

Major Controls on Devonian Stratigraphy and Sedimentation

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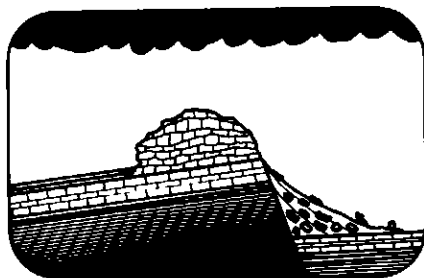
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Conference Reports



Major Controls on Devonian Stratigraphy and Sedimentation

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"Tell us the Answer to the great Question! to Life! the Universe! and Everything!" (from *The Hitch Hiker's Guide to the Galaxy* by Douglas Adams, with apologies).

This conference, held in Calgary on the 18th and 19th of March, 1982, was organized by the Sedimentology Division of the Canadian Society of Petroleum Geologists in honour of Helen R. Belyea. It was the first conference sponsored by the Division and a modest tribute to one of western Canada's pioneer stratigraphers. Speakers were by invitation only and registration was limited to 200, almost all of whom were from the local oil business. For this reason, one might have expected that it was going to be a case of outside scientists educating the natives on the geology they have been ignoring. But in fact there was a good mixture of local and outside speakers. The sessions were closely organized by Ash Embry with assistance from Jack Wendte and Frank Stoakes, leaving plenty of room for discussion. It was pleasing to note that the conference evolved somewhat as it progressed: ideas from talks and discussions were readily incorporated by participants,

a situation perhaps facilitated by holding the more conceptual papers on the first day. Some of the papers had already been published, but this did not detract from the conference at all.

Phil Heckel open the conference with a presentation on well-argued plate tectonic reconstructions that appear to be improvements on earlier attempts for the Devonian. The Jurassic crept in when Pete Vail gave his now-familiar exposé of sea level changes based on the subsurface seismic record of continental margins, but with a fresh focus on downlapping relationships. Chris Kendall imitated energetically on stage the different ways in which carbonate platforms respond to eustatic changes in sea level. Larry Sloss gave subsidence more weight than eustasy for producing the thicknesses and stratigraphic relationships in cratonic areas of North America. Jim Wilson gave a wide-ranging discussion on the reaction of carbonate environments in cratonic settings to sea level change caused by both subsidence and eustasy. In a major change of scale, Ed Anderson and Pete Goodwin ascribed thin carbonate cycles to rapid, basin-wide pulses of subsidence and relative sea level rise, resurrecting an old idea under the new name of "punctuated aggradational cycles". (This was hotly contested by your correspondent who believes that most small-scale shallow water carbonate cycles represent not regional shallowing events but local accretion of small tidal flats to sea level during more or less steady subsidence).

The rest of the papers dealt with the surface and subsurface Devonian of western Canada, and were augmented by scattered forays into other regions for comparison. These included the only paleontologically oriented talk by Roy Smith on behalf of Jess Johnson, and others on stratigraphy and sedimentation by Eric Mountjoy, Taras Storey, Helmut Geldsetzer, Dave Morrow, Keith Williams, Nick Meijer-Drees, Bob Workum, Jack Wendte, Frank Stoakes, Bill Cutler and Jim Anderson. Explanations were given

within the framework of relative sea level rise by eustasy and/or subsidence, although Eric Mountjoy graciously pointed out that this was not a new approach here: Rein deWit used it nearly 20 years ago. Jack Wendte, in particular, made some thoughtful observations and showed rather convincingly that eustasy may indeed have acted in consort with subsidence and sedimentary factors to produce the regional stratigraphic configuration of the western Canadian Devonian. This was an important paper for your correspondent who was (and still is) not at all sure of the real effect of worldwide sea level change when superimposed on local subsidence rate. A general impression from most of the western Canada papers, however, was that our chaps were neglecting somewhat the conceptual aspects of relative sea level. There was a great deal of fitting the data to the model but not enough inductive reasoning to coax the evidence from the rocks themselves. The effect of relative sea level is surely of practical interest and not just the domain of tagged out arm-chair types!

Digby McLaren gave a dinner address on the achievements of Helen Belyea and reminded us of those halcyon days of pioneer geology in western Canada. Although after listening to Bob Workum's current but evolving views of the supposedly familiar Frasnian stratigraphy of the southern Rockies, maybe those days are not lost forever: there is plenty of work to be done here just gathering the geological data, led alone finding the still-elusive answer.

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