Abstracts for posters displayed at the Annual Conference, January 1989

Late triassic and early Jurassic biostratigraphy of stratotype sections in southern Britain. *G. Warrington and HC. Ivimey-Cook, British Geological Survey, Keyworth, Nottingham NG12 5GG.*

Late Triassic and early Jurassic outcrops on the coasts of the Bristol Channel in South Glamorgan and west Somerset include, respectively, the type sections of the Penarth Group and the Blue Anchor Formation (both late Triassic). Those in Somerset also include the type locality of *Psiloceras planorbis,* the index fossil of the basal Jurassic (Hettangian) *planorbis* Zone, and in 1967 were proposed as candidate sections from which a stratotype for the base of the Hettangian Stage and, therefore, the Jurassic System should be chosen. The base of the Jurassic, at the lowest occurrence of *Psiloceras, is* typically a few metres above the base of the Lias, the lowest beds of which are therefore placed in the Triassic. Palynological and faunal studies of these sections accompanied mapping of the Cardiff, Weston-super-Mare and Taunton districts by the British Geological Survey. During the late Triassic a continental environment was replaced by marine conditions following a transgression, the inception of which is reflected in the biota from the topmost beds of the Blue Anchor Formation. Faunas and microfloras from the succeeding Penarth Group record the progressive colonisation of a widespread marine environment during the latest Triassic. After minor fluctuations during Penarth Group deposition this environment and the associated biota stabilised during deposition of the Lias. The appearance of *Psiloceras* in the Lias is an event that occurred in an established marine regime rather than one associated with the preceding transgression.

Posters displayed illustrate the distribution of palynomorphs and other fossils, mainly macrofaunal, in the Triassic-Jurassic boundary sequence at outcrop and in boreholes in South Glamorgan and west Somerset.

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Source rock and seep oil maturity in Dorset, Southern England. C.*Cornford, Hallsannery Field Centre, Bideford, Devon EX39 SHE.*

Analysis of the tetra and penta-cyclic hydrocarbon molecules (steranes and triterpanes) in the oil seeps of the Dorset coast of Southern England (Mupe Bay, Osmington Mills) shows both the oils to derive from a similar mid-late mature source rock. Measured maturity of the Jurassic source rocks at outcrop are uniformally immature (0.3-0.5%R) despite a history of Mesozoic burial and Tertiary inversion and uplift.

Evidence from oil-cemented sandstone clasts within oil-stained Lower Cretaceous fluviatile channel sands at Mupe Bay, suggests that oil was already seeping during the Lower Cretaceous. Detailed work comparing the extracts of the oil-stained clasts and the surrounding oil-stained sandstones shows the clasts to contain oil derived from a slightly, but significantly, less mature source rock. This is consistent with lower maturity oil seeping first into the sand that was then incorporated as bank collapse clasts into the channel sand. Later, with further source rock burial, more mature oil entered the matrix sandstone.

Locally calibrated time/temperature thermal geohistory modelling can just simulate source rock maturities appropriate to the seep oils if palaeo-geothermal gradients and surface temperatures were locally higher in the Jurassic than at the present day.

A volumetric balance between oil in place in the Wytch Farm field and the available area of source rock draining into the structure suggests that an anomalously thick and/or organic-rich Rhaeto-Liassic section must have developed in the Bournemouth Bay basin, and that Cretaceous palaeo-geothermal gradients were higher in this specific area.

The mineralogical and paragenetic status of gilbertite. C. *Halls, Lin Yucheng and P. Watkins, Department of Geology, Royal School of Mines, Imperial College, London.*

The pneumatolytic stages of hydrothermal evolution in the Variscan granites of SW England typically lead to the formation of parageneses in which muscovite is an important component. The yellowish-green colour, nacreous lustre and spherular growth in aggregate of much of this pneumatolytic muscovite is so distinctive that it was given the name of gilbertite by early investigators of Cornish mineralogy.

Evidence exists that gilbertite is formed both as a product of alteration of earlier micas and feldspar during the process of greisenisation and also directly by crystallisation from pneumatolytic fluids in veins, vugs and miarolytic cavities. It frequently occurs intergrown with minerals such as quartz, tourmaline, apatite, topaz and cassiterite. Although the name gilbertite does not serve to describe a separate species of mica, it remains a valuable term which distinguishes this variety of muscovite as a pneumatolytic phenomenon which is readily identified by its macroscopic appearance. New chemical analyses of gilbertite collected from opencast clay workings near the type locality in St Austell are presented, together with illustrations of the paragenetic associations and textures.

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