

IGCP Project 469: Variscan Terrestrial Biotas and Palaeoenvironments

NEWSLETTER NO. 4



I apologise for the delay in preparing this Newsletter. A combination of Christmas, and then getting organised for the Cardiff and Nova Scotia meetings, meant that it was difficult to find time to get the text together. It has meant that this Newsletter will include reports of both the Freiberg and Cardiff meetings.

FREIBERG MEETING, OCTOBER 2004

This meeting of IGCP 469 was held in Saxony – hosted by the Department of Palaeontology, Geological Institute, University of Freiberg. It was a joint meeting, with one day devoted to IGCP 469, and one to celebrate the bicentenary of the famous German geologist Bernard von Cotta. It was organised by Jörg Schneider and Olaf Elicki of Freiberg, to whom we were all extremely grateful for providing such an enjoyable and instructive time.



Me, introducing the project

I unfortunately arrived late, after missing a connecting flight at Düsseldorf, and so missed much of the ‘ice-breaker’ on the Friday evening. However, there were still enough people present (and a few bottles of beer!) to allow me to meet some old friends from the project, and to make a few new ones.

Saturday was mainly given over to presentations from the IGCP 469 project.



Icebreaker!

E. Jarzembowski, ‘Animal/animal interactions in the Late Carboniferous’

Z. Šimůnek, ‘Palaeobotanical research in the Carboniferous and Permian horizons of the Boskovice Furrow’

B. G. Evans, ‘Geoparks, coalfields and South Wales: a sustainable combination’

D. McLean, ‘A review of late Westphalian palynological datasets from northwestern European basins’

M. Oliwkiewicz-Miklašínska, ‘Record of plant communities in peat and surrounding areas on the base of palynological analysis (examples from coal-bearing succession in Upper Silesia Coal Basin)’

J. Bek, ‘Carboniferous sphenophyllalean spores and their parent plants’

- M. Popa**, ‘Carboniferous megafloras from Romania’
- S. Opluštil**, ‘Lepidodendraceae of the Late Paleozoic continental basins of the Czech Republic’
- C. J. Cleal**, ‘The Westphalian macrofloral record from the cratonic Central Pennines Basin, UK’
- M. Doktor, R. Gradiński, D. Gmur & A. Kędzior**, ‘Sedimentary environments and peat-forming conditions during deposition of the Kraków Sandstones Series, Upper Silesia Coal Basin, Poland’
- M. Libertin**, ‘Autecology of *Calamites* preserved in tuff (Czech Republic, Bolsovian)’
- J. Pšenička**, ‘Carboniferous ferns from the tuff horizon, Kladno Formation (Bolsovian) Czech Republic’
- B. A. Thomas**, ‘A re-examination of some Upper Carboniferous herbaceous lycophytes from the Westphalian of the Zwickau Coalfield, Germany’
- Y. G. Tenchov**, ‘Early Westphalian sediments of Dobrudzha Coal Field (NE Bulgaria): stratigraphy, depositional conditions, interpretation’

In addition, a number of posters were displayed by members of IGCP 469.

- T. Dimitrova, C. J. Cleal & B. A. Thomas**, ‘Palynology of late Westphalian – early Stephanian coal-bearing deposits in the eastern South Wales Coalfield’
- J. Drábková**, ‘Palynological assemblages from Radčice locality near Plzeň (Cantabrian, Nýřany Member, Plzeň Basin, Bohemian Massif’
- M. Menning, A. Alekseev, B. I. Chuvashov, V. I. Davydov, H. C. Forke, P. H. Heckel, Y. G. Jin, P. J. Jones, H. Kozur, T. I. Nemyrovska, J. W. Schneider, K. Weddige & D. Weyer**, ‘Devonian-Carboniferous-Permian correlation chart 2003 (DCP 203)’

The text of some of these papers will be given in a special volume of the journal *Zeitschrift der Deutschen Gesellschaft für Geowissenschaften*

Sunday was devoted to a series of workshops celebrating the work of Bernard von Cotta,



Waiting for the excursion coach on a cold autumn's morning in Freiburg town square.

especially on red-bed sequences and their environmental interpretation. Finally, on Monday, we held an excursion to see some of the Carboniferous and Permian rocks of Saxony. Of particular interest was the visit to Zwickau, where we were shown the only remaining exposures of Upper Carboniferous rocks there, including a number of coals and fossil-bearing horizons. It was particularly satisfying to see that these river-side exposures were being conserved, to provide a long-term record of this important coalfield

Jörg and Olaf are to be congratulated on organising a fantastic meeting – it represented a wonderful show-case for the project. One of the great

advantages of having it as a joint meeting was that we opened the project up to a wider audience than would normally be possible (over 50 delegates attended the meeting). It resulted in a number of new people joining the project, further widening the range of specialists from across Europe who are taking part. A number of major advances in the project were reported, especially in the use of palynology and macrofloras for vegetational analysis.

Photographic memories of the meeting are still available on the internet (<http://www.geo.tu-freiberg.de/palaeo/workshop>).

CARDIFF MEETING, APRIL 2005

Mainly following Ben Evan's presentation at Sofia, where he described some of the work that he has been doing in South Wales, caused many project members to suggest that we hold the first 2005 meeting in Cardiff. So, bowing to popular demand, we duly organised a meeting at the National Museums & Galleries of Wales in Cardiff, on the 14th-16th April of this year.

Twenty-nine delegates attended the meeting, together with other members of staff from the Museum. The first day and a half was given over to presentations by various members of the project.

C. J. Cleal, 'Progress Report on IGCP 469'

S. Opluštil & K. Martinek, 'A comparative analysis of some Late Carboniferous basins of the Variscan Europe'

Y. G. Tenchov, 'Late Westphalian and Cantabrian sediments of Dobrudzha Coalfield (NE Bulgaria) – an interpretation of their stratigraphy and sedimentation conditions'

H. Falcon-Lang, 'Latest Middle Pennsylvanian tree-fern forests in lower delta-plain deposits, Sydney Mines Formation, Nova Scotia, Canada'

E. L. Zodrow, Tenchov, Y. G. & Cleal, C. J., 'Polymorphic λίου πτερίς *obliqua* (Bunbury) type area, Cape Breton Island, Canada'

J. Bek, 'Spore assemblages of the eastern part of the Upper Silesian Basin (Namurian A-Langsettian), Czech Republic'

C. J. Cleal, 'The Westphalian-Stephanian macrofloral record from the South Wales Coalfield, UK'

T. Dimitrova & D. Mclean, 'The palynology of the Oxfordshire Coalfield, UK'

A. Kędzior, M. Doktor & D. Gmur, 'Sedimentary history of the Upper Carboniferous coal-bearing succession - an example from the Upper Silesia Coal Basin, Poland'

E. Jarzembowski, 'The South Wales Upper Carboniferous entomofauna'

M. Popa, 'Pecopterids of the Resita Formation, South Carpathians, Romania'

M. Libertín, J. Drábková & J. Bek, '*Sternbergites* gen. nov., a new isosporous compression lycopsid from the Pennsylvanian of the Czech Republic'

B. A. Thomas, 'Westphalian D lycophytes: their distribution throughout the Euramerian coalfields'

J. Pšenička, 'Problems with the identification of pecopterid species'

- H. McGlashon**, 'Glacial cycles and atmospheric CO₂: evidence from Permo-Carboniferous plant fossils'
- D. Gmur, M. Doktor & A. Kędzior**, 'Peat-forming conditions of the youngest coal seams (Westphalian C-D) from the coal-bearing succession of the Upper Silesia Coal Basin based on coal petrography'
- D. Mclean**, 'Changes in the British Late Carboniferous vegetation as indicated by palynological data'
- J. Bek**, 'Palynological evidence of palaeoecological changes in coal seams in four profiles in the Kladno-Rakovník Basin, Czech Republic'
- T. Kh. Dimitrova, Y. G. Tenchov & C. J. Cleal**, 'Ecological aspects of macro and microflora from the Dobrudzha Basin, Bulgaria'
- Z. Šimůnek**, 'An attempt on palaeobotanical database on the example of Westphalian D-Cantabrian floras of the Plzen Basin (Czech Republic)'

Some of the papers given at the meeting are to be published in a special issue of the journal *Geological Magazine*.

Friday afternoon was given over to a presentation by Alister Rees on his work on palaeobotanical databases, and how this may relate to IGCP 469, and by Mihai Popa on the forthcoming Bucharest meeting of IGCP 469. Finally, a Business Meeting was held, where we discussed progress and organisation within the project. Some of the results of this discussion are summarised later in this Newsletter. Although the expected demise of the IGCP programme will start to put severe financial strains on our project, especially after 2006, it was agreed that we would continue with biannual meetings for as long as possible. However, now is clearly the time that we must start to look into alternative sources of funding if the project is to have a long-term future, and that we are to achieve our stated goals.



The last day of the meeting was given over to an excursion. In the morning, we looked at the South Wales Coalfield, lead by Barry Thomas. Although the weather was essentially dry, there was a fierce wind that did not always help concentration on some of the more exposed stops. We first visited a well-known view-point at Caerphilly Mountain, where it is possible to look across part of the

eastern coalfield, and where the relationship between the Carboniferous lithologies and present-day topography is clearly visible. We then moved up the Rhondda Valley, where the typical 'Valleys' scenery could be seen, to Blaenrhondda Road-cutting. Here, a classic exposure of the Pennant Formation was examined, showing its typical development on the north crop of the coalfield. We then moved on to Cwm Gwrelych, a small river along which the entire Productive Coal Formation succession of the north crop

can be seen. Although we only had time to examine the lower part of the succession, it allowed some opportunity for delegates to collect samples, and to get a feel for the type of exposure that South Wales has to offer.

In the afternoon, we travelled east to the Writhlington Geological Reserve in Somerset. This part of the excursion, lead by Ed Jarzembowski, provided an opportunity to collect late Westphalian D macrofloras and faunas from the Radstock Coalfield. This coalfield has been a classic source of palaeobotanical material since the early 19th century, and recently (mainly due to the efforts of Ed Jarzembowski and his colleagues) has yielded one of the most diverse terrestrial faunas of this age, including insects and arachnids. Some three hours of collecting yielded a wealth of material, and most people came away with something of interest.

BUCHAREST MEETING, OCTOBER 2005

Plans are now well advanced for this meeting and there is now a web site giving further details (<http://mepopa.com/igcp469>). Anyone who is intending to come to Bucharest for this potentially exciting meeting should contact the organiser, Mihai Popa (mihai@mepopa.com) as soon as possible.

KRAKÓW MEETING, APRIL 2006

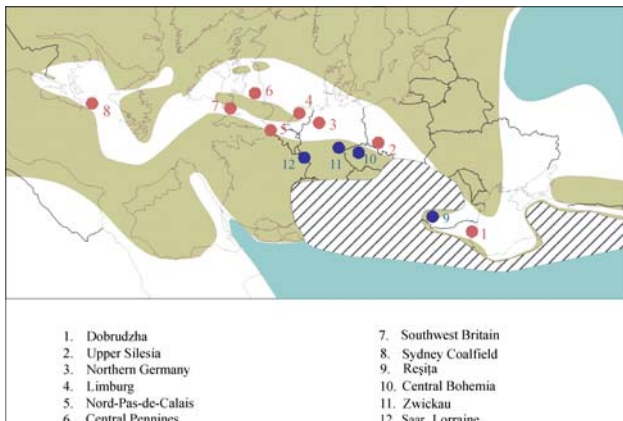
Colleagues at the Geological Institute, Kraków have offered to host the first IGCP 469 meeting for next year. This will provide us with the opportunity to examine the evidence from Upper Silesia, as well as reporting on general progress within the project. Further details will be given in later Newsletters, or from the meeting organisers Artur Kedzior (ndkedzio@cyf-kr.edu.pl) or Marek Doktor (nddoktor@cyf-kr.edu.pl).

PRAGUE MEETING, SEPTEMBER 2006

It has now been agreed that we will have an IGCP 469 session at the European Conference on Palaeobotany and Palynology next year in Prague.

PLAN OF CAMPAIGN

I hope that we have always understood what the ultimate aim of IGCP 469 was to be. It is clearly laid out in the original project proposal, which most of you will have seen, as well as being summarised in Newsletter No. 1. In essence, it is to try and determine the patterns of environmental and biotic change that took place across the western



palaeotropical coal forests of Europe and eastern North America, as the Variscan tectonic activity reached its maximum towards the end of the Westphalian Age and into early Stephanian times.

However, exactly how we achieve this goal has been less-clearly stated. This is partly because in some ways, we did not really know what the best approach would be. This has been one of the main topics dealt with during our biannual

meetings, and various approaches have been suggested and in some cases tested.

I feel that we are now, for the first time, able to clarify exactly what direction our work should be taking, and what sort of data we need to be generating.

The project has essentially been broken down into 12 study areas, as shown on the accompanying map. There may be other small areas within Europe, such as in the southern Carpathians, but the available data from these other places is mostly limited. They can be incorporated at a later date, if it is felt that they will provide significant new insights into the problem being investigated. More importantly, it does not include North American areas west of Cape Breton. This is a major failing of the project to date. Although we have tried to encourage interest from our American colleagues, the response, to be honest, has been disappointing. Maybe by clarifying the details of IGCP 469 we may be able to rectify this failing.

Within each study area, we are seeking to do the following for the upper Westphalian and lower Stephanian – mainly Bolsovian, Westphalian D ('Asturian') and Cantabrian Substages.

1. Compile up-to-date species lists and range charts for the macrofloras.
2. Compile up-to-date species lists and (where possible) range charts for the main faunal groups, in particular insects, spiders and vertebrates (the latter probably based mainly on trace fossil evidence).
3. Compile up-to-date palynological range charts and spectra (both mio- and megaspores), ideally separately for the coals and clastics.
4. Determine changes in coal petrography through the sequence.
5. Determine the broad pattern of change in sedimentary facies through time and space, especially those that reflect changes in edaphic and climatic conditions.
6. Determine subsidence curves.
7. Determine changes in environmentally-sensitive parameters such as carbon isotopes and stomatal densities.

The revised macrofloral and palynological range charts will assist in refining stratigraphical correlations between the study areas. They will also be used to identify any significant changes in biodiversity through the succession. The macrofloral and faunal species lists will be used to make floristic and faunistic comparisons between the area using techniques such as ordination or cluster analysis, to see if any changes in the levels of provincialism can be identified. The palynological spectra and coal petrography will be used to identify broad changes in the dominant, wetland vegetation of the coal forests. The sedimentological, basin-subsidence, carbon isotope and stomatal density data will give information on how the physical environment is changing.

Ultimately, the data will be compiled into standard charts to help comparison between the different areas. Initial drafts of such charts were given in the previous Newsletter, although these have already been subjected to some change. This aspect of the project is being coordinated by Stanislav Opluštil (oplustil@mail.natur.cuni.cz) from whom further details can be obtained.

PROJECT COORDINATORS

So far, the project has been organised around four Regional Coordinators: Barry Thomas for Western Europe, Stanislav Opluštil for Central Europe, Yanaki Tenchov for Eastern Europe, and Erwin Zodrow for North America. During the Business Meeting held as part of the Cardiff IGCP 469 meeting, it was decided that it would be useful if we also had Subject Coordinators, especially when it comes to organising and leading the subject workshops at our biannual meetings. As a result, the following have agreed to act as Subject Coordinators.

Macrofloras – Chris Cleal

Palynology – Duncan McLean

Faunas – Ed Jarzembowski

Sedimentology - Stanislav Opluštil

This arrangement will not replace the old structure but, rather, will complement it.

SOME MORE PHOTOGRAPHS!!



Jörg—excursion leader and
lion-rider!!



Barry finds a fossil at Zwickau



Fossil trees at Chemnitz



Après excursion