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Cover photographs:

Front cover: Switzerland, 2021. Deep beneath the Gornergletscher, in Switzerland, where ice meets rock, an engineer from the team **Flyability** tests a drone modified for surveying glacier caves. This drone can fly along passages inside glacier caves that humans cannot explore – because they are too narrow, too fragile, or pose too many risks. A cage protects the drone from collisions, while a laser scanner creates 3D maps that – over years – might help in calculating changes to the ice mass underground and in detecting danger zones. [Photo by **Robbie Shone**.]

The back cover collage comprises eight images captured in Austrian and Italian ice caves by Robbie Shone. As well as presenting scenes of astonishing colours and beauty, ice caves provide accessible sites for collecting measurements and samples used in a wide variety of scientific investigations, including many facets of palaeoclimatology (and related topics) together with contemporary changes related to ongoing climatic warming.

Image a Beautiful blue ice within one of the photographer’s favourite ice-cave locations, “The Castle” formation in Eisriesenwelt cave near Salzburg. Documenting these and similar formations is important, because they are under threat from warming climates. **Austria 2021.**

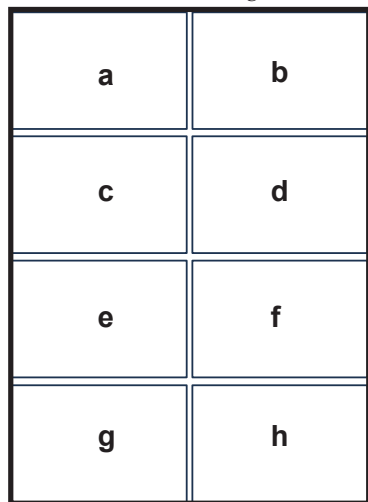


Image b The many layers of ancient ice within this giant plug, suspended above the floor and wedged between the rock walls of Buso della Neve del Zingarella, provide a time record. It is essential that these deposits are sampled and studied before the ice disappears for ever by melting and/or crashing to the floor. **Italy 2021.** Christoph Spötl and Gabriella Koltai (University of Innsbruck) examining layers in a thick bed of ice in

Image c Eisriesenwelt Eishöhle (**Austria, 2020**) to understand permafrost evolution over time. Layered beds of ice up to several centuries old contain climate-record data that remain largely under-studied.

Image d Palaeoclimatologist Tanguy Racine (upper) and his colleague Cecilia Kan use an ‘ice screw’ to extract an ice sample on the 21m ice wall in Eisgruben (**Austria 2021**). Ice has accumulated here for most of the past 2,000 years and ice near the bottom of this 100m-deep cave might be 5,300 years old.

Image e Ice cones in the Schneevulkanhalle of Schwarzmooskogel Eishöhle (**Austria 2021**). In 2013 the cones were up to 20m tall. Now scientists are racing to decipher climate history details stored within the remaining ice before it melts. The yellow glow might relate to light falling on soil-derived impurities within one ice cone.

Image f A team of explorers (La Venta @laventaexploringteam) are mapping and monitoring a cave in the Italian Dolomites using 3D LiDAR technology. Here the change in melt within an ice plug blocking a giant chasm on a high mountain top is being recorded, to assess the effects of climate change. **Italy 2015.**

Image g In Hochschneid cave, east of Salzburg, Tanguy Racine collects twigs and pine needles from ice for C-14 dating, which can show how ice has waxed and waned during millennia of climate change. **Austria 2021.**

Image h For reasons unknown, the volume of ice inside Eiskogelhöhle (**Austria 2021**) has barely changed since being photographed in 2013. Possibly, due to its high elevation, cold winds blow all year round and never become warm enough to melt the ice. In contrast, ice in Schwarzmooskogel (Image e), 500m lower, is melting rapidly.

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EDITORIAL

John Gunn and David Lowe

Assuming that all goes well with the final stages of journal production and distribution, then it should reach our members and subscribers in early September, just before “*Hidden Earth*”, which will be held at the Llangollen Pavilion in North Wales from the 20th to 22nd September 2024. As most readers will be aware, this is very much an event organized by cavers for cavers and it originated as the “*BCRA Annual Conference*”, the first of which was held at Leeds University over the weekend of 14–15 September 1974 and was attended by around 300 people. Subsequently the event was known variously as “*The National Caving Conference*” (e.g. 1985), the “*BCRA Conference*” (e.g. 1987), and the “*BCRA National Caving Conference*” (e.g. 1991), but in 1996 this changed to “*Hidden Earth*”. Debate over the number of sessions “*of a scientific nature*” is as old as the event itself, as a letter in BCRA Bulletin No.6, 1974 states that “*If the conference is to appeal to “cavers in general” then the programme must clearly contain a minimum of science (if any at all)*”. It will come as no surprise to those who have read previous Editorials that we disagree profoundly and, instead, argue that many cavers appreciate talks that have a ‘light’ science component. In particular, we assert that talks on new discoveries, whether in Britain or overseas, should as a minimum place the cave / cave system in its geological and hydrological contexts and also discuss relative passage ages and any cave sediments, both clastic and speleothem that were observed. We further suggest that these discoveries should be recorded via a paper or report in *Cave and Karst Science*!

For those who prefer a greater science content in talks, then the *BCRA Cave (and Karst) Science Conference* is being held at the University of Northumbria on Saturday 12th October, three weeks after *Hidden Earth*. As is our custom, the abstracts of papers presented, hopefully along with those of any poster presentations, will be published in the next issue of “*Cave and Karst Science*”.

We also give readers a timely reminder that the 19th International Congress of Speleology will be held from 20 – 27 July 2025 at Belo Horizonte in Brazil. This promises to be a superb event, with a real blend of scientific, sporting and recreational speleology, and we encourage all readers to consider attending. There is a 75% discount for early registration (pre 31 January 2025) and this is approximately £50, which includes the closing banquet and a mid-week field trip.

Turning now to the content of this Issue, astute readers will note that there are less pages than in recent issues, partly due to less material being received and partly as a consequence of one of us suffering a series of efficiency-sapping health problems that began late in 2023 and are only now – hopefully – promising to come to an end. Nevertheless, we are pleased to say that the content includes an interesting mix of topics, some being quite “out of the ordinary”, which we hope will interest the broad cross-section of our readers.

From the field of subterranean biology, Lee Knight and his Slovenian colleagues Nataša Mori and Anton Brancelj return to our pages, this time describing a pilot study of the biota of percolating waters in three caves in southern Britain – the results being considered as a proxy for the fauna supported by the epikarst aquifer. Moving into the area of the speleo-history of southern Europe, Konstantinos (Kostas) Trimmis provides a brief but fascinating insight into the life and times of Erato Angelopoulou, one of the first and most prominent Greek female speleologists. Southwards across Africa, the rarely reported-on country of Mozambique gives the setting for a fascinating and copiously illustrated paper by Frederico Tátá Regala and 18 colleagues, describing the caves and speleological heritage of the Inhaminga area on the Cheringoma Plateau. Finally among the main contributions to this Issue, returning to southern Britain, Adelle Bricking and Graham Mullan report on the historical implications of newly acquired radiocarbon dates from disarticulated human and dog bone specimens excavated at Fishmonger’s Swallet in South Gloucestershire. The Issue concludes with a *Forum* section that contains “Notes for Authors” and various pieces of correspondence, some based upon memories prompted by other communications, together with a Photo Feature related to biofilm on a sediment bank at the base of Block Hall in Derbyshire’s Speedwell Cavern.

Finally, regular readers will know that we commonly use photographs on the front and rear covers that relate to articles contained within each Issue. For the present issue there were insufficient strong contenders, and we would like to record particular thanks to Robbie Shone for providing us with the photographs on the theme of “ice in caves” that appear on the front and rear covers of this Issue and, also importantly, providing first drafts of the photograph captions. If other cave photographers wish to see their work grace the covers of our journal, then please contact the editors.