

## **Canadian Tectonics Group**

Simon Hanmer

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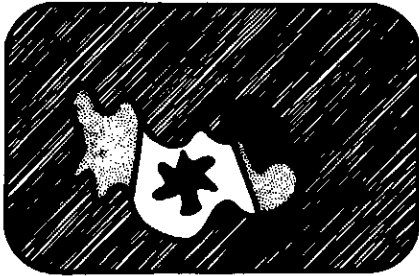
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# Conference Reports



## Canadian Tectonics Group

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Simon Hanmer  
*Geological Survey of Canada*  
588 Booth Street  
Ottawa, Ontario K1A 0E4

The Fourth Annual Meeting of the Canadian Tectonics Group was held in Maniwaki, Quebec in October (26-27), 1984. The general objective of the group is to hold an annual forum open to all those interested in the field of structural geology in any of its ramifications. One has but to attend a meeting to become a member of the group. This results in the presentation of a broad range of topics at the meetings, from quartz crystallographic preferred orientations to the broader scale tectonics of major mountain chains. The meetings are well attended by university faculty, students and members of government surveys (interested geologists from private industry are more than welcome too), and are held on a rotating basis in eastern, western and central Canada. They have followed a successful format of Saturday oral presentations, evening poster session and a Sunday field trip.

The Maniwaki meeting was well attended, with over 50 participants. In keeping with our established principle, the meeting was open and without a predetermined theme. Contributions grouped naturally into four sessions: microstructure; mesoscopic cleavage and boudinage structures; thrust structure and tectonics in the western Cordillera/Rocky Mountains; structure and

metamorphism. Poster presentations spanned "slump folds" to feldspar blastesis and the Meguma terrane (Nova Scotia) to the Valhalla gneiss complex (British Columbia). With such a broad spectrum of topics, it is difficult to present a readable thematic overview. Perhaps a brief look at who presented what is more appropriate here.

### Oral Presentations

Pierre-Yves Robin and Craig Jowett (Toronto) set the ball rolling with the subject of computer-based evaluation of orientation data. Georgio Ranalli and coworkers (Carleton) presented a convincing case for the lognormality of recrystallized grain size distributions and the consequent wisdom of taking the median, rather than the mean, as a statistical parameter for evaluation of stress magnitude. Sandra Simigian and John Starkey (Western) illustrated the use of digitized image analysis in, among other things, the study of crystallographic orientations. Chris Mawer (UNB, Fredericton) gave us a critical review of "Dynamic Recrystallization". Pierre-Yves Robin (indefatigable) returned to present a model for feldspar blastesis in shear zones by precipitation in "shifting pressure zones" around rotating feldspar cores. Fried Schwerdtner (Toronto) reminded us of the importance of distinguishing increments of finite strain in ductile tectonites. Simon Hanmer (GSC) illustrated the experimental deformation of initial boudinage undergoing subsequent simple shear, and the potential use of the resulting structure as a kinematic indicator. Jean van Berkel (Toronto) and John Morgan (Toronto) discussed unusual and complex cleavage patterns in salt and gneiss dome environments, respectively. Jack Henderson (GSC) presented a dynamic model of pre-fold cleavage and vein formation in metasediments and their subsequent evolution during buckling. Of particular interest is the presence of auriferous quartz in the veins Henderson described.

Georgio Ranalli (despite an atrocious cold) came back to lead out the thrust-related presentations with a discussion of the inter-relationships between composition, deformation law, lithospheric rheology and

tectonic decoupling at different depths. Under suitable conditions a brittle upper crust, ductile lower crust and a brittle upper mantle are to be expected. Four papers were presented on thrust tectonics in western Canada. Dick Brown and coworkers (Carleton) gave us an overview of their work in the metamorphic hinterland of the SE Canadian Cordillera. Henry Charlesworth (Edmonton) elegantly illustrated his computer simulations of the evolution of thrust-toe triangle zones. Phil Simony and coworkers (Calgary) discussed basement involvement in the Rocky Mountain thrust belt. Willem Langenberg (Geological Survey of Alberta) illustrated the transfer of movement from one thrust to another.

Fried Schwerdtner (irrepressible) gave us a second talk, this time concerning measurement of horizontal shortening in the absence of topographic relief. Aphrodite Indares and Jacques Martignole (Montreal) presented their geobarometric data for a traverse between the Grenville Front and the Central Metasedimentary Belt of the Grenville Province. Bob Stesky and K. Bailey-Kryklwy (Toronto) rounded off the day with an analysis of lineaments in the Ontario Grenville.

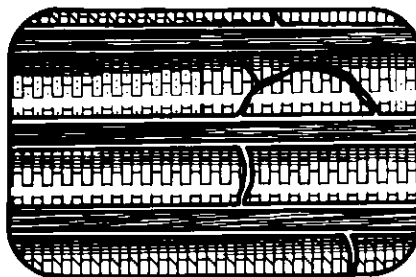
### Posters

Steve Armstrong (UNB, Fredericton) illustrated lower Paleozoic strike-slip juxtaposition of island arc and back arc basin rocks in the Maritimes. Marc Bardoux (Carleton) and Sharon Carr (Carleton) presented work on the Kelowna detachment zone, Okanagan Valley, and brittle and ductile faulting in the Valhalla gneiss complex, respectively. C. Elliot (UNB, Fredericton) re-evaluated "slump folds" in Newfoundland. Hervé Hugon (Toronto) illustrated the potential pitfalls of using fold asymmetry as a kinematic indicator. Chris Mawer presented the Meguma terrane (Nova Scotia) as a part of a wide E-W Upper Paleozoic dextral shear zone. Leo Nadeau (Carleton) illustrated the detailed microstructural evolution of deformed high grade metaleucogabbroic rocks. Ges Nunn (Newfoundland Dept. of Mines and Energy) offered a display concerning allochthonous terranes in the NE Grenville south of the Grenville Front.

Andy Okulitch and Ulrich Mayr (GSC) illustrated the complex tectonics in the vicinity of major transform faults on Ellesmere Island. Rein Tirrul (GSC) presented his recent work establishing the existence of nappes in the Kilohigok Basin near Bathurst Inlet. Jean van Berkel gave a presentation on the deformation of tin anorthositic layers and contemporaneous feldspar blastesis. B. Wiseman (Toronto) and Jean van Berkel presented a computer simulation of diapiric ridge development.

The Sunday field trip (led by Simon Hanmer) gave us an opportunity to examine examples of rectilinear "straight" gneisses, porphyroclastic granoblastic gneisses and tectonic marble melange in the vicinity of the western boundary zone of the Central Metasedimentary Belt in Quebec. The outcrops were chosen to illustrate the interpretation of these rocks as high strain tectonites akin to those described in the Ontario Grenville and shown there to mark zones of intense NW-directed overthrusting. The outcrops provoked lively interest and discussion, and were only rivalled by the sun breaking through just in time for an excellent home-made lunch prepared by "Caterers Anonymous".

After four successful and fruitful meetings, the Canadian Tectonics Group is now an established entity and shows every sign of continuing vigour. Our next meeting (October, 1985) will be held in Newfoundland. Interested geologists who may not yet be on the mailing list for First Circulars might wish to contact Tom Calon at Memorial University, St. John's, Newfoundland, A1C 5S7 (Telephone 709-737-8398).



## Carbonates in Subsurface and Outcrop CSPG Core Conference — October 18-19, 1984

Leslie Eliuk  
*Shell Canada Resources Ltd*  
P.O. Box 100, Station M  
Calgary, Alberta T2P 2H5

This conference was organized by the Sedimentology Division of the Canadian Society of Petroleum Geologists. The core committee consisted of Gillian Harrison, John Kaldi, Nick Meijer-Drees, William Styan, Christian Viau, Nigel Watts and Leslie Eliuk (Chairman). The original objective of the meeting was to allow the comparison of carbonate facies in the subsurface with similar rocks in outcrop. Over half the displays did, in fact, make this comparison, thereby enlarging our understanding of both environments. Though not planned that way, the conference was essentially one of Devonian examples from Alberta, British Columbia, the Yukon, the Northwest Territories and Alaska, with Cambrian and Pleistocene "bookends" to complete the display. Some contributions put more emphasis on diagenesis and geochemistry, reflecting the increasing importance of these aspects of sedimentary and petroleum geology. The lengths of the write-ups span a wide range, but the efforts of all the contributors were greatly appreciated and resulted in a 306-page guidebook.

This conference was notable as the first to be held in the new, expanded core facilities of the Energy Resources Conservation Board. A brief review, included in the guidebook, surveys the 22-year history of rock data storage and study at this site (Shima and Pow, ERCB). A glance at the bibliography of core conferences held in Calgary (Eliuk and Harrison, Shell) indicates that it was 15 years ago that the ERCB and its staff first provided the free use of their facilities for a core conference for the membership of the CSPG. This, and the excellent service over the years, is much appreciated by sedimentary geologists and other friends of carbonate rocks who have spent time at the Core Research Centre.

The Core Research Centre is located in northwest Calgary in the Research Park adjacent to the University of Calgary. Over 900 visitors braved near-blizzard conditions to look at 14 exhibits and tour the spacious facility. Up to six long core tables were used to display a single exhibit, allowing over 200 metres of core to be shown; most contributors used one to three tables. As well, some contributors made use of separate rooms to show slides, while a few used personal computer terminals or video equipment as part of their displays.

In the following brief review of the displays, the affiliation of the authors and the page length of their articles in the guidebook are bracketed behind their names.

Shima and Pow (ERCB, 9) reviewed the history of Alberta core and sample storage by the Energy Resources Conservation Board. They brought us up to 1983, when 1,020,000 metres of core and cuttings representing 20,000 kilometres of drilled section were stored at the Core Research Centre, where they are available for study. Eliuk and Harrison's (Shell, 21) annotated bibliography of all Calgary area core conferences starts in 1969 and lists ten conferences. Of the total 138 displays, it is interesting to note that nearly two-thirds were on siliciclastics. The 1984 conference to a good extent corrected that imbalance.

The non-Devonian "bookends" were Aitken and Pugh's (GSC, 20) display of Middle Cambrian recurrent lithofacies from two different wells based on studies that were published previously by the Geological Survey of Canada (GSC). The other "bookend" was Harrison, Cooper and Coniglio's (Alberta Geological Survey, Shell and Memorial University, 16) review of the youngest units of the Florida Keys Pleistocene. Some of the data shown had been published earlier in the *Bulletin of Canadian Petroleum Geology* (1983, v. 31, p. 135-147), but much of the material on this widely known analogue for ancient carbonate ooid and reefal deposits remains to be published.

Three contributions examined formations of Early and Middle Devonian age outside of Alberta. Although Morrow's contribution (GSC, 2) consisted only of a figure and abstract, it presages a forthcoming paper that develops further his model of Middle Devonian (Watt Mountain) regional exposure with support from stable isotope studies. During that time, a major Florida-like groundwater system and consequent karst diagenesis of older carbonate bodies is interpreted for northeast British Columbia and adjacent areas. Clough and Blodgett (Alaska State Survey and Oregon University, 25) described a basin-to-carbonate-shelf transition from outcrops in the western Ogilvie Mountains of Alaska and the Yukon. Based on their Masters of Science theses