

Curriculum Vitae

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SUMMARY

I am an author, photographer and earth scientist, with a growing practice in nature writing that draws these three strands of work together. However, I have not forgotten my roots. My interest in the old metal-mines of Wales began in my undergraduate years in the 1980s and has never left me. In the time since then, I studied the ore mineralogy of the Central Wales mines to gain an MPhil at Aberystwyth, then went on to deliver the Minescan project, jointly commissioned by the Countryside Council for Wales and the National Museum of Wales. The work involved a four year study of over a thousand old mines the length and breadth of Wales in order to achieve an objective ranking of their importance to science, in terms of mineralogy and metallogenesis.

Following the completion of Minescan, I undertook various other contracts for the Museum, mostly of a curatorial nature but including the compilation of the second edition of **A Mineralogy of Wales**. I also co-authored, with four others, **Mineralization of England and Wales** (Joint Nature Conservation Committee, 2010), a volume providing descriptions of all mineralogical SSSIs in those countries.

Research continues to this day with a number of first-authored and co-authored peer-reviewed papers having been published on aspects of Welsh mines and their mineralogy, including a number of discoveries of minerals new to the UK and, more importantly, a number of major advances in our understanding of Welsh metallogenesis.

It has to be put on record, however, that the funding that was available for such research became far scarcer following the financial crash of the late 2000s. To work around that issue, more recent studies have involved collaborations with universities and their final-year student dissertation projects, meaning that analytical services remain available (in more normal times). Away from the field of research, I have in the meantime written a number of books and undertaken short geological contracts for the likes of Natural Resources Wales, Dulas Ltd, Aberystwyth University, National Trust Wales and Snowdonia National Park.

Details

I have arranged my working life into four categories: 1) scientific interpretation; 2) geological conservation and research; 3) author – non academic books; 4) things from the dim and distant past.

1) SCIENTIFIC INTERPRETATION: 2002-PRESENT DAY

1.1: Dunedin Academic Press: 2012-14

In early 2012 I was commissioned to write a book with the working title *Introducing Mineralogy*, aimed at first-year undergraduates with no prior knowledge of the subject. Thus, it had to get through a lot of technical material in a very reader-friendly way, something I specialise in. I ended up not only writing the book but also illustrating it. The book was completed in 2014, being published late in that year: so far, reviews have been very positive.

1.2: Snowdonia National Park: 2013-14

One of the most challenging and interesting projects I have delivered was the Darwin Wall at the new National Park Visitor Centre at Ogwen. The Wall was to commemorate Darwin's 1831 geological traverse of Snowdonia, by inlaying a 25m length of its top with cut and polished tiles of the rocks he would have encountered on his way from Bangor to Barmouth via Cwm Idwal, Ffestiniog and Trawsfynydd.

My job was to interpret the likely route and then go out and collect suitably large samples for cutting – in essence this meant collecting 2-3 tonnes of large boulders from numerous localities along the way. I then supervised the cutting, polishing and ordering of the samples and the wall was completed on-time, the official opening being in the summer of 2013. It was a great teamwork experience, involving myself, a stonemason and a monumental masonry company, plus slate quarrying companies and First Hydro, and I think we all learned a lot off each other in the process. The project then continued into 2014 with the production of an interpretation leaflet: further, more detailed interpretation is in the pipeline.

1.3: Aberystwyth University: 2013-present day

Since Autumn 2013 I have been teaching short courses on the geological evolution of the Welsh landscape for the Department of Lifelong Learning. The courses involve a lecture/Q&A followed by three days of field trips taking in aspects of Welsh geology from the Precambrian to the Quaternary. They are aimed at people of any age with an interest in geology.

1.4: Skeptical Science website: 2011-present day

As a geologist and someone with a strong interest in weather and climate, I saw the invitation from John Cook to join the team of volunteers that runs his award-winning Skeptical Science website as a great opportunity. We are widely regarded as one of the most informative climate change websites in the world: we routinely debunk the wide range of myths (a mixture of pseudoscience and conspiracy-theories) that regularly appear in some sections of the media. The debunkings and related topical blog-posts are all fully referenced back to the peer-reviewed literature, giving readers the opportunity to double-check our writings for themselves. Climate change is deadly serious and I regard it as a privilege to be at the forefront of the battle against the constant stream of anti-science misinformation. Through this experience I have also had the occasional piece published in the Guardian.

1.5: Centre for Alternative Technology: 2011-present day

In 2011 I was commissioned to develop a presentation of the geological history of Mid-Wales for CAT's Living Landscape Festival. The show took the visitors from the formation of the Earth right through to the present day and how the Welsh landscape has evolved and why. Since that time, with CAT's resident Artist and local artist Jane Lloyd Francis, we have been developing an interesting guided trip around the old slate quarry itself, accessed via a short tunnel: the trip combines geology and the arts in a unique fashion that is best experienced rather than described!

1.6: Cardiff University: 2010-12

I teamed up with Prof. Julian Pearce, then of Cardiff University's Department of Earth Sciences, to run a third-year undergraduate residential field-trip in North Wales, involving teaching of the study of ore-deposits (of which there are a great variety in the district). We developed exercises in Coed y Brenin, where there exists a wide range of mineral deposits, and included a further afield day excursion to the famous old copper-mines of Parys Mountain on Anglesey.

1.7: Spirit of the Miners: 2006-07

I was involved in a variety of interpretation projects commissioned by Spirit of the Miners – the Ceredigion Uplands Regeneration Initiative. The initiative was managed by Ceredigion County

Council and funded by the Welsh Assembly Government, the European Objective 1 programme and the Countryside Council for Wales. My input comprised a) writing and illustrating a bilingual colour booklet on the mines and minerals of the area and b) the design, writing and layout of 6 bilingual interpretation panels, for projects involving Central Wales RIGS, Trefeurig Community Council, CADW, CCW and the Welsh Mines Preservation Trust. The panels are sited at the following mines: Cwmystwyth, Cwmsymlog, Cwmrheidol and at the remains of the Pont Ceunant Generating Station near Frongoch.

1.8: National Museum of Wales: 2004-05

A Mineralogy of Wales – a listing of all the different minerals to be found in the country with localities, descriptions and references, was first published as a book in 1994. By 2003, so many new discoveries had been made, many through the MINESCAN project (see 2.3), that it was felt that an update was due. I co-wrote the second edition, with prime responsibility for dealing with the ore minerals. The fully revised version was published not as a book but as a website within the National Museum's main website. The results of this major project may be seen at:

<https://museum.wales/mineralogy-of-wales/database>

1.9: Forest Enterprise: 2002-04 and guided trips to present day

The possibility of a geological trail incorporating several GCR sites (see 2.3) in Coed Y Brenin (NE of Dolgellau) was conceived in the late 1990s. In 2002-2003 I designed and wrote the trail guide and interpretation panels: the trail officially opened in May 2004. This was, I believe, the first geological trail in any Forest Enterprise woodland.

The trail looks at various mineral deposits related to volcanism in early Ordovician times and includes the well-known Coed Y Brenin porphyry-copper deposit, discovered by Riofinex Ltd in the 1960s. Part of the work involved excavating an exposure of the "ore-zone" of this deposit. The trail has since been modified a little with new footpaths created to make the route as circular as possible: its current name is the Volcano Trail. I have taken many groups (such as members of the Open University Geological Society) around the trail and to other nearby localities in the years since the trail opened.

2) GEOLOGICAL CONSERVATION/RESEARCH: 1996-PRESENT DAY

2.1: Welsh RIGS groups: 2005-2009

From 2005-2009 I worked with groups in Gwynedd, Clwyd, Pembrokeshire and Central Wales inputting site data into RIGS documentation. RIGS stands for Regionally Important Geological Sites, which are localities of educational or research value. Part of a team of specialist geologists, the sites I covered in these areas are flagged-up for their mineralogical and/or metallogenic features. Documentation is held on a central database and is also passed on to the relevant Planning Authorities.

2.2: RML Ltd/Symonds Group/CCW/Dulas Ltd: 1997-present day

In 1997, I was commissioned by RML (Richards, Moorehead and Laing) to undertake a field-survey, and provide a database and report, on a number of disused metal mines in the SW Shropshire Orefield, as part of a feasibility study into their partial reclamation. The work, using the methodology developed for Minescan (see 2.3), involved assessment and delineation of any areas of mineralogical importance at the sites specified. The association with RML went back to the late 1980s/early 1990s, when a number of minesite rehabilitation projects were done in Central Wales and I advised on mineralogical aspects of several such sites.

In 1999, I was contracted by Symonds to undertake the mineralogical assessment of features exposed in a working quarry in Charnwood Forest, Leicestershire. The work involved the rope access inspection of a 60m rock-face, collection of samples, assessment and compilation of a

report. The aim of the work was to determine whether features examined in the face were of sufficient scientific interest to warrant being made accessible as part of the after-use plan upon closure of the quarry.

In 2010 I surveyed working quarries in South Wales for then Countryside Council for Wales (CCW), in order to establish a practical plan to conserve features of geological importance upon their eventual closure. I have also advised this body, now part of Natural Resources Wales, on numerous minor issues regarding sites of scientific importance.

In 2011 I worked as a consultant to Dulas Ltd on the site of a proposed windfarm at Nant-y-moch, near Aberystwyth. The work involved mapping out, documenting and photographing areas of regional and national geological importance, so that any future construction work, including roadbuilding and quarrying to obtain aggregate, would avoid damage or disturbance to them.

2.3: National Museum of Wales: 1996-present day

My association with the Department of Geology, National Museum of Wales, Cardiff, goes back many years, but this was the first time I became professionally involved. Early 1996 saw the initiation of the Minescan project, for which I was taken on as a consultant. The work began with a three-month desktop study in order to rationalise government-held listings of >1200 disused Welsh metal mines, many of which were in fact disused trials for e.g. slate. Simultaneously, a set of weighted criteria were developed, against which the mineralogical and/or metallogenic interest of the mine sites could be assessed in the field, resulting in each site being awarded a numerical score. The ranking system was designed to determine whether the sites were of sufficient quality to be incorporated into the Mineralogy Block of the Geological Conservation Review (GCR). Set up by the Joint Nature Conservation Committee (JNCC), the GCR programme was implemented to afford sites of national geological importance statutory protection as Sites of Special Scientific Interest.

The second, much bigger part of the project lasted for four years. It involved the field assessments and rankings of over 1000 Welsh mine and mineral sites on a county-by-county basis. The work, financially supported by CCW, involved site visits, sample collection, follow-up laboratory work and database compilation with, finally, recommendations on the status of each site in terms of GCR significance. 1996 saw Dyfed and Powys mines examined, 1997 was spent in Gwynedd, 1998 in Clwyd and 1999 in Glamorgan and Gwent. The work has resulted in an unprecedented, detailed regional view of metallogenesis in Wales and follow-up work has continued to generate scientific publications.

In 1999 I was also commissioned by the JNCC to co-author the Welsh chapter of the GCR mineralogy/ metallogenesis volume, *Mineralization of England and Wales*, the first draft of which was completed in March 2000. The full book, now with other chapters on various parts of England, was finally published by the JNCC in the autumn of 2010.

In 2000-2001, I worked at the Museum, doing research into and curating a PhD collection from the Dolgellau Gold-belt. The work involved conservation of numerous samples (both rough rock and polished sections) and their examination and description: as in all such cases, the process involved much petrology and scanning electron microscope work. During this period I also wrote and co-produced a bilingual colour booklet, "Mineral Treasures of Wales". This gave readers an introduction to Wales' diversity of mineral deposits.

In 2006 I was made an Honorary Research Fellow of the Museum. Research continues when I have the time and resources available.

2.4: List of peer-reviewed publications

MPhil Thesis:

Mason, J.S. 1994. A Regional Paragenesis for the Central Wales Orefield. Unpublished MPhil thesis, University of Wales.

First Author (oldest first):

Mason, J.S. and Hughes, S.J.S. 1990. Geology of the Darren District. In: Hughes, S.J.S. The Darren Mines. British Mining, Northern Mine Research Society, 40, 131-141.

Mason, J.S. 1992. Wulfenite in the British Isles. Part Two: Wales. U.K. Journal of Mines and Minerals, 11, 38-41.

Mason, J.S. and Rust, S.A. 1995. An unusual occurrence of arsenate minerals at Gwaith-yr-Afon mine, Dyfed, Wales. Journal of the Russell Society, 5, 109-113.

Mason, J.S., and Green, D.I. 1995. Supergene minerals including exceptional ramsbeckite from Penrhiw Mine, Ystumtuen, Dyfed. U.K. Journal of Mines & Minerals, 15, 21-27.

Mason, J.S., and Green, D.I. 1996: Supergene copper mineralisation in situ at Lodge Park Copper Trial, Dyfed. U.K. Journal of Mines & Minerals, 17, 19-23.

Mason, J.S. 1997. Regional polyphase and polymetallic vein mineralisation in the Caledonides of the Central Wales Orefield. Transactions of the Institution of Mining and Metallurgy (Section B: Applied Earth Science), 106, B135-B144.

Mason, J.S. and Rust, S.A. 1997. The Mineralogy of Ystrad Einion Mine, Dyfed, Wales. U.K. Journal of Mines and Minerals, 18, 33-36.

Mason, J.S., Fitches, W.R. and Bevins, R.E. 1998. Pre-tectonic auriferous vein-type mineralisation in North Wales. In: Abstracts volume, Geoscience '98 conference (London: Geological Society, 1998), 147.

Mason, J.S. 1998. Tucekite, a mineral new to Britain, and other rare ore minerals from the Central Wales Orefield. U.K. Journal of Mines and Minerals, 19, 30-36.

Mason, J.S., Fitches, W.R and Bevins, R.E. 1999. Evidence for a pre-tectonic origin for the auriferous vein-type mineralisation in the Dolgellau Gold-belt, North Wales. Transactions of the Institution of Mining and Metallurgy (Section B, Applied earth science), 108, B45-B52.

Mason, J.S. and Bevins, R.E. 2002. St Elvis Mine, Solva, Pembrokeshire: Another Elizabethan tetrahedrite occurrence? British Mining 71, 5-12, Northern Mines Research Society.

Mason, J.S., Bevins, R.E and Alderton, D.H.M. 2002. Ore Mineralogy of the mesothermal gold lodes of the Dolgellau Gold Belt, North Wales. Transactions of the Institution of Mining and Metallurgy (Section B, Applied earth science), 111, B203-B214.

Mason, J.S. 2004. The development and preservation of supergene lead mineralisation in Central Wales. U.K. Journal of Mines and Minerals, 24, 35-46.

Mason, J.S. 2014. Elyite from a Roman lead smelter near Llancynfelyn, Central Wales. Journal of the Russell Society, 17, 32-35.

Mason, J.S. 2016. Exhalative banded iron oxide mineralisation associated with Middle Ordovician pillow-basalts from Cadair Idris, North Wales. Journal of the Russell Society, 19, 42-50.

Mason, J.S. 2018. The post-Acadian, Lower Palaeozoic hosted base-metal vein mineralisation of Snowdonia and the Llŷn Peninsula, North Wales. *Journal of the Russell Society*, 21, 93-105.

Mason, J.S., Liezers, M.J. and Cotterell, T.F. 2018: Andradite-bearing skarn-like mineralisation and a suspected Palaeogene dyke from Coed y Brenin, North Wales. *Journal of the Russell Society*, 21, 106-123.

Mason, J.S. 2020. The Dolgellau Gold-Belt, the Snowdon Caldera and the district in between: a single late Ordovician metallogenic province? *Journal of the Russell Society*, 23, 53-74.

Co-Author:

Rust, S.A, and Mason, J.S., 1988. The minerals of Esgair-Hir mine, Dyfed, Wales. U.K. *Journal of Mines & Minerals*, 5, 35-43.

Patrick, R.A.D., Mason, J.S. and Gallagher, M.J. 1991: Auriferous structures in the Upper Dalradian near Aberfeldy, Scotland. In: Abstracts volume, Prospecting in areas of glaciated terrain, Edinburgh 1991, Institution of Mining and Metallurgy, London.

Swainbank, I.G, Colman, T.B, Fletcher, C.J. and Mason, J.S. 1992. Multiple sources for lead mineralisation in the Caledonian terrane of Wales. In: Abstracts volume, Mineral Deposit Modelling in relation to crustal reservoirs of the ore-forming elements. Institution of Mining and Metallurgy, London 1992.

Green, D.I., Rust, S.A. and Mason, J.S. 1996. Frongoch Mine, Dyfed. U.K. *Journal of Mines & Minerals*, 17, 29-38.

Bevins, R.E., Mason, J.S. and Wood, M. 1996. MINESCAN - WALES: Specimen acquisition and site conservation. *Acta Mineralogica-Petrographica*, Szeged, XXXVIII, Supplementum, 14.

Bevins, R.E. and Mason, J.S. 1999. MINESCAN - Selection Criteria for Mineral Site Conservation. In: Baretino, D., Vallejo, M. and Gallego, E. (Eds): *Towards the Better Management of the Geological Heritage in the New Millennium*, Madrid, Spain, pp. 21-23.

Cotterell, T.F., Mason, J.S. and Dean, A.C., 2010. Hübnerite in alpine-type fissure veinlets in the Cambrian manganese ore bed, Harlech, Wales. *Journal of the Russell Society*, 13, 47-52.

Bevins, R.E., Young, B., Mason, J.S., Manning, D.A.C. and Symes, R.F. 2010. *Mineralization in England and Wales (Geological Conservation Review Series)*. Joint Nature Conservation Committee. 598pp; ISBN-10: 1861075669

Cotterell, T.F., Green, D.I., Hubbard, N.H., Mason, J.S., Starkey, R.E. and Tindle, A.G. 2011. The mineralogy of Dolyhir Quarry, Old Radnor, Powys, Wales. U.K. *Journal of Mines and Minerals*, 32, 5-61.

3) AUTHOR, NON-ACADEMIC BOOKS: 2011-PRESENT DAY

3.1: Shore Fishing: A Guide to Cardigan Bay

I have been a keen sea-angler for the past 30 years and in 2009 I undertook the challenge to catch over 40 species of fish from the Welsh shore, something that when completed left me with a strong sense of achievement but also with a comprehensive collection of high-quality images. A workless period in 2010-11 left me determined that next time work was thin on the ground I would use my time enterprisingly and in late 2011 I began writing a book sharing my experience and knowledge of Cardigan Bay. The book was published by Coch-y-Bonddu Books, Machynlleth, in February 2013 and it has received excellent reviews and is now into its second edition. The aim was to produce something whose usefulness would never go away as new people come into the activity every year.

3.2: The Making of Ynyslas: Tales from an Area the Size of Wales - 25,000 Years Ago to the Present Day

This was the first in a planned series, first conceived in 2015, that is part life writing, part earth science, and draws on Welsh legend. Ynyslas is a shingle-based, dune-capped promontory, forming the outer boundary of Cardigan Bay's Dyfi Estuary. Weaving personal reflection with present climate science and its impacts and a journey through deep time, the book describes the long-term formation of the area around Ynyslas, from earliest pre-history to the present day.

The crucial role of the climate, and particularly the deglaciation following the last ice-age, forms the backbone to the narrative. This physical theme, however, intertwines with the high probability that the area was inhabited by humans who must have witnessed, over generations, the steady drowning of Cardigan Bay from about 11,700-6,000 years ago. This is possibly the era of Cantre'r Gwaelod, the legendary Lost Hundred of Cardigan Bay and its capital, Caer Wyddno, which if it did exist is now beneath the waves. The only remnant of the great drowning is the well-known Submerged Forest that uncovers at low tides along the beach between Ynyslas and Borth.

This project aimed to bridge public engagement in arts and science. As an earth scientist by training with a creative practice of writing, I'm in a position to bring these two arenas together. The book became available in August 2018 and prior to the pandemic, I was engaged in a series of promotional events involving me in person: since then it has been occasional zoom-talks, as has been the case for everyone. However, as the visitor-centres that are the prime outlets for the book start to reopen, I anticipate the brisk, pre-pandemic sales to resume once again.

The next volume, concerning that period of deep time between the formation of the Solar System and the oldest rocks known from Wales, was my personal lockdown-project, involving as it did digesting and explaining a tremendous volume of technical material. It's now at the fully laid-out, proof-reading stage.

4) HISTORICAL: 1988-1995

Voluntary Field Assistant (Mineral Reconnaissance Programme, British Geological Survey, 1988-89): Regional and specific area surveys for gold, platinoids and base metals, mainly in Scotland (Ochils, Glen Clova, Loch Ailsh) involving drainage, soil, deep overburden and rock sampling supplemented by geophysical surveys and diamond drilling. Additionally gained experience at BGS Keyworth in all aspects of sample preparation for analysis.

Project Geologist (Colby Resources Corporation of Vancouver, 1989-91): Regional and specific area surveys for gold in the Scottish Dalradian involving similar techniques to the BGS work plus liaison with estate owners and Crown Agents, geological mapping, trenching of auriferous veins and the sinking of an open stope on a particularly rich vein at the Calliachar Burn prospect. Promoted to managing field geologist in 1990; corporate (& therefore field) operations ceased in late 1991.

General geologist (1991-95): Based in Central Wales and undertaking a variety of contracts, including rock face demolition & stabilisation (Constitution Hill, Aberystwyth, for Posford Duvivier Ltd, Welshpool Quarry for Richards Moorehead & Laing Ltd); minesite surveys (for Richards, Moorehead & Laing Ltd); emergency dewatering of mineworkings and underground drainage maintenance (National Rivers Authority Welsh Region); exploration for baryte at Cothercott, SW Shropshire (Colin Stewart Minchem Ltd).