind. However we would encourage that a number of researchers should be drawn in to discuss and appropriately report on any findings as well as inform on the commercial and marketing impact of such findings. We would however caution against using the 'world's oldest caves' as a marketing theme until the present work has been validated more fully by further researchers.



Figure 7 – Clayey sand layer with delicate helictites in the Jubilee cave.

Yours in the promotion of cave science,

Ted Matthews Dip Ed (Science, Geology)
Dr Dan Catchpole BAppSc (UTS), PhD (UNSW),
Adjunct Professor (UTS)

Please Note: Whilst the authors of this letter are employees of the Jenolan Caves Reserve Trust, the views presented in this letter are their own and do not formally represent the views of The Trust or in any way constitute an official response from The Trust or its management to the previously published article in The ACKMA Journal.

BOOK REVIEW

Caves of the World Heritage in Slovakia. Edited by Jozef Jakál and Pavel Bella. State Nature Conservancy of the Slovak Republic, Slovak Caves Administration, Liptovský Mikuláš. ISBN 978-80-8064-303-4. 168 pages, hardbound. Purchasing enquires to Pavel Bella <bella@ssj.sk> **Reviewed by Dr. Armstrong Osbourne.**

The Slovak Cave Administration at Liptovský Mikuláš often sends me publications on their caves. They are mostly written in Slovak; this book however, is different. It is not only brilliant to look at, it is written in English, is comprehensive and contains outstanding content! We really do need a book like this for NSW or eastern Australian caves.

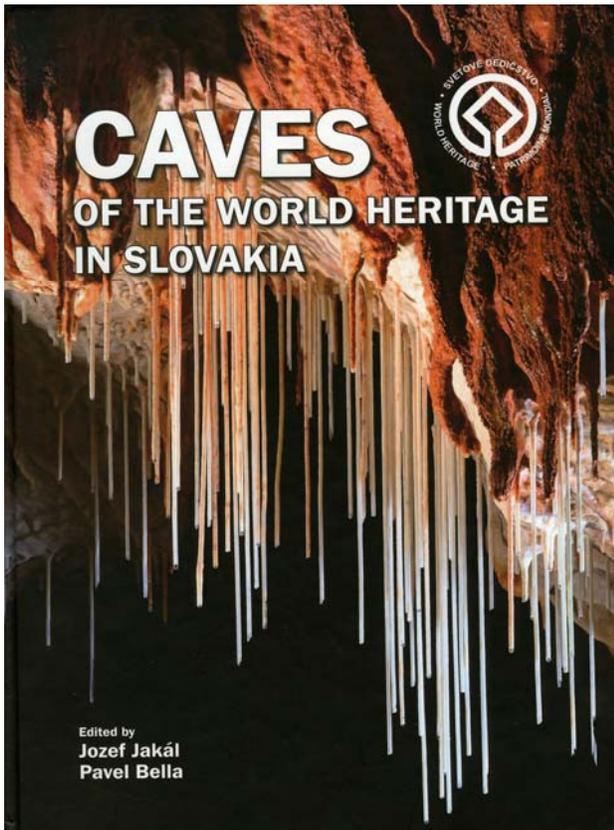
The photographs are stunning, with Pavel Bella contributing many. Penney's favourites are the

mighty flowstone formation on page 7, the folded Lower Triassic shales on page 22, the icefall on page 84, and the fungi on page 97.

The text is complimented with clear diagrams, maps, cave maps, cave sections and historical images. I particularly like the 1905 postcard of people summer ice-skating in Dobšinská Ice Cave, with Hungarian, English and German captions.

The book consists of a forward and an introduction followed by ten chapters by eight specialist authors. Of these authors, four are members of the scientific staff of the Slovak Caves Administration. This illustrates the great strength and depth of the Administration staff.

In the Foreword, Jozef Hlaváč, Director of the Caves Administration, gives a background to the World Heritage area and the work of the Caves Administration, including its pure and applied research program. He even makes an oblique reference to Dr Kensu Urata and me. In the short Introduction, research geographer Dr Jozef Jakál and Administration Deputy Director and geomorphologist Dr Pavel Bella outline the aims and origins of the book, recognizing the work of cavers and scientists.



In the first main chapter, Bella and Jakál give a short, but comprehensive introduction to the surface and underground landscape of the Slovak Karst National Park. This is well written, but some of the technical terms may stump the uninitiated reader.

The second chapter by Caves Administration geologist Dr Ľudovít Gaál describes the geology and geological history of the Slovak Karst. This is engaging and complimented with coloured diagrams, photomicrographs and photographs. There is a great deal packed into the eight pages of this chapter and it requires a slow read.

The third chapter, again by Bella and Jakál is an introduction to karst hydrology and the role of water in karst. Again there are excellent diagrams

and photos. One of the best is the figure showing hydrographic zones on page 27, which superimposes surface, underground and cave diving images over the usual diagram showing vadose and phreatic zones. There is also an image of something we desperately need to see in eastern Australia, a karst spring with a permanent automatic gauge!

In the fourth chapter, Jakál gives an excellent introduction to surface karst landscapes in general, while also describing the specific landscape of the Slovak Karst. While the chapter is generally introductory and descriptive, Jakál also poses some important questions such as the lack of large polje in the Slovak Karst.

Bella, in the fifth chapter gives a comprehensive description of the caves and how they have formed. The images, plans and sections are extremely well chosen and are themselves a great introduction to cave geomorphology. Readers unfamiliar with Slovak terminology may be puzzled by the use of the term Abyss, a translation of the Slovak word *priepast* referring to vertical shaft-like caves or vertical shafts in caves. While Pavel and I may disagree on some of the interpretation presented here, his textbook images and diagrams really are *textbook* examples. The plans of the meandering stream cave and maze ("underground labyrinth") cave on page 52 are truly impressive and convincing, as is the image of the meandering stream with notches on page 54.

"The stone beauty of caves" is the title of the sixth chapter by Ľudovít Gaál. As well as covering the whole range of forms and mineralogy, some of the images are of features that are just too good. The stegamite on page seventy-nine with the caption "Weeping Willow in the Domica Cave is our most beautiful stegamite" is an example of this, as is the revelation on the previous page that there are "more than 450 shields and drums" in Domica Cave. Including only one of Bella's Ochtinska aragonite images has saved this chapter from beautiful image overload. Gaál's own diagram of stalagmite shapes on page seventy three is worth a look as it shows forms like palms that are quite common in central and southern Europe but are relatively uncommon here.

In the seventh chapter, "Cave Microclimate", Dr Ján Zelinka, climatologist at the Caves Administration, gives an excellent introduction to the climate of caves as well as describing the specific climate of the caves in the Slovak Karst. The first image on page 87 of the continuous monitoring site in Gombasecká Cave illustrates how seriously Ján and his staff approach atmospheric monitoring of their caves. The chapter contains excellent diagrams, great pictures of ice and an explanation of what speleotherapy is all about.

Chapter eight, "Cave Life" by Dr Ľubomír Kováč from the university at Košice is encyclopaedic and well illustrated, showing a whole witches' brew from fungi, invertebrates, newts and bats. It is a great resource with really clear images and descriptions

of the major groups. It ends with a section on methods and a discussion of conservation.

In the ninth chapter, Dr Marián Soják of the Archaeological Institute at Nová Ves describes human use of the caves from the Palaeolithic through to the 16th century. Artefacts and sacred sites of several cultures are described and illustrated. The finds illustrated include stone tools, bone tools, pottery, jewellery and Roman coins. The opening point is very interesting, approximately one third of the 5,000 recorded caves in Slovakia were used by people over that period.

The tenth chapter by Marcel Lalkovič from the university at Banská Štiavnica describes the history of cave exploration, documentation, science and tourism from 1224 onwards. I found this chapter very interesting, particularly given the great changes in governance over the area during the 20th century with the effects of two world wars, moving national boundaries and the collapse of two empires. The old maps, sketches and photographs are fascinating as is the history of administration of some of the show caves, which is surprisingly similar to that in parts of Australia. Slovak cave-science icon Anton Droppa is honoured by a portrait on page 131 and an image of him undertaking fieldwork in Ochtinská Aragonite Cave on p 138.

In the eleventh chapter Pavel Bella gives a description of six show caves and fourteen other

significant caves and abysses in the region. Once again the images are stunning. Interestingly there is a description of a new show cave, Krásnohorská, discovered in 1964 and opened to the public in 2004.

The twelfth and final chapter, "Protection of Karst and Caves" by Jozef Jakál, Ľudovít Gaál and Dagmar Haviarová begins with a classic diagram of the evils perpetrated on karst and continues with a well reasoned argument for better care and protection. Of course the images here are great, we see a cleverly-hidden water tank, in-cave water monitoring equipment to die for, orchids, a colourful lizard and kingfisher, a tourist-monitoring camera (mounted in a fully guided cave) and interpretive signs and exhibits.

The book ends with an extensive bibliography, mostly in Slovak, but a careful look will reveal at least two familiar authors.

This book is a great model for how to design, write and illustrate a serious popular book on a significant cavernous karst. It should be on the shelves of cave guides and managers. The only drawbacks are the English, which in places is difficult and a little quaint, and the availability, which is currently only at the caves themselves. My advice is if you are able, go to Slovakia, see the caves, meet some of the authors and buy the book

COMING EVENTS

– Elery Hamilton-Smith

In particular, this list covers events of special interest to researchers and managers. If you are interested in any listed events, contact Elery Hamilton-Smith on: <elery@alphalink.com.au>.

2008: September 21-26	International Symposium of Subterranean Biology, Fremantle, WA.
2008: September 21-24	Multi-disciplinary Conference on Sinkholes and Karst, Tallahassee, Florida
2008: October 5-14	A Just and Sustainable World – IUCN World Conservation Congress, Barcelona.
2008: November 24-28	Australian Protected Areas Congress, Twin Waters, Queensland
2008: December 1-5	Healthy Environments, Healthy People, Merida, Mexico
2008: December 2	Australian Sociology Association Conference: Environment & Society day, Melbourne.
2008: December 3-5	Tourism and Hospitality Research Conference, Hammer Springs, NZ
And Looking Ahead:	
2009: January 5-9	KarstAway – 27th ASF Conference, Sale, Victoria
2009: January 5-7	Mauritius Conference on sustainability
2009: May 3-9	18th ACKMA Conference, Margaret River, Western Australia
2009: May 12-17	Hypogene Speleogenesis and Karst Hydrology of Artesian Basins, Ukraine
2009: July 19-26	International Congress of Speleology, Kerrville, Texas
2009: Sept 23-26	Sustainability of the Karst Environment, Plitvice, Croatia
2010: Sept 25-28	Cave Guides Workshop, Wellington, NSW.
2010 (dates TBA):	International Symposium on Vulcanospeleology, Australia
2010: May	ACKMA Annual General Meeting “Week”, Mulu Caves, Sarawak, Malaysia
2011: May	19th ACKMA Conference, Tasmania