West Virginia Geological and Economic Survey

Colloquium Series

Presenting

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Date: **Monday Jan 7th, 2008**
Place: **Large Conference Room**
Refreshments: **maybe**
Presentation: **Begins promptly at Noon**

The Age of the Dunkard:
Have We Learned Anything in 120 Years?

The age of the youngest strata in the Appalachian Basin, assigned to the Dunkard Group, has been contentious since the late 1800s. Dunkard strata are erosionally preserved within the Pittsburgh-Huntington Synclinorium, a distribution frequently termed "The Dunkard Basin." A southeastward thickening trend, however, indicates that extant Dunkard strata represent an erosional remnant, not a true depositional basin. Tectonic changes associated with the amalgamation of Pangaea resulted in climatic and topographic partitioning as the formally everwet paleoequatorial coastal lowlands experienced an overall drying through the Late Carboniferous.

The Dunkard Group contains a well-known Late Pennsylvanian (Stephanian) fossil flora with sporadic occurrences of taxa more suggestive of the Early Permian. Spores (palynomorphs) extracted from Dunkard coal beds, deposited in water-logged environments, support a Late Pennsylvanian age. Fossil macrophytes have proven more difficult to interpret. Three distinct paleofloras are recognized that occupied different niches on the Late Carboniferous landscape. Early workers placed utmost importance on the first occurrences of Permianesque forms such as *Callipteris (Autunia) conferta, Taeniopteris jejunata* and *Walchia* (early conifer). These extrabasinal xerophytes lived contemporaneously with the Dunkard lowland and relic late Westphalian-like wetlands floras and were introduced into the lowlands episodically during extraordinary flood events or climate perturbations. In contrast to earlier periods, Late Pennsylvanian biostratigraphic signals provided by climate-sensitive plant fossils are suspect due to ecologic partitioning. Invertebrate fossils known from Dunkard strata, mainly *Lingula* and non-marine bivalves, are of limited biostratigraphical utility. Until more definitive fossils are found, the exact age of the Dunkard cannot be resolved closer than transitional "Permo-Carboniferous."

This presentation will address the various historic and scientific data associated with this 120 year old controversy and discuss why care must be employed when interpreting the available data. A brief summary of basin development will be included.