

## Conference Report: Siluria Revisited, 10<sup>th</sup> to 15<sup>th</sup> July 2011

Michael Rosenbaum<sup>1</sup> and David Ray<sup>2</sup>

ROSENBAUM, M.S. & RAY, D.C. (2011). Conference Report: Siluria Revisited, 10<sup>th</sup> to 15<sup>th</sup> July 2011. *Proceedings of the Shropshire Geological Society*, **16**, 60–62. The purpose of this conference for the International Subcommittee on Silurian Stratigraphy was to facilitate presentations of recent research concerning the Silurian System. The Silurian has recently been the focus of a considerable amount of research interest encompassing climate change, extinction and radiation events, isotope excursions, hydrocarbon source rock generation and much more, all of which need to be underpinned by detailed stratigraphical, sedimentological, geochemical and palaeontological studies and accurate radiometric dating. The field trips were intended to enable a new generation of workers on the Silurian System to visit the GSSPs for those series and stage boundaries that occur in Wales and the Welsh Borders and to visit other sites that have been the subject of recent published and unpublished study.

<sup>1</sup>Ludlow, Shropshire. E-mail: [msr@waitrose.com](mailto:msr@waitrose.com)

<sup>2</sup>Neflex Petroleum Consultants Ltd, Abingdon. E-mail: [daveray01@yahoo.com](mailto:daveray01@yahoo.com)

### BACKGROUND

*Siluria Revisited* was the title of the 2011 meeting of the International Subcommittee on Silurian Stratigraphy, based in Ludlow 10-15 July 2011. The Silurian System continues to be the focus of considerable research interest, ranging from applied hydrocarbon exploration work to studies of palaeoclimates, sea-level change, isotopic excursions and extinctions. All of these depend upon high resolution biostratigraphical studies (Loydell, 2011).

The associated field trips were intended to enable a new generation of workers on the Silurian System to visit the GSSPs for those series and stage boundaries that occur in Wales and the Welsh Borders and to visit other sites that have been the subject of recent published and unpublished study (Ray, 2011 and [available online](#)).

### CONTEXT

The main aim of the International Subcommittee on Silurian Stratigraphy is to set global standards for the fundamental scale for expressing the history of the Earth. This is done by precisely defining global units (systems, series, and stages) of the International Chronostratigraphic Chart that, in turn, are the basis for the units (periods, epochs, and age) of the International Geologic Time Scale.

These objectives are set out on the Commissions web site:

<http://www.stratigraphy.org/index.php?id=GSSPs>

The main tool by which this is achieved utilises the concept of a Global Boundary Stratotype Section and Point (GSSP), otherwise known as a “Golden Spike”: a point in the ground that defines the base of each stage. Within the Silurian there are 8 stages, 6 of which are defined in Wales and the Welsh Borders, as shown on the International Stratigraphic Chart (which can be downloaded at: <http://www.stratigraphy.org/upload/StratChart2010.jpg>). The primary web site listing the details is at:

<https://engineering.purdue.edu/Stratigraphy/gssp/index.php?parentid=77>

Each Silurian GSSP in the region was visited during this meeting, discussing the way each had been defined and outlining the issues concerning their suitability. Site details are contained within the field guide (Ray, 2011).

### PRESENTATIONS

The conference included two days of presentations which covered a wide range of topics describing recent research concerning the Silurian. The majority of the 65 delegates, from 20 different countries, were involved with at least one presentation. Although time for each was short, full scientific papers are to be published

later in 2011, in a special volume of the Bulletin of Geosciences (<http://www.geology.cz/bulletin>).

Few of the 44 presentations dealt explicitly with Shropshire, although one of the authors (MSR) delivered a talk on the final evening in St Laurence's, the parish church for Ludlow, entitled "Siluria: the lost ocean of the Marches", aimed at the residents of Ludlow and helping to explain why delegates from all across the world had come to the town to consider rocks of Silurian age.

Of the scientific presentations, the following had the greatest direct relevance to Shropshire and its surroundings:

- L. Robin M. Cocks and Trond H. Torsvik: Global Global Silurian palaeogeography: answers and questions. Although this paper concentrated on Asia, the same authors have undertaken considerable research concerning the position and movement of the Welsh Borders since the Silurian.
- Bradley D. Cramer, Daniel J. Condon, Ulf Söderlund, Carly Marshall, Mikael Calner, David C. Ray, Lennart Jeppsson, Alan T. Thomas, Graham J. Worton, Ian Boomer and P. Jonathan Pratchett: Extinctions, excursions, events and epiboles (or was that hyperbole?). An overview of the relationship between the chemical and biological histories of the Earth. Concluded that it is where an excursion begins, not where it peaks, that corresponds to the onset of environmental change and associated extinction events.
- Jeremy R. Davies, Richard A. Waters, Jan A. Zalasiewicz, Stewart G. Molyneux, Thijs R. A. Vandenbroucke, Jacques Verniers and Mark Williams: The Telychian stratotype – a critique. Describing the location of the GSSP on a huge submarine landslide, hitherto unrecognised, revealed by recent geological mapping by the BGS near Llandovery.
- Peep Männik and Richard J. Aldridge: Conodonts from the type section of the Llandovery/Wenlock boundary. Describing the type section at Hughley Brook close to Leasows Farm. Although the conodonts confirm the correlation with these fossils elsewhere, the sedimentation appears to have been discontinuous and the section is disturbed by faulting, leading to gaps in the succession.
- Keith Nicholls: The Ordovician/Silurian boundary in Wales: a geoconservation perspective. Highlighted problems for protection and conservation of stratigraphically important sites, focussing on Cwm Hirnant near Bala, at the end of the Ordovician when there was a eustatic fall in sea level associated with the Hirnantian Glacial Episode (and widespread extinction).
- David C. Ray: Wenlock bentonites from the Midland Platform, England: geochemistry, sources and correlation. Volcanic ashes analysed for their Rare Earth Elements to facilitate correlation with flooding events linked to a regional sequence stratigraphy that has considerably refined and improved the means of correlation across the Wales and the Welsh Borders and into the West Midlands, and across the North Sea to the Baltic.
- Mike P.A. Howe: Silurian graptolites from the subsurface of southern Britain – their biostratigraphical and wider significance. A re-evaluation of the material from three deep boreholes into the Silurian across southern England.
- Steve Kershaw: Silurian stromatoporoid palaeoecology and its applications. These calcified sponges record environmental conditions and are thus important indicators. The current work is focussing on forms associated with the sedimentary rocks of Wenlock tied into the newly developing high resolution stratigraphy reported by David Ray (above).

## FUTURE DEVELOPMENTS

The relevance of Silurian studies to contemporary issues is brought into focus by the similarity of environments to those experienced at the present day, with unstable climatic conditions but without the influence of higher terrestrial life forms.

Known as *The Early to Middle Palaeozoic Revolution*, International Geoscience Programme (IGCP) Project 591 has the aim of bridging the gap between the Great Ordovician Biodiversification Event and the Devonian Terrestrial Revolution. IGCP 591 already has a web site, which also provides a location for conference publications and research notices:

<http://www.igcp591.org/index.php>

To quote from this Project's summary on their web site: "This Early Ordovician to Early Devonian interval contains several of the most significant palaeoclimate and palaeobiological events in Earth history including paleobiodiversity events and/or perturbations to the global carbon cycle associated with the Great Ordovician Biodiversification Event (GOBE), near the base of the Katian, Ordovician-Silurian boundary, Llandovery-Wenlock boundary, middle Homerian, middle Ludfordian, and Silurian-Devonian boundary, among others.

This interval of Earth history also contains the acme and amelioration of the Early Palaeozoic Ice Age, which provides an important historical analogue for researchers of modern climate change. Additionally, this interval contains the roots of the invasion of life onto land.

The Earth did not go quietly into the Middle Palaeozoic and the primary research objective of IGCP 591 is to investigate this dynamic and important interval in the history and evolution of life and our planet.

IGCP 591 is designed to allow the Early to Middle Palaeozoic global community an opportunity to build on the momentum gained by the highly successful IGCP projects 410 and 503 by providing a regular venue in which to continue their research and dialogue so effectively begun during those projects. This project commenced with the 2011 Field Meetings of the International Subcommissions on Ordovician and Silurian Stratigraphy in Madrid, Spain, and Ludlow, England, respectively.

#### ACKNOWLEDGEMENTS

The authors would like to acknowledge the material contained within the conference publications and field guide which has formed the basis for the summary that has been presented in this conference report: Ray (2011), and to David Loydell for organising the conference programme and compiling the abstracts volume (Loydell, 2011).

#### REFERENCES

- Loydell, D.K. (2011). *Siluria Revisited: Programme and Abstracts*. International Subcommission on Silurian Stratigraphy.
- Ray, D.C. (2011). *Siluria Revisited: a Field Guide*. International Subcommission on Silurian Stratigraphy, 170 pp. [available online at:  
[http://www.igcp591.org/downloads/siluria\\_revisited\\_excursion\\_2011.pdf](http://www.igcp591.org/downloads/siluria_revisited_excursion_2011.pdf)]

Copyright Shropshire Geological Society © 2011.

ISSN 1750-855x