

## NEWSLETTER OF THE STRUCTURAL GEOLOGY AND TECTONICS DIVISION GEOLOGICAL ASSOCIATION OF CANADA

January 1997

Happy New Year to all in Structure and Tectonics Land. We hope everybody had a pleasant holiday season.

### AWARDS

#### (1) The SGTD Best Paper award

The SGTD's Best Paper award is given for the best paper of the year by Canadian authors, or dealing with Canadian structural geology and tectonics. The winning paper is chosen by the Division Executive from short lists of papers submitted by the Division Councilors. The Councilors select papers eligible for the Best Paper prize that appear in eight journals: CJES, Tectonophysics, Tectonics, GSA Bulletin, Geology, CSPG Bulletin, JGR, and the Journal of Structural Geology.

The winner of this year's award is:

John G. Spray Pseudotachylite controversy: fact or friction *Geology*, 1995, volume 23, p. 1119-1122.

Congratulations for an excellent contribution. Note: The list of all Canadian papers submitted to us is attached at the bottom of this volume.

#### (2) Best Thesis Prize

The SGTD also sponsors a Best Thesis prize. We rely on thesis supervisors for submittal of theses which have been definitively accepted since the previous autumn.

And the winner of the *1997 best thesis prize* is:

Pinglao Zhao Rheology of polyphase rocks and its tectonic implications University de Montreal

Congratulations on a fine piece of work

#### (3) Calls for submissions to the best Student GAC-MAC Abstract

The SGTD awards \$150 to the best student abstract in the hopes that this will help to defer some of the lucky student's expenses. This year we would like to actually award this prize BEFORE the meeting. So, If you are a student and you have submitted an abstract to the GAC-MAC meeting email the same abstract to Frank Fueten (ffueten@craton.geol.brocku.ca) by Feb. 15. The executive will make a decision by the end of February and the cheque may be in your hand by the beginning of March. The decision will officially be announced via the CTG/SGTD mail list.

#### (4) CTG Annual Meeting

The 1996 Canadian Tectonics Group meeting was held October 18-20 at Bowen Island, B.C. As usual the meeting was a success and gave a number of us easterners an insight into BC Geology. On behalf of all we would like to thank Carol Evenchick, Murray Journeay, Bob Turner and Lori Kennedy and all others who helped for a well organized and well run meeting (\*\*\*\*\* Sandy, did I leave someone out\*\*\*\*\*)

The 1997 Canadian Tectonics Group meeting will be hosted by Nick Culshaw from Dalhousie U. and will be held in Nova Scotia. Stay tuned for more information and updates.

\*\*\* Sandy, should we mention upcoming special sessions the Division is sponsoring? \*\*\* Sandy, you want to put the other stuff in here?? DID you hear from anybody regarding the involvement of more members we had in the last main thrust? I never heard from anybody \*\*\*

## **(5) Finances**

We now have 181 SGTD members who contribute \$5 per year to the SGTD.

Balance May 1, 1996	\$ 4624.98
GAC Division membership dues	+ \$ 865.00
GAC Division meeting: Manitoba (refreshments)	- \$ 263.56
Best Student Abstract, GAC 1996	- \$ 100.00
Best Paper award	- \$ 100.00
Best thesis award	- \$ 100.00
Bank Service charges	- \$ 3.50
<b>Balance Jan. 1, 1997</b>	<b>\$ 4922.92</b>

## **The usual reminders**

This issue of the main thrust and several back issues are available at the CTG/SGTD web site <http://craton.geol.brocku.ca/ctg.html> If you have a web page and would like it listed at the CTG web site please email the URL to [ffueten@craton.geol.brocku.ca](mailto:ffueten@craton.geol.brocku.ca).

## **The current SCTG Executive**

Alexander R. Cruden, Chairman Department of Geological Sciences University of Toronto Erindale Campus Mississauga, ON L5L 1C6 ph: 905-828-3971 fax: 905-828-5328 email: [cruden@credit.erin.utoronto.ca](mailto:cruden@credit.erin.utoronto.ca)

Paula MacKinnon, Treasurer Department of Geological Sciences Brock University St. Catharines, ON L2S 3A1 Ph: 905-688-5550 ext 3856 Fax: 905-682-9020 email: [paula@craton.geol.brocku.ca](mailto:paula@craton.geol.brocku.ca)

Frank Fueten, Secretary Department of Geological Sciences Brock University St. Catharines, ON L2S 3A1 Ph: 905-688-5550 ext 3856 Fax: 905-682-9020 email: [ffueten@craton.geol.brocku.ca](mailto:ffueten@craton.geol.brocku.ca)

Here is the list of all Canadian papers submitted to us:

## **STRUCTURAL AND TECTONICS PAPERS IN CANADIAN JOURNAL OF EARTH SCIENCES VOL 32 JULY 1995 TO VOL 33 JULY 1996**

Carr, S.E. 1995. The southern Omineca Belt, British Columbia: new perspectives from the Lithoprobe Geoscience Program. Canadian Journal of Earth Sciences, 32: 1720-1739.

Connors, K.A. 1996. Unraveling the boundary between turbidites of the Kiseynew belt and volcano-

plutonic rocks of the Flin Flon belt, Trans-Hudson Orogen, Canada. *Canadian Journal of Earth Sciences*, 33: 811-829.

Cook, F.A. 1995. Lithospheric processes and products in the southern Canadian Cordillera: a Lithoprobe perspective. *Canadian Journal of Earth Sciences*, 32: 1803-1824.

DubJ, B. and LauziPre, K. 1996. Structural evolution of a major fault zone: the Cape Ray Fault Zone, southwestern Newfoundland, Canada. *Canadian Journal of Earth Sciences*, 33: 199-215.

Gordon, T.M. and Lawton, D.C. 1995. Geometry of the allochthonous Daly Bay Complex, Northwest Territories: a model constrained by geology and a three-dimensional gravity interpretation. *Canadian Journal of Earth Sciences*, 33: 1292-1302.

James, D.T., Connelly, J.N., Wasteneys, H.A., and Kilfoil, G.J. 1996. Paleoproterozoic lithotectonic divisions of the southeastern Churchill Province, western Labrador. *Canadian Journal of Earth Sciences*, 33: 216-230.

Lynch, G. and Giles, P.S. 1996. The Ainslie Detachment: a regional flat-lying extensional fault in the Carboniferous evaporitic Maritimes Basin of Nova Scotia, Canada. *Canadian Journal of Earth Sciences*, 33: 169-181.

Norman, A.R., Williams, P.F., and Ansdell, K.M. 1995. Early Proterozoic deformation along the southern margin of the Kiseynew gneiss belt, Trans-Hudson Orogen: a 30 Ma progressive deformation cycle. *Canadian Journal of Earth Sciences*, 32: 875-894.

Park, A.F. 1996. Structural evolution of sulphide tectonites and their host rocks, Stratmat mine, New Brunswick. *Canadian Journal of Earth Sciences*, 33: 472- 492.

Stevens, R.A., Erdmer, P., Creaser, R.A., and Grant, S.L. 1996. Mississippian assembly of the Nisutlin assemblage: evidence from primary contact relationships and Mississippian magmatism in the Teslin tectonic zone, part of the Yukon-Tanana terrane of south-central Yukon. *Canadian Journal of Earth Sciences*, 33: 103-116.

### **Journal of Structural Geology**

U. Riller, A.R. Cruden, and W.M. Schwerdtner  
Magnetic fabric and microstructural evidence for tectonothermal overprint of the early Proterozoic Murray pluton, central Ontario, Canada;  
*J. Structural Geol.*, 18, 1005-1016.

R.W. Schlische and R.V. Ackermann  
Kinematic significance of sediment-filled fissures in the North Mountain Basalt, Fundy rift basin, Nova Scotia, Canada;  
*J. Structural Geol.*, 17, 987-996.

M.G. O'Dea and G.S. Lister  
The role of ductility contrast and basement architecture in the structural evolution of the Crystal Creek block, Mount Isa Inlier, NW Queensland, Australia;  
*J. Structural Geol.*, 17, 949-960.

L.B. Goodwin and P.F. Williams  
Deformation path partitioning within a transpressive shear zone, Marble Cove, Newfoundland;  
*J. Structural Geol.*, 18, 975-990.

W.M. Schwerdtner  
Local displacement of diapir contacts and its importance to pluton emplacement study: Discussion;  
*J. Structural Geol.*, 18, 711-712.

D.G. Cook and B.C. MacLean  
Mid-continent inversions, Northwest Territories, Canada  
J. Structural Geol., 18, 791-802.

### **Bulletin Canadian Petr. Geol**

Jones, P.B. (1996): Triangle zone geometry, terminology and kinematics. Bull. Can. Petr. Geol., v.44, pp.139-152.

Skuce, A.G. (1996): Frontal Foothills structures in central Alberta: the thin end of the intercutaneous wedge? Bull. Can. Petr. Geol., v.44, pp.153-164.

Jamison, W.R. (1996): Mechanical models of triangle zone evolution. Bull. Can. Petr. Geol., v.44, pp. 180-194.

Hiebert, S.N. and Spratt, D.A. (1996): Geometry of the thrust front near Pincher Creek, Alberta. Bull. Can. Petr. Geol., v.44, pp.195- 201.

Stockmal, G.S., MacKay, P.A., Lawton, D.C. and Spratt, D.A. (1996): The Oldman River Triangle zone: a complicated tectonic wedge delineated by new structural mapping and seismic interpretation. Bull. Can. Petr. Geol., v.44, pp. 202-214.

MacKay, P.A. (1996): The Highwood Structure: a tectonic wedge at the foreland edge of the southern Canadian Cordillera. Bull. Can. Petr. Geol., v.44, pp. 215-232.

Slotboom R.T., Lawton, D.C. and Spratt, D.A. (1996): Seismic interpretation of the triangle zone at Jumping Pound, Alberta. Bull. Can. Petr. Geol., v.44, pp. 233-243.

Soule, G.S. and Spratt, D.A. (1996): En echelon geometry and two- dimensional model of the triangle zone, Grease Creek Syncline area, Alberta. Bull. Can. Petr. Geol., v.44, pp. 244-257.

Lawton, D.C., Sukaramongkol, C. and Spratt, D.A. (1996): Seismic characterization of a "compound tectonic wedge" beneath the Rocky Mountain foreland basin, Alberta. Bull. Can. Petr. Geol., v.44, pp. 258-268.

Dechesne, R.G. and Muraro, J.W. (1996): A relic triangle zone at Benjamin Creek gas field, southern Alberta Foothills: geometry, kinematics and preservation. Bull. Can. Petr. Geol., v.44, pp. 269- 281.

Lebel, D., Langenberg, C.W. and Mountjoy, E.W. (1996): Structure of the central Canadian Cordilleran thrust-and-fold belt, Athabasca- Brazeau area, Alberta: a large, complex intercutaneous wedge; Bull. Can. Petr. Geol., v.44, pp.282-298.

Liu, S., Lawton, D.C. and Spratt, D.A. (1996): Three-dimensional geometry of the structural front between Berland River and Smoky River, central Alberta Foothills. Bull. Can. Petr. Geol., v.44, pp. 299-312.

Spratt, D.A. and Lawton, D.C. (1996): Variations in detachment levels, ramp angles and wedge geometries along the Alberta thrust front. Bull. Can. Petr. Geol., v.44, pp. 313-323.

Lingrey, S. (1996): Structured patterns of imbrication in the Pine River area of northeastern British Columbia. Bull. Can. Petr. Geol., v.44, pp. 324-336.

Lane, L.S. (1996): Geometry and tectonics of Early Tertiary triangle zones, northeastern Eagle Plain, Yukon Territory. Bull. Can. Petr. Geol., v.44, pp. 337-348.

Varsek, J.L. (1996): Structural wedges in the Cordillera crust, southwestern Canada. Bull. Can. Petr. Geol., v.44, pp. 349-362.

Cooper, M. (1996): Passive-roof duplexes and pseudo-passive-roof duplexes at mountain fronts: a review. *Bull. Can. Petr. Geol.*, v.44, pp. 410-421.

L.S. Lane and J.R. Dietrich (1995): Tertiary structural evolution of the Beaufort-Mackenzie Delta Region, Arctic Canada. *BCPG*, v.43, pp.293-314.

N.J. Begin, D.C. Lawton and D.A. Spratt (1996): Seismic interpretation of the Rocky Mountain thrust front near the Crowsnest deflection, southern Alberta. *BCPG*, v.44, pp.1-13.

## **Tectonophysics**

Dunning GR. Macdonald AS. Barr SM. ZIRCON AND MONAZITE U-PB DATING OF THE DOI INTHANON CORE COMPLEX, NORTHERN THAILAND - IMPLICATIONS FOR EXTENSION WITHIN THE INDOSINIAN OROGEN. *Tectonophysics*. 251(1-4):197-213, 1995 Dec 15.

Lamontagne M. Ranalli G. THERMAL AND RHEOLOGICAL CONSTRAINTS ON THE EARTHQUAKE DEPTH DISTRIBUTION IN THE CHARLEVOIX, CANADA, INTRAPLATE SEISMIC ZONE. *Tectonophysics*. 257(1):55-69, 1996 May 30.

Lepvrier C. Vanberkel JT. Schwerdtner WM. EARLY TERTIARY EUREKAN PALAEOSTRESSES IN THE EASTERN SVERDRUP BASIN (ELLESMERE AND AXEL HEIBERG ISLAND, CANADIAN ARCTIC ISLANDS). *Tectonophysics*. 255(3-4):229-241, 1996 Apr 30.

## **Geology**

Oct 95:

Hildebrand, R.S., and Easton, R.M. 1995. An 1161 Ma suture in the Frontenac terrane, Ontario segment of the Grenville Orogen. *Geology*, v. 23, p. 917-920.

This is a reinterpretation of the Frontenac Terrane stratigraphy and structure in light of new metamorphic and geochronologic data. Score: 7

Nov 95:

Rohr, K.M.M., and K.P. Furlong. 1995. Ephemeral plate tectonics at the Queen Charlotte triple junction. *Geology*, v.23, p. 1035-1038.

A very nice analysis of the microtectonics of an evolving triple junction. Score: 7.5

Ansdell, K.M., Lucas, S.B., Connors, K., and Stern, R.A. 1995. Kiseynew metasedimentary gneiss belt, Trans-Hudson orogen (Canada): Back-arc origin and collisional inversion. *Geology*, v. 23, p. 1039-1043.

Another geochronology-petrology based tectonic model. Score:7.

Dec 95:

Spray, J.G., 1995. Pseudotachylite controversy: fact or friction. *Geology*, v. 23, p. 1119-1122.

Interesting new experimental result documenting with unusual clarity the process of pseudotachylite formation. Score 7.5-8.

Jan 96: NIL

Feb 96: NIL

Mar 96: NIL

Apr 96:

Whitehead, J., Reynolds, P.H., and Spray, J.G. 1996.  $^{40}\text{Ar}/^{39}\text{Ar}$  constraints on Taconian and Acadian events in the Quebec Appalachians. *Geology*, v. 24, p. 359-362.

Hb, Mu and K-spar cooling ages constrain the age and temperatures of Taconian obduction and Acadian deformation on the Baie Verte-Brompton Line. This is marginally tectonic, and of second-order importance. Score: 7

May 96:

Gibbons, W., Doig, R., Gordon, T., Murphy, B., Reynolds, P., White, J.C. 1996.

Mylonite to megabreccia: Tracking fault events within a transcurrent terrane boundary in Nova Scotia, Canada. *Geology*, v. 24, p. 411-414.

Excellent summary of a multidisciplinary application of analytical metamorphic petrology, TEMicroscopy and geochronology to the tectonic evolution of shear zones. Score: 7.5-8.

Brandley, R.T., Krause, F.F., Varsek, J.L., Thurston, J., and Spratt, D.A. 1996. Implied basement-tectonic control on deposition of Lower Carboniferous carbonate ramp, southern Cordillera, Canada. *Geology*, v. 24, p. 467-470.

Largely data presentation in support of basement structural control of Late Paleozoic sedimentation. Score: 7.

Jun 96: NIL

Jul 96: NIL

Aug 96:

Beaumont, C., Ellis, S., Hamilton, J., and Fullsack, P. 1996. Mechanical model for subduction-collision tectonics of Alpine-type compressional orogens. *Geology*, v. 24, p. 675-678.

Excellent model study relating orogenic evolution to buoyancy of subducted lithosphere (i.e. oceanic vs continental). Score: 7.5-8.

Ellis, S. 1996. Forces driving continental collision: reconciling indentation and mantle subduction tectonics. *Geology*, v. 24, p. 699-702.

Another Dalhousie model study relating the relative importance of indenter width and crust-mantle coupling to orogenic behavior. A complex topic, not as nicely presented as Beaumont's. Score: 7-7.5.

### **Journal of Geophysical Research**

Braun, J. and Beaumont, C. 1995. Three-dimensional numerical experiments of strain partitioning at oblique plate boundaries: Implications for contrasting tectonic styles in the Southern Coast Ranges, California, and central South Island, New Zealand. *Journal of Geophysical Research*, 100: 18059-18074.

Tectonics Malo, M., Tremblay, A., Kirkwood, D., and Cousineau, P. 1995. Along strike Acadian structural variations in the Quebec Appalachians: Consequence of a collision along an irregular margin. *Tectonics*, 14, 1327 - 1338.

Zhang, G., Hynes, A. and Irving, E. 1996. Block rotations along the strike-slip Finlay-Ingenika fault, north-central British Columbia: Implications for paleomagnetic and tectonic studies. *Tectonics* 15, 272 - 287.

Original integration of structural (fault slip and cleavage data) and paleomagnetic data to look at problem of block rotations associated with a fault. Takes a very quantitative approach to structural geology.

Van Kranendonk, M. J. 1996. Tectonic evolution of the Paleoproterozoic Torngat Orogen: Evidence from pressure-temperature-time-deformation paths in the North River map area, Labrador. *Tectonics* 15, 843-869.

Fairly standard structure, geochron, P-T type paper, but impressive by the sheer amount of data presented. Provides a very detailed picture of the tectonic evolution of a complex piece of Precambrian crust.

Corfu, F., Stott, G.M., and Breaks, F. W. 1995. U-Pb geochronology and evolution of the English River Subprovince, an Archean low P-high T metasedimentary belt in the Superior Province. *Tectonics*, 14, 1220 - 1233.

Lynch, G. 1996. Tectonic burial, thrust emplacement, and extensional exhumation of the Cabot nappe in the Appalachian hinterland of Cape Breton Island, Canada. *Tectonics* 15, 94 - 105.

Martignole, J. and Calvert, A. J. 1996. Crustal-scale shortening and extension across the Grenville Province

of western Quebec. *Tectonics* 15, 376 - 386.

Busch, J. P., van der Pluijm, B. A., Hall, C. M., and Essene, E. J. 1996. Listric normal faulting during postorogenic extension revealed by  $^{40}\text{Ar}/^{39}\text{Ar}$  thermochronology near the Robertson Lake shear zone, Grenville orogen, Canada. *Tectonics* 15, 387 - 402.

Baird, D. J., Nelson, K. D., Knapp, J. H., Walters, J. J., and Brown, L. D. 1996. Crustal structure and evolution of the Trans-Hudson orogen: Results from seismic reflection profiling. *Tectonics* 15, 416 - 426.

Hajnal, Z., Lucas, S., White, D., Lewry, J., Bezdan, S., Stauffer, M. R., Thomas, M. D. 1996. Seismic reflection images of high-angle faults and linked detachments in the Trans-Hudson Orogen. *Tectonics* 15, 427 - 439.

Van der Velden, A. J. and Cook, F. A. 1996. Structure and tectonic development of the southern Rocky Mountain trench. *Tectonics* 15, 517 - 544.

Umhoefer, P. J. and Miller, R. B. 1996. Mid-Cretaceous thrusting in the southern Coast Belt, British Columbia and Washington, after strike-slip fault reconstruction. *Tectonics* 15, 545 - 565.

Basset, K. N. and Kleinspehn, K. L. 1996. Mid-Cretaceous transtension in the Canadian Cordillera: Evidence from the Rocky Ridge volcanics of the Skeena Group. *Tectonics* 15, 727 - 746.