

YORKSHIRE GEOLOGICAL SOCIETY

President: Paul Hildreth



NOVEMBER TO DECEMBER 2020

ANNUAL GENERAL MEETING 2020

(Online by Zoom) Saturday 5th December 2020, 2:00pm

YGS ONLINE CHRISTMAS LECTURES

1st – 10th December 2020

VERY IMPORTANT – COVID-19 EMERGENCY: PLEASE KEEP
CHECKING THE YGS WEBSITE FOR THE LATEST PROGRAMME
AND OTHER INFORMATION: <http://www.yorksgeolsoc.org.uk>



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ANNUAL GENERAL MEETING 2020 ONLINE BY ZOOM

Saturday 5th December 2020, 2:00pm

Zoom. Please go to our AGM 2020 webpage for joining instructions:
<https://www.yorksgeolsoc.org.uk/agm2020>

AGENDA

- 1.30pm Login opens to participants
- 2.00pm Intro and troubleshooting
- 2.10pm Welcome by the President, Paul Hildreth
- 2.15pm **Initial Motion proposed by the Council to confirm the use of Zoom for the AGM due to the coronavirus emergency and Government restrictions:**
"The Online Meeting to follow shall constitute the Annual General Meeting of the Society for 2020, and the resolutions and elections passed at that meeting shall have equivalent status to those passed at previous AGM's held in accordance with the Rules of the Society"
Proposed on behalf of Council by: Paul Hildreth, President.
Seconded by Andrew Howard, General Secretary
- 2.25pm **Minutes of the last AGM, 7th December 2019**
- 2.30pm **Review of the Year 2020 and Vote of Thanks to outgoing Council (President)**
- 2.45pm **Announcement of Medallists and Grant Winners for 2020**
Presentations to be postponed until the Second Presidential Address of Paul Hildreth so that these presentations can be made in person
- 3.00pm **Break (arrange your own refreshments!)**
- 3.15pm **Annual Report and Accounts for 2020** (to be taken as read), short introductions by the General Secretary and General Treasurer to be followed by:
- 3.30pm **General Question and Answer session**



ANNUAL GENERAL MEETING 2020 ONLINE BY ZOOM

Saturday 5th December 2020, 2:00pm

3.45pm **ELECTION OF COUNCIL AND OFFICERS FOR 2021**

As at 27 October 2020 the following nominations had been received. Any further nominations or volunteers should be notified to the General Secretary secretary@yorksgeolsoc.org.uk by 30 November 2020.

President	Dr Nick Riley
Vice President 1	Mr Paul Hildreth
Vice President 2	Vacant (Note 1)
General Secretary	Vacant (Note 2)
General Treasurer	Mr John Holt
Principal Editor	Professor Paul Wignall
Membership Secretary	Mr David Blythe
Indoor Meetings Secretary	Professor Mike Bowman
Field Meetings Secretary	Vacant (Note 3)
Grants Secretary	Professor Mike Rogerson
Publications Secretary	Dr Joanna Thomas
Circular Editor	Professor Patrick Boylan
Web Editor	Mr Rick Saville

OTHER COUNCIL MEMBERS

Dr Elizabeth Atar	Mr Tom Berry
Dr Natasha Dowey	Mr David Hill
Dr John Knight	Dr Annette McGrath
Mr Bill Paley	Professor Colin Waters

Note 1: The second Vice President position will be taken up by the nominee for President 2023-24. A nominee is being sought by Council to fill this role on a temporary basis in the meantime.

Note 2: Mr Paul Hildreth will take up this role in an acting capacity pending the co-option and election of a General Secretary.

Note 3: The role of Field Meetings Secretary has been vacant since 2017 and delivered unofficially by the President, General Secretary and Vice Presidents. A volunteer is sought to fulfil this role in 2021-22.

VOTE OF THANKS FOR RETIRING COUNCIL MEMBERS:

The President will propose a Vote of Thanks to the two members and trustees who shall be retiring from Council at the AGM: Dr Andrew Howard and Dr Stewart Molyneux.

4.00pm Introduction from the new President Dr Nick Riley, and Vote of Thanks to retiring President Paul Hildreth

4.30pm Close



THE SORBY MEDAL is awarded in recognition of distinguished contributions to geological knowledge, either of Yorkshire and the North of England, or by a person associated with Yorkshire or the North of England by birth, training or locus of research. Council has approved the award for 2020 to **Prof. Phillip Lars Manning** of the University of Manchester.

Phil is Professor of Natural History and Director of the cross-faculty Interdisciplinary Centre for Ancient Life (ICAL) at the University of Manchester (UK). He is also a Fellow (International) of the Explorer's Club (New York, USA) and a Research Associate of the American Museum of Natural History (New York, USA). The University of Pennsylvania (Philadelphia, USA) appointed Phil as a visiting scholar in 2013 where he still regularly visits to lecture and supervise graduate students. He has a BSc from Leicester University in Earth Sciences, an MSc from the University of Manchester in Geology and a PhD from the University of Sheffield in Palaeontology.

Phil has presented many television documentaries including a recent series for National Geographic Channel ("Jurassic CSI") that showcased the application of new technologies in palaeontology and he has also contributed to many BBC, Discovery Channel, Channel 4 and History Channel TV documentaries.

THE MOORE MEDAL is awarded in acknowledgement of services to geology in the north of England. The recipient, approved by Council, is **Mr. Anthony Charles Benfield** of Barwick in Elmet, Leeds.

Leeds-born Tony has been a prominent and leading participant in a wide range of geological activities throughout the North of England, the "footprint" of Yorkshire Geological Society, for nearly 60 years. He joined the Society in 1962, was Secretary of the Programme Committee 1988-1989, General Secretary 1990-1993 and served as Vice-President for the two years 1994-1995; in all he served some 10 years as a member of Council. His services to the Society were recognised by the award of Honorary Membership in 2009.

This award however is not based only on Tony's contribution to this Society but in recognition of his much wider range of activity and participation in promoting geology throughout the region, in support of research, affiliated societies and education.

It is hoped that both medals can be presented in person at the rearranged President's Day – including Paul Hildreth's postponed second Presidential Address – which we are hoping to hold by mid-2021.



YGS CHRISTMAS LECTURES: DECEMBER 1st TO DECEMBER 10th 2020

Convened by Andy Howard

YGS is pleased to announce a series of online lectures in the first two weeks of December 2020, presented by recent YGS grant winners.

To register, please visit our Events webpage at <https://www.yorksgeolsoc.org.uk/events>. Please also check this webpage in the run up to the events in case of any last minute changes to the programme.

You only need to register once for the whole programme, the link in your email ticket will admit you to any or all of the lectures at the appointed time. All talks are free to attend.

PROGRAMME: ABSTRACTS AND BIOGRAPHIES

All lectures will commence at 4pm. Login opens at 3.45pm.

Tuesday 1st December: Dating faults, fractures and fluids with U-Pb calcite geochronology: appraising the relationship between deformation and basinal fluid-flow in the Cleveland Basin.
Jack Lee, Durham University

Thursday 3rd December: How Whitby got its whale jaw arch – (evolutionarily speaking...)
Rebecca Bennion, University of Liège

Tuesday 8th December: Shifting Sands and Devil's toenails: The Lower Jurassic stratigraphy of Redcar (NE England)
Dr Jed Atkinson, University of Leeds

Thursday 10th December: Big boulders and catastrophic debris flows in the High Atlas Mountains of Morocco.
Madeleine Hann, University of Manchester



DATING FAULTS, FRACTURES AND FLUIDS WITH U-Pb CALCITE GEOCHRONOLOGY: APPRAISING THE RELATIONSHIP BETWEEN DEFORMATION AND BASINAL FLUID-FLOW IN THE CLEVELAND BASIN

Jack Lee, Durham University



The Cleveland Basin has long held a special place in the hearts of Yorkshire geologists with a rich geological history. Using cutting edge U-Pb dating techniques, combined with structural analysis and isotopic traces, we are re-evaluating the deformation and fluid-flow history in the Early Jurassic mudrocks. This furthers our understanding of the relationship between fluid-flow and deformation in mud-rich lithologies with important implications for mudrock seal integrity in petroleum systems and Carbon Capture and Storage.

Jack Lee is in the final year of a PhD at Durham University studying “*Fracturing and fluid-flow in an exhumed Jurassic basin: an integrated field, microstructural, geochronological and isotopic study of vein mineralisation within mudstone-dominated successions*”, supervised by Nick Roberts, Jonathan Imber, Bob Holdsworth, Andy Aplin, Richard Haslam and Cedric John. Jack had previously completed a MSc by Research at Durham University on “*The Jurassic Source Rock Potential of the Celtic Sea and Western Approaches*” and also has three and a half years’ experience analysing abnormal fluid pressure in shales working for Ikon Science.

Jack was awarded a grant from the YGS Research Fund in 2018/19.



HOW WHITBY GOT ITS WHALE JAW ARCH – (EVOLUTIONARILY SPEAKING...)

Rebecca Bennion, University of Liège



The whalebone arch at the top of Whitby's West Cliff is an iconic tourist attraction and landmark of the town. It pays homage to the town's history as a whaling port in the 18th and 19th Centuries when over two thousand Arctic whales were hunted for their blubber and oil. The bones that form the arch are the jaws of a bowhead whale (*Balaena mysticetus*), one of the main species targeted by whalers. It belongs to a group of whales that use a unique feeding mechanism: instead of catching prey with teeth, they filter them from the water using a specialised hair-like structure called baleen. Their skulls and jaws are specially adapted for this style of feeding and are very different to those of the earliest whales which swam the Late Eocene seas.

In this talk I shall endeavour to give a palaeontological perspective on the bowhead and other baleen whales. I will discuss how recent fossil finds from around the world are providing insight into how baleen filter feeding evolved from toothed ancestors, as well as some of my own research investigating trends in marine vertebrate evolution using 3D models of fossil skulls.

Originally from Whitby in North Yorkshire, **Rebecca Bennion** is currently based in Belgium studying for a PhD at the University of Liège and Royal Belgian Institute of Natural Sciences. Her research uses 3D scanning to investigate convergent evolution in skull shape between marine reptiles (ichthyosaurs and mosasaurs) and marine mammals (whales and dolphins). She previously studied early Carboniferous fish from the Scottish borders (BA, University of Cambridge) and Lower Jurassic ichthyosaurs from Lyme Regis (MRes, University of Southampton).

Rebecca was awarded a grant from the YGS Fearnshides Award scheme in 2018/19.



SHIFTING SANDS AND DEVIL'S TOENAILS: THE LOWER JURASSIC STRATIGRAPHY OF REDCAR (NE ENGLAND)

Dr Jed Atkinson, University of Leeds



Beneath the shifting sands of Redcar, the oldest Jurassic succession on the Yorkshire-Cleveland Coast outcrops. Several projecting scars containing high numbers of the bivalve *Gryphaea* (see image), the Devil's toenail, rise above the sands but the intervening softer lithologies are seldom well-exposed. This has led to this succession being overlooked, even though it represents an interval of time significant in the story of recovery from the end-Triassic mass extinction. Winter storms of 2018 removed much of the sand cover providing an opportunity to study the section in detail. Here I will present the results of facies analyses and fossil diversity counts from this unique location, placing Redcar into the context of mass extinction recovery and marine conditions within the Early Jurassic epicontinental seas.

Jed Atkinson completed his undergraduate, PhD and a postdoctoral research position at the University of Leeds. Over the seven years he spent with the department Jed specialised in recovery following mass extinction events. His research focused on detecting patterns in diversity, ecology and body size during the rebuilding of sea-floor invertebrate communities.

Jed was awarded a grant from the YGS Research Fund in 2018/19.



BIG BOULDERS AND CATASTROPHIC DEBRIS FLOWS IN THE HIGH ATLAS MOUNTAINS OF MOROCCO

Madeleine Hann (with Jamie Woodward and Philip Hughes),
University of Manchester



The High Atlas Mountains of Morocco were formed circa. 30 Ma during collision of Africa and Eurasia. The resulting topography is as dramatic as the Moroccan culture. The previously glaciated, steep-land river catchments of the High Atlas contain a valuable record of Quaternary environmental change. One catchment, near the popular tourist village of Imlil, contains a series of 200+ enormous basalt boulders up to 10 m in diameter. Using geology, geomorphology and absolute dating methods, the mystery of the mechanism and timing of their deposition has been untangled. These 'mega-boulders' indicate a catastrophic event which continues to have an impact on the catchment today. Understanding past catastrophic events helps our understanding of dominant landscape shaping processes and predicting future hazards in deglaciation mountain regions.

Madeleine grew up in the North Yorkshire seaside resort of Whitby and attended Whitby Community College. She went on to study Geology and Geophysics at the Royal School of Mines, Imperial College London in 2013-2017. Despite her roots on Yorkshire's Jurassic Coast, Madeleine admits she 'was never very good at Palaeontology' and is now completing her PhD in Physical Geography at the University of Manchester (2017-2020). Now living back in Whitby, Madeleine is a keen sea swimmer and trail runner, enjoying exploring the old mine works and outcrops along the coast.

Madeleine was awarded a grant from the YGS Fearnside's Award scheme in 2018/19.



The Draft Annual Report for 2020 will be available to members before 14th November 2020, to be distributed as follows:

By direct email, as an attachment in .pdf format (NB this will only reach you if you have previously consented to receive YGS communications by email – about 70% of YGS members. If you normally receive an email newsletter from the General Secretary, then you are on this distribution list).

By download from the YGS website (please navigate to our AGM Meeting page at <https://www.yorksgeolsoc.org.uk/agm2020> to download a copy)

Application to the General Secretary by email (please email the General Secretary to request a copy, you will receive a copy as an attachment in .pdf format by return email).

Application to the General Secretary by post (please write to the General Secretary by post at the address below, you will receive a hard copy in the post by return).

The Annual Report will be taken as read at the meeting. The adopted report will be published in the Proceedings of the Yorkshire Geological Society in 2021.

YGS General Secretary

[a postal address is included in the printed version of this Circular]

Email: secretary@yorksgeolsoc.org.uk



PRESIDENT'S FINAL WORD

Paul Hildreth, President



Since my election to the presidency at the Annual General Meeting held at Weetwood Hall, Leeds, on 5th December 2018, the world has become a very different place and all of our lives have been changed in ways we could never have imagined only a couple of years ago. It has been a roller coaster term of office both personally and for the Yorkshire Geological Society. Council has sailed into uncharted waters with a crew more used to Hornsea Mere than the open ocean. This said, I must congratulate Council on its willingness to pull together and cooperate in using new methods, not only to communicate its business, but also provide YGS members with opportunities to partake in talks and field meetings.

At the risk of repeating myself, I can share with you an ambition that I set myself in about 1967 as an undergraduate attending my first GA lecture in Burlington House, London. Having listened to the eloquent speakers that day I resolved to summon up the courage to present a lecture, not to the GA, but to my 'home' society the YGS. I had to wait until 2008 to do so when as Council's 'champion' for a Hull meeting, one of the scheduled speakers dropped out at a late stage and I stepped into the breach with a talk on 'Chalkoholism'. It is this Society, the one that remains special, that has allowed me to reach heights I never could never have imagined on that evening in Piccadilly. Thank you to all concerned and particularly those members who have supported and encouraged me during my terms as both General Secretary and as President.

Two members of Council are retiring at the AGM in December. I would like to express my gratitude to both Dr. Stewart Molyneux and Dr. Andy Howard for their many years of service. Stewart has been associated with the Principal Editor's role for a total of 17 years, four in partnership with Doug Holliday (2003 - 2006) and, since 2018, in an acting capacity. This equals that of J.W. Davis (1877 - 1893), a major figure in the early days of the society, whose stint though was unbroken and solus, and of another of the outstanding figures in YGS history, H.E. Wroot (1918 - 1934). Stewart leaves his successor, Professor Paul Wignall, with a healthy list of submissions to PYGS, a stunningly attractive publication thanks to his skilled liaison with the Geological Society Publishing House (GSPH).

Andy was awarded a 'virtual medal' by one society member when he volunteered to serve as General Secretary immediately after his term as President. His dedication to the YGS cause has been outstanding, leading several initiatives such as the Research Fund and Student Grant Award, championing many indoor meetings and leading outdoor field meetings. His determination to provide a programme of some sort for members during the present restrictions sparked the YGS involvement in virtual field trips, on-line lectures and mini field trips. His support and accessibility during this presidency has been greatly appreciated.



PRESIDENT'S FINAL WORD

Paul Hildreth, President

My final contribution as President, the second Presidential Address, will not take place at the 'normal' event, i.e. the December AGM. Instead, the plan is to hold a specially-themed meeting in late June 2021 when I hope to invite guest speakers to present on topics related to that of my own address, the early Cretaceous of Lincolnshire. Included in this I hope to have some exciting and potentially important results of 'frantic' work being carried out at Middlegate Quarry, South Ferriby. The site, formerly supplying clay and chalk for cement-making, is being abandoned and pumping of water ceased in late October following the removal of all the clay benches and smoothing out the Jurassic clay surface to an approximate 1:4 gradient throughout the quarry. It is estimated that the ingress of water will flood the quarry to about 35m OD submerging all of the Jurassic clay and Lower Cretaceous Carstone sections. Recent months have seen Dr. Michael Oates painstakingly logging and collecting from the Jurassic clays before they are lost.

Middlegate was designated SSSI status for its geology in 1987. Its significance includes:

- the only continuous Oxfordian/Kimmeridgian boundary section in England
- the only "permanent" exposure of Amphill Clay (Oxfordian) in England
- the most complete basal Kimmeridgian Baylei Zone in Britain
- mixed Boreal and sub-Boreal Jurassic ammonite faunas
- the best exposure of Hunstanton Formation (Red Chalk) in typical East Midlands facies
- the type locality for the Ferriby Formation (Cenomanian, Grey Chalk)

The only good news, apart from the fact that the whole of the Chalk succession will still be accessible, is that Mike Oates and I have built a good relationship with the quarry operators, relevant Cemex staff and the landowner (Scawby and South Ferriby Estates) who are prepared to cooperate in preserving selected exposures, in particular the Albian – Cenomanian boundary, and are considering the 'donation' of a brick building for conversion to an education-cum-information centre. With luck and determination it is hoped that visits to the quarry can be re-established in the near future.

It has been an honour and a privilege to serve as your President despite almost half of my tenure being 'virtual'. I have become newly acquainted with several members and better-acquainted with several more. I wish my successor, Dr. Nick Riley MBE, well and trust that he will eventually lead us back to normality and a new era where we can all enjoy the benefits of both face-to-face and virtual meetings.

Paul Hildreth
President

*Mike Oates on his way home
after a day of sampling (Photo:
Paul Hildreth)*





INTRODUCING THE SOCIETY'S NEW PRESIDENT FOR 2020-2022:
DR NICK RILEY MBE C. Geol.
John Phillips Medalist 2017



I am delighted and honoured to be nominated by Council to take over from Paul Hildreth at your President at the 2020 AGM. I first joined the YGS as a student and have been a continuous member since then. The Society has influenced me greatly over my lifetime, via its Proceedings, field meetings and its unique focus on the geology and geomorphology of the North of England and adjacent areas.

I was very fortunate to have been born in the North of England (Blackburn – famous for its 4,000 holes in the ground) at an exciting time when the extractive industries were very obvious compared to today. It was a time of great freedom for children and we spent most of our free time playing outside. My earliest memory about exploring the natural world was

when I was three years old. I had a wooden hammer. It was supplied with a toy, that can still be bought today, consisting of a hammer and wooden dowels, which you can hammer through holes in a wooden frame. I distinctly remember hammering a rotting log and finding numerous fascinating creepy crawlies, especially segmented ones (wood lice and pill millepedes). The field behind our house had a brook. We used to play in and around it most of the time, and I became fascinated by the aquatic life that lived in it. My mum got worried that I spent so much time near water that I had better learn to swim. She took me Darwen baths, where the infamous Mrs Scholey taught me to swim. I remember her shouting at me “swim like a frog!”, which of course, was a great way to communicate to me!

My grandparents had a stall on Darwen Market. My mum would help there. There was a bookstall and my mum bought me *The World in the Past – what it was like and what it contained* by B. Webster Smith FGS. I still have it. I doubt our Editor would tolerate the prosaic style it was written in if submitted to the *Proceedings* (nor did I at the age of 6). It was full of lovely illustrations (111 plates), some in colour. Of course, as a child, the dinosaur ones caught my imagination straight away, but so did the plates of trilobites in Chapter Three “*The Age of King Crabs*”. At last I had found a book with the creepy crawlies I had found in that rotting log! This was my first experience of questioning whether the science was correct – as I believed I had the evidence that trilobites were very much alive and crawling about in deepest Lancashire, and not extinct! A trip to Blackburn Museum soon proved me wrong!

Chapter Six “*The Coal Age*” with its illustrations of ferns, swamps, dragonflies and amphibians also caught my eye. There were many active collieries and coal tips around, where I could find at the least the ferns quite easily. In the local ponds the prehistoric looking great crested newt, was common, so were dragonflies and water scorpions. May be not everything from the coal swamps had disappeared? Those same coal tips had beautiful marine fossils too, with



paper pectens (*Dunbarella*), and nodules, which if you hammered open had beautiful goniatites (*Gastrioceras*), some oozing pale green oil from their crystal walled chambers. My mum bought me another book a few years later, Rachel Carson's "*Silent Spring*". This book resonated with me, as I remembered all the dead birds lying around during the terrible 1962-3 winter, the awful air pollution (from high sulphur content coal burning), and how the snow turned to grey, as speckles of soot covered its surface, while the soot coated buildings and tree bark. Then there was the horrific Aberfan disaster, the Torrey Canyon oil spill with images of oiled birds and the pristine Cornish coast defiled. I was awakening to the negative impact we humans were having on our environment and on the natural world.

My early teenage years meant I could cycle longer distances and pursue my interest in natural history, especially the rocks and fossils, over the wider NW England region. By now I had Geological Survey maps and memoirs (by mail order), and I could get on the train to Manchester Central Library – to access periodicals, including the *YGS Proceedings*! I was building up a large collection (now registered with the BGS) of goniatites, trilobites and echinoderms in particular. The library opened up a whole new world, as I thumbed through American and Russian books and journals there. To my astonishment, I noticed new material in *Палеонтологический журнал* (*Palaentological Journal*), with ammonoids (goniatites) from the Russian Arctic, very similar to what I was finding, and so I started corresponding with the late Dr. Lydia Kusina at the Russian Academy of Sciences. This was the Cold War, yet all my air mail letters got through, and all the mail from her, including reprints, got through to me. This was my first lesson in how science can overcome political/cultural barriers, and how geology ignores them completely. I was never allowed to do geology at school, the only geology we were exposed to was in physical geography and in biology – the latter in the context of the theory of evolution.

I left school and was very fortunate to be accepted to do a joint Degree in Zoology and Geology at Bristol University. For me this was a perfect combination. Understanding life on Earth today is informed by the past and vice-versa. Doing a joint science subject meant the need to have lectures six days a week, and "holiday" periods were largely filled with project work. However, I was really happy being completely immersed in the sciences and learning so many new things. My cohort of geology students has not lost touch with each other and we still meet up and hold field trips together, comparing what we knew in the 70's to what we know now. After graduating I stayed on at Bristol and did a PhD on the Dinantian Worston Shales of the Craven Basin.

During that time I learned to dive. I also was invited onto a marine survey ship, the RRS Challenger. This was part of the Sabrina Project – a survey dedicated to try and understand the sedimentary systems in the Western Approaches and Bristol Channel, in the context of how they may be affected by the construction of a Severn Barrage. I was able to identify fauna brought up in the "shipek grab" samples, as well organisms photographed on the sea



bed and in the upper parts of marine canyons at the continental shelf edge. It was amazing to see crinoids and brachiopods alive. From the sediments themselves I could identify bioclasts, that indicated their provenance, such as rocky shore, estuarine, or sea grass community. Some were remarkably fresh, showing that the system was very active from shore to shelf edge.

I left Bristol in 1980 & started the next phase of my life. I was successful in being recruited into the Geological Survey (then the IGS) in Leeds. This was to support the NCB/BC coal exploration (Plan 2000) programme, and the Survey's own mapping activities. I also married a fabulous nurse, Gill (brought up in the West Riding!). Our first home was a former agricultural cottage made of Magnesian Limestone in Micklefield: behind us was a working quarry and mine (Peckfield No. 1 Colliery). Our first-born arrived in 1983, little did we know that 4 more would appear over the years! In 1984, I was transferred to Keyworth, as the Leeds office was to close. During my time in Leeds I had become increasingly involved in onshore oil exploration. This was a useful switch, as the coal industry was now in steep decline, and lacked political support. Despite this, I still used to visit mines and always got through picket lines without the need for police escort etc. I often wonder if the mine geologist (much prettier than me!) who drove a VW Beetle in the film "*Brassed Off*", may have been inspired by my visits? Disasters started to happen (not caused by me!), the Abbeystead tunnel explosion, and the Carsington Dam failure, allowed me not only use my geological skills to find out what went wrong, but also learn more about civil engineering and its interaction with geology.

By the early 1990's the Soviet Union collapsed. I was able to secure European funding, to work with my former Soviet contacts, including Dr. Lydia Kusina and many others. It was the first time we had met face to face! Quite an emotional event. Our goal was to try and unify a sequence stratigraphic approach to the Carboniferous of the former USSR. My visits to Russia and Ukraine deserve a dedicated book in themselves. That same decade I was in receipt of a Royal Society Grant to visit China and Vietnam. It was a bit like being Michael Palin. I immediately fell in love with China and was able to make many subsequent visits, culminating in us now having a Chinese daughter-in-law and grandchild! Back home things were changing, and I got involved in the Sellafield underground repository project, and in the discovery of new gas fields in the Southern Gas Basin of the North Sea. I made my first of many visits to the USA, all Carboniferous related, yet another story! At the end of the decade I took the opportunity to move into BGS senior management.

The 2000's coincided with a largescale restructuring of the BGS. The new programme "Sustainable Energy and Geophysical Surveys", was my area of responsibility. The emphasis was in what we now call the "Energy Transition". European funding was increasingly targeted at the low carbon economy, and this provided a real boost to the pioneering and leading work that the BGS had already been involved in on Carbon Capture and Storage during the 1990's. I got more involved with the European Commission and with our own government. Informing



INTRODUCING THE SOCIETY'S NEW PRESIDENT FOR 2020-2022:
DR NICK RILEY MBE C. Geol.
John Phillips Medalist 2017

evidenced-based science policy and advocating the need for Carbon Capture and Storage. It was not only about the threat of human induced climate change and sea level rise, but also the threat of ocean acidification, from ever rising atmospheric CO₂ concentrations, that urged me on. This was a time of learning to answer those who were sceptical in an appropriate way, but most of all, put your main energy into working alongside those with the same aims and values. I am glad to say that more and more people are beginning to realise this; I am just waiting for the tipping point!

In 2013, I decided to leave the BGS. It was the right thing to do for many reasons, both personal and professional. I am very grateful to still be involved with the BGS in an honorary research capacity, working voluntarily with post-docs. We are learning from each other and hopefully I am encouraging the next generation of geoscientists. Which brings me to my final point.

You may have wondered why I told you my story in the way I have? I hope you picked up on the theme of how important our early life experiences are. If we fail to inspire, particularly the young, about our science, then it will diminish. I hope we can explore this further together during my tenure as President. Thank you for reading this and please get back to me with your thoughts.

Nick Riley
President-Elect



YGS OPPORTUNITIES FUND

Members are advised that Council of the Society has allocated financial resources to a new Opportunities Fund. The intention is that this new fund will be used to respond promptly and flexibly, in line with the Society's charitable objectives, to opportunities for which the existing fund structure is restricted or inappropriate.

It is envisaged that this will allow the Society to respond to requests for support in any of a number of areas, which for example may include conservation and protection measures, signage, rescue and documentation of short-term exposures, representation and participation at public or educational events. In contrast to the long-standing Society funds, which have an annual cycle for applications and award, sums from the Opportunities Fund budget can be allocated by Council to specific requests for immediate support, which meet the criteria of the Society objectives.



YGS OPPORTUNITIES FUND

The Opportunities Fund will comprise a budget allocation, set annually as part of the Society financial statement, from which sums, normally of up to £1,000, may be awarded following formal requests submitted by any member or members of the Society for consideration by Council. Members of the Society are encouraged to consider how the Society can be proactive in protection and promotion of earth heritage and engagement with the public at large. This will include collaboration with geology trusts or other earth-science organisations in our footprint is anticipated where appropriate.

Members are encouraged to discuss any such opportunities in the first instance with any member of Council. Applications for support from this fund should be submitted to the YGS Treasurer: treasurer@yorksgeolsoc.org.uk.



YGS PUBLICATIONS NOW AVAILABLE AS WIKI PAGES

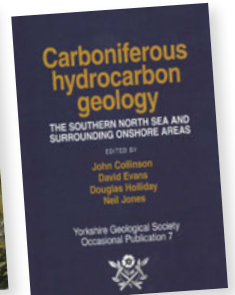
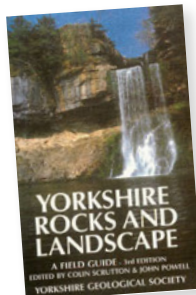
The popular YGS field guides to Yorkshire and Northumbria have now been made available to everyone as wiki-style pages on the BGS Earthwise site, which aims to promote free exchange of information within the wider geological community.

The guides can be accessed via our new Online Guides YGS webpage at <https://www.yorksgeolsoc.org.uk/virtualfieldtrips/onlinefieldguides> or directly on Earthwise at

http://earthwise.bgs.ac.uk/index.php/Category:Yorkshire_Geological_Society.

Field guides by the Edinburgh Geological Society and the Geological Society of Glasgow are also available on Earthwise.

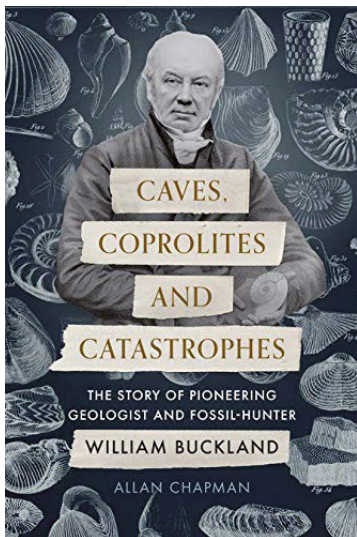
The wiki field guides offer an option to create a pdf from selected content, such as an individual excursion, for printing or offline viewing. We welcome your comments and encourage you to contribute your own articles on related topics.





BOOK REVIEW:
CAVES, COPROLITES AND CATASTROPHES: THE STORY OF
PIONEERING GEOLOGIST AND FOSSIL-HUNTER WILLIAM
BUCKLAND BY ALLAN CHAPMAN, 2020

Michael Roberts



Published SPCK Press 2020

Hardback ISBN: 9780281079506 £19.99

eBook ISBN: 9780281079520 £15.99

William Buckland was a great eccentric. He was primarily a great geologist but beyond anecdotes few know much about him. Buckland has followed me much of my life as when a student his portrait (now stolen) in the old Oxford geology building stared down at me as I entered. I then researched his theology in relation to Genesis and design, and, best of all, his discovery of Ice Ages in North Wales.

William Buckland (1784-1856) was first Reader in geology at Oxford and later Dean of Westminster. He was a leading early geologist, with a penchant for coprolites, and discovered the first Jurassic mammal near Oxford, which Chapman does not mention. He was part of the group of geologists, clerical and lay, who worked out the geological succession from the Cambrian to the Ice Ages. He thought

and wrote about Christianity in relation to geology, as in *Vindiciae Geologicae* (1819), *Reliquiae Diluviae*, his Bridgewater Treatise and his 1838 sermon on Death, which is overlooked. Those sitting there might have included “Soapy Sam” Wilberforce and St John Newman. After all not all geologists lecture at future saints!

The title *Caves, Coprolites and Catastrophes* brings out both the main themes of Buckland's geology and the eccentric nature of his life and work, and Chapman writes engagingly seeking to put Buckland into context with the geology of his day. He deals with his time at Oxford as professor of geology and how Christchurch became a menagerie. Preferment came with the Deanery of Westminster, which he held until his death after several years of mental illness. At Westminster Buckland was involved with main issue of the day – cholera and the state of sewers – in which he immersed himself! He even preached about it in graphic detail at Westminster Abbey in the presence of Queen Victoria. I imagine some wished he had stayed with coprolites. But illness struck in 1850 and sewers were left to others. As an account of Buckland's *life* this is a competent portrait but is less so on his geology and religious beliefs.

The author brings out Buckland's importance as both in palaeontology and stratigraphy, but falls down on details. When Buckland was born in 1784 it was possible for an educated person still to believe in 4004BC, but by his death in 1856 one could not. His geological working life from 1810 to 1847 was a great time of change, as in England, with a preponderance of clerical geologists, discussions over Genesis were never far away and Buckland was in the thick of it



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as he tried to modify older theological understandings. Chapman does not grasp Buckland's theology. He seems unfamiliar with contemporary geology, either in general or what Buckland was involved in. This is often the downfall of semi-popular books on the history of geology, where out-of-date references are used and works by Rudwick, Torrens, Oldroyd etc. are over-looked.

The longest section on Buckland's geology is about caves and hyenas, particularly Kirkdale Cave near Kirby Moorside, North Yorks. which he correctly identified as the "Antediluvian" den of a pack of marauding and hunting fossil hyaenas (who supplied him with large amounts of strange balls of bone fragments which he correctly identified as fossil hyaena dung, which he called coprolites). For several years Kirkdale Cave and Buckland's at the time very controversial interpretation, for the first time, put Yorkshire on the scientific stage across Europe and even North America, and won Buckland (one of the rarest and the first ever) Royal Society Copley Medal.

Scattered through the book are cameos of contemporary geologists, which are rarely tied into Buckland's work. Thus, the cameo on Adam Sedgwick is weak on his Cambrian work, which he began in 1831 but is portrayed as a walking tour with Darwin to teach him "how to interpret landscapes and fossils". In eighteen days together they only did one long walk! The cameos often omit the main contribution of the geologists discussed. What is not given is an idea of how geology had developed and especially in England from 1790, with Buckland active for forty years from 1805. Those years saw the delineation of the Geological column from Cambrian to Pleistocene and enabled geologists to put strata in historical order. That is more important than the excretory habits of hyenas.



Lecturing to Oxford students and fellow Dons on his Kirkdale fossil hyaena den discoveries, 1823.

The chapter on his magnum opus his Bridgewater Treatise disappoints. The treatise is a superb summary of geology in 1836, with a full account of fossils then known, and reflections on his theology of design in relation to geology, reflecting his following of William Paley. The second volume is full of excellent illustrations. However, Chapman does not situate Buckland's book in the geology of the day, when the lower Palaeozoic was being worked out in Wales, Devon and Cornwall by Sedgwick, Murchison and others. Thus Buckland often referred to these as "Transition", but also cites Murchison on his Silurian. That needed explanation. His comments on Lyell are rather odd as he totally polarises Lyell and Buckland on catastrophism, presenting



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what Stephen Gould would call a cardboard cut-out of Uniformitarianism and Catastrophism. After all both completely accepted Deep time. His interchange with Rev John Fleming, who almost anticipated uniformitarianism in the 1820s, is overlooked.

Much of Buckland's work gives excellent descriptions of fossils. His second fossil, a Pleistocene sloth *Megatherium*, demonstrates Buckland's approach. Rather than seeing odd anatomy as "imperfection" as did Buffon, he looked harder to find the function, and thus with *Megatherium* showed it was designed for digging roots and its vast size made it a fortress against attackers. Elsewhere in writing about the British Association meeting of 1832, when Buckland was president and gave an entertaining lecture on *Megatherium*, Chapman refers to this mammal as a dinosaur!

Chapman devotes one chapter to the Scriptural geologists, (19th century equivalents of young earth Creationists) who were the bane of Buckland and Sedgwick's lives. At best they had poor arguments and at times were simply offensive. Chapman rightly says that many were educated, but then seems to argue that they were intellectually on a par with mainstream geologists. Having read most of the Scriptural Geologists, that is not the case. When judged by the geology of their day, they were incompetent, as Buckland, Sedgwick and Hugh Miller claimed. Theirs were not the errors of Darwin at Glen Roy or some of Buckland's views on the geological efficacy of the Flood, but crass errors, which from a philosophical point of view must be called *bullshit*.

Dean Cockburn of York is given most coverage, but his intransigence and geological folly is down-played. Cockburn, or Very Revd Dr Sir William Cockburn as he is referred to on several occasions, was the only leading churchman among the Scriptural geologists. He was rabidly against geology but his diatribe against Buckland is unmentioned, but the one against Sedgwick is. He concluded his diatribe *A letter to Professor Buckland* 1838;

"The writer of these pages hopes that he has now established his second proposition, namely, that all the facts made known to us by geological discoveries may be fairly accounted for by a minute attention to the Mosaic history."



Caricature by Thomas Sopwith of Buckland kitted out to search evidence of glaciation in North Wales in 1842.



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One can imagine Buckland's despair on reading that, akin to a geologist today reading some Creationist demolition of geology! As an aside I must mention the 1844 British Association meeting at York, when a Yorkshire geologist was at the receiving end of the Dean's ire. Yorkshire geologists are not as placid as Devonian ones, as good Adam replied with unclerical invective, and so Cockburn ensured that the whole of the Geology Section of the Association, including Sedgwick, Buckland and even the Archbishop of York – a prominent member of the Geology Section, were not invited to the Civic Banquet in honour of the Association in the Mansion House. So Adam and other geologists retired to Bishopsthorpe, the Archbishop's Palace, for their own excellent dinner, making full use of the Archbishop's famous wine cellar.

Chapman does emphasise that the Scriptural Geologists were extinct by the 1850's but that was largely due the vigorous response of clergy geologists. The final major geological contribution of Buckland was introducing the concept of a major Ice Age to Britain, after Agassiz convinced him in Switzerland in 1838. Chapman makes several mistakes here. There are no extant glaciers in the Jura, though there is the enormous erratic from the last glaciation, the Pierre a Bot. Further, the parallel roads of Glen Roy are old lake levels, not a glaciated valley. Further again, Chapman wrongly ascribes Sopwith's cartoon of Buckland from their Welsh trip in 1841 to his visit to Scotland in 1840 with Lyell and Agassiz, (illustration 13) and the wording on one rock says Waterloo Bridge, which is in Betws y Coed. He claims that the glacial theory was rapidly accepted, but despite Darwin's further work in 1842 and continuing work in Scotland it suffered from epistemic injustice for two decades.

Michael Roberts



FURTHER REPRINTS OF CLASSIC YORKSHIRE GEOLOGY PUBLICATIONS NOW AVAILABLE

Over the past few years many classic geological publications previously only available as usually very expensive “antiquarian” books have now become available as inexpensive print-on-demand publications – often on in several different editions from specialist publishers around the world, particularly the USA, India and the UK. A wide range of 19th century British geological publications with special north of England interest are now distributed by the Book Depository: <http://www.bookdepository.com>

Titles of interest include:

- **William Buckland 1824. *Reliquiae Diluvianae: Or Observations on the Organic Remains Contained in Caves, Fissures, and Diluvial Gravel, and on Other Geological Phenomena, Attesting the Action of an Universal Deluge***
Centred on Buckland's sensational account his interpretation of Kirkdale Cave, North Yorkshire), as an “Antediluvian” fossil hyaena den with many international and national comparisons. (£14.95) [See Michael Roberts book review above]
- E.O. Gordon, [Buckland's youngest daughter] 94. ***The Life and Correspondence of William Buckland*** (£24.95)
- E. Maule Cole, 1887. ***Geological Rambles in Yorkshire***. (from £12)
- Thomas Sheppard. ***Lost towns of the Yorkshire Coast*** (1912)
- Thomas Sheppard. ***Handbook to Hull and the East Riding of Yorkshire*** (1923)
Museums Association and British Association conference volumes by leading authors of the day. Hull
- Clement Reid. ***The geology of Holderness Geological Survey Memoir*** (1882)
- Clement Reid. ***Submerged Forests 1913***.
The first extended account the flooded areas of the of the North Sea: what is today referred to a “Doggerland” 1913

Patrick Boylan, Circular Editor





A NEW FOSSIL SHOP FOR THE YORKSHIRE COAST



There is a new addition to the geology scene in Scarborough, The Fossil Shop has recently opened in Scarborough, just a few hundred metres from South Bay. It has been opened by YGS member and previous Council member and Treasurer, Will Watts, as part of his enlarged Hidden Horizons business.

With a background in museums and education Will is keen to make the shop a real hub for geologists both young and old, to share information and experiences and pass on good practice. With this in mind there are a range of events happening based at the shop including fossil roadshows every month offering free identification services.

Based behind the shop are the workshops of Will's other business, GeoEd Ltd, makers of replica fossils, originally for Open University teaching kits for over 25 years, and some of the GeoEd high quality replicas are also available in the shop, giving you the chance to own iconic fossils including Archaeopteryx, Allosaurus and large Holzmaden Ichthyosaurs. The shop also has a range of original fossils and minerals from around the world, with a strong selection of local material, it also carries a range of handy publications and equipment.

Talking about the new shop Will says 'I'm really excited to get the shop up and running, it's something I wanted to do for a while, but the COVID situation has hastened the decision for me. A lot of our schools work has dried up so we needed to look for alternative income, and the shop will help with that. I am also looking forward to making the venue a real must visit place for any one interested in the fantastic geology and palaeontology of the Yorkshire Coast, I look forward to seeing some YGS members soon!

Hidden Horizons is offering a 10% discount on all purchases made from the shop (in person, not mail order) by YGS members. Until the new YGS Membership Card is issued in January you can instead show the cashier your copy of the YGS Circular.

The Fossil Shop can be found at 65a Eastborough, Scarborough, YO11 1NH, at www.hiddenhorizons.co.uk, 01723 817017 or on Facebook and Twitter just search for The Fossil Shop, Scarborough.



CORRESPONDING SOCIETIES

Please contact the society representatives and/or websites shown for the latest information, and if you would like to attend a particular meeting as a guest

Important notice to Societies and Groups: Due to the coronavirus emergency we have not been listing Society and Group programmes. We plan to resume this with Circular 632 – to be published at the beginning of January 2021. Will the Societies please (a) check their contact details as in the present Circular and (b) resume sending brief summaries of Winter programmes to Patrick Boylan circular@yorks.geol.soc.org.uk by 13th December 2020.

CRAVEN AND PENDLE GEOLOGICAL SOCIETY

<http://cpgs.org.uk>

Venue for indoor meetings: St. Joseph's Community Centre, Bolland Street, Barnoldswick BB18 5EZ at 7.30pm.

CUMBERLAND GEOLOGICAL SOCIETY

<http://www.cumberland-geol-soc.org.uk> (Contact Form on the website)

EAST MIDLANDS GEOLOGICAL SOCIETY

secretary@emgs.org.uk <http://www.emgs.org.uk>

Usual meeting place: School of Geography, Nottingham University.

EDINBURGH GEOLOGICAL SOCIETY

E-mail: secretary@edinburghgeolsoc.org.uk <http://www.edinburghgeolsoc.org/>

Lectures are held in the Grant Institute of the University of Edinburgh, West Mains Road, Edinburgh, at 7:30pm, except where stated otherwise.

GEOLOGISTS' ASSOCIATION

<http://geologistsassociation.org.uk>

HUDDERSFIELD GEOLOGY GROUP

<http://www.huddersfieldgeology.org.uk/>

Indoor Meetings at Greenhead College, Huddersfield, at 7.15pm unless otherwise stated.

HULL GEOLOGICAL SOCIETY

<http://www.hullgeolsoc.co.uk/org>

Usual meeting place for indoor lectures: Department of Geography, University of Hull, at 7.30 pm. N.B. for security reasons the door is locked at 7.40pm.

LEEDS GEOLOGICAL ASSOCIATION

lga.sec@btinternet.com <http://www.leedsga.org.uk/>

Usual meeting place for indoor lectures: Rupert Beckett Lecture Theatre (Michael Sadler Building) Leeds University at 7.15pm



CORRESPONDING SOCIETIES

Please contact the society representatives and/or websites shown for the latest information, and if you would like to attend a particular meeting as a guest

LEICESTER LITERARY & PHILOSOPHICAL SOCIETY – SECTION C GEOLOGY

<http://www.charnia.org.uk/>

Usual meeting place for indoor lectures (unless otherwise stated): Lecture Theatre 3, Ken Edwards Building, University of Leicester, Thursdays at 7.30pm, refreshments from 7.00pm.

MANCHESTER GEOLOGICAL ASSOCIATION

secretary@mangrolassoc.org.uk <http://www.mangeolassoc.org.uk>

Usual meeting place for indoor lectures: Williamson Building, Department of Geology, University of Manchester

MID-WEEK GEOLOGY GROUP IN YORKSHIRE

<http://www.mwgyyorkshire.org.uk> Email: mwgyyorkshire@hotmail.com

Informal mainly amateur and retired group that organises monthly field meetings or museum visits on Tuesdays, Wednesdays or Thursdays.

NORTH EASTERN GEOLOGICAL SOCIETY

<http://www.negs.org.uk>

Lectures are at 7.30pm in the Arthur Holmes Lecture Room, Science Laboratories Site, University of Durham.

NORTH STAFFORDSHIRE GROUP OF THE GEOLOGISTS ASSOCIATION

<http://www.esci.keele.ac.uk/nsग्ga/>

Usual meeting place for indoor meetings: William Smith Building, University of Keele at 7.30pm.

ROTUNDA GEOLOGY GROUP (SCARBOROUGH)

<http://www.rotundageologygroup.org/>

The Education Room, Woodend, The Crescent, Scarborough YO11 2PW.

WESTMORLAND GEOLOGICAL SOCIETY

mail@westmorlandgeolsoc.org.uk <http://westmorlandgeolsoc.co.uk/>

Meetings are on Wednesdays and start at 8 pm (unless otherwise stated) and are held in the Abbot Hall Social Centre, Kendal.

YORKSHIRE PHILOSOPHICAL SOCIETY GEOLOGY GROUP

<https://www.ypsyork.org/groups/geology-group/>

YORKSHIRE REGIONALGROUP OF THE GEOLOGICAL SOCIETY OF LONDON

<https://www.geolsoc.org.uk/yrg> Secretary: Mark Lee Mark.Lee3@atkinsglobal.com

Usual meeting place: The Adelphi Hotel, Leeds.



NEXT YGS CIRCULAR 632 – JANUARY TO FEBRUARY 2021:
DEADLINE: 13th DECEMBER 2020

Please send all copy including your texts, illustrations and ideas for short articles, plus updates on Corresponding Society programmes, to the Circular Editor, Patrick Boylan:
email: circular@yorksgeolsoc.org.uk or by post to: 2a Compass Road, Leicester LE5 2HF.



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YGS WEBSITE LINKS

YGS News: <https://www.yorksgeolsoc.org.uk/news>

YGS Events: <https://www.yorksgeolsoc.org.uk/events>

Community Events: <https://www.yorksgeolsoc.org.uk/community-events>

Virtual Field Trips: <https://www.yorksgeolsoc.org.uk/virtualfieldtrips>

Geology Online: <https://www.yorksgeolsoc.org.uk/geology-online>

YGS Blogs: <https://www.yorksgeolsoc.org.uk/ygs-blog>

YGS Grants: <https://www.yorksgeolsoc.org.uk/grants>

NOVEMBER TO DECEMBER 2020

ANNUAL GENERAL MEETING 2020

(Online by Zoom) Saturday 5th December 2020, 2:00pm

YGS ONLINE CHRISTMAS LECTURES

1st – 20th December 2020

Please Note: Articles and abstracts published in the YGS Circular reflect the views and opinions of the individuals writing those parts of the Circular and do not necessarily represent the views of Council or of the Society as a whole.



*Incoming and outgoing Presidents
Dr. Nick Riley and Paul Hildreth*

*Front cover: Mike Oates on his way home after
a day of sampling with Paul Hildreth,*

Middlegate Quarry, South Ferriby (Photo: Paul Hildreth)