haps in South America. The Shropshire-Leicestershire area in central England, striking at a high angle to the orogen and exhibiting both divergent and convergent phenomena, may represent a short-lived 'open and shut' feature with a structure like that of the Cretaceous Benue trough.

PALAEOENVIRONMENTAL STUDIES OF THE GEORGIAN BAY FORMATION AT ERINDALE ONTARIO: EQUATORIAL SHALLOW MARINE SEDIMENTATION ON THE CRATONIC MARGIN OF THE TACONIAN EXOGEOSYNCLINE

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Sections of the Upper Ordovician Georgian Bay Formation, exposed on the banks of the Credit River and other streams near Erindale, Ontario, consist of shale with about 10% of intercalated sandy limestone. The sandy limestones form extensive lenticular beds, a few centimeters thick, with channelled and tool-marked bottoms and ripple-marked tops.

These and other features, mainly sedimentary structures and trace fossils, indicate an equatorial environment in which mud was deposited in sea water that was probably not more than a few tens of meters deep. Occasional storms brought in carbonate debris, mostly ooliths, bryozoans, and brachiopod fragments, from neighboring shoal areas and angular quartz and feldspar from Grenville province rocks exposed nearby. Channels up to 2.5 m deep and tens of meters wide, filled with a chaotic deposit consisting of angular limestone and sandstone blocks mixed with detached carbonate load casts and pseudo-nodular carbonate filled tubes in a shale matrix, may represent the heads of submarine canyons that led into the Appalachian exogeosyncline.

SIGNIFICANCE OF ABUNDANT K-FELDSPAR IN CAMBRIAN-ORDOVICIAN CARBONATE ROCKS OF THE PROTO-ATLANTIC SHELF IN NORTH AMERICA

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Strata containing abundant authigenic feldspar, which heretofore have been considered rarities in the geologic column, now appear to be characteristic of the Cambrian-Ordovician rocks that formed on the shelf of the proto-Atlantic Ocean. They crop out from the mid-continent to the present Appalachians and along the paleo-shelf edge through Newfoundland, Scotland, and Greenland. Abundant authigenic K-feldspar deposits in Cenozoic alkaline lake beds are known to have formed from tephra. The presence of some volcanic rocks of probable Cambrian and Early Ordovician age in New England suggested that the authigenic K-feldspar of the shelf rocks might be the only remaining evidence of older tephra. Chemical analyses of over 1300 carbonate rock samples from the shelf in N.Y.S. indicate that Cambrian and Lower Ordovician strata contain 7 times more normative K-feldspar than the younger carbonates. Petrographic study utilizing cathodoluminescence of the Tribes Hill Formation of Early Ordovician age shows that the K-feldspar is not entirely authigenic, like tephra derived feldspar, but rather, comprises subequal amounts of detrital K-feldspar as grain cores and authigenic K-feldspar as overgrowths. Detrital quartz always is associated with the K-feldspar. The Canadian Shield nearby the present N.Y.S. area was ex-

PALEONTOLOGY II: MORPHOLOGY AND PALEOECOLOGY

Press Club, 0840 hours

W. G. Heaslip and Robert M. Linsley, Presiding

1. *Joseph T. Durazzi*: Ostracod Shell Chemistry as an Invironmental Indicator 1400
2. *Victor K. Vere*: Discriminant-Function Analysis and Population Structure of the Trilobite *Cryptolithus* 1420
3. *Richard Haefner*: Cephalon Size and Shape of Two Coeval Lower Cambrian Olenellid Trilobites from California 1440
4. *Kraig L. Derstler*: Carpoid Echinoderms from Pennsylvania 1500
5. *Charles W. Thayer*: The Strength of Pedicle Attachment in Articulate Brachiopods: Its Ecologic and Paleoecologic Significance 1520
6. *J. W. Harrington, J. M. MacRae**: The Development of Asymmetry in the Rhynchonellid Brachiopod *Hypothyridina venustula*, from the Devonian of New York 1540
7. *James C. Brower*: Evolution of the Melocrinitidae 1600
8. *Albert R. Quehl*: Delocrinus Speciation during the Late Pennsylvanian in Western Pennsylvania 1620
9. *Robert Titus*: Paleoecology of the Crinoids of the Lower Trenton Group of Central New York State 1640
10. *C. Warren Norton*: Paleoecology and Distribution of Foraminiferida in the Brush Creek Marine Event (Missourian, Pennsylvanian), Appalachian Basin . 1700

STRATIGRAPHY AND HISTORICAL GEOLOGY

Caravan Room, 0840 hours

Donald W. Fisher and Donald B. Potter, Presiding

1. *Ismail M. Patel*: The Precambrian-Cambrian Boundary in Southern New Brunswick 0840
2. *Thomas L. Pellegrini*: Geology of the Mamaroneck Area, Southeastern New York and Southeastern Connecticut 0900
3. *Michael T. Field*: Stratigraphic Sequence of the Ware Area, Merrimack Synclinorium, Central Massachusetts 0920
4. *James E. Tillman,* S. G. Khoury, Joseph L. Wallach, B. Archer*: A Simplified Classification of the Glenarm and Wissahickon in Southeastern Pennsylvania 0940
5. *William J. Metzger*: Stratigraphy and Correlation of the Bar Harbor Series, Frenchman Bay, Maine 1000
6. *Robert D. Jacobi*: Structure and Stratigraphy of the Eastern Part of the Terrane North of Lukes Arm Fault, North-Central Newfoundland . . . 1020
7. *A. B. Uzuakpunwa,* Arthur H. Brownlow*: The Chester Amphibolite of Western Massachusetts: New Data and Tectonostratigraphic Implications . 1040
8. *Kevin Burke,* William Kidd*: Palaeoenvironmental Studies of the Georgian Bay Formation at Erindale Ontario: Equatorial Shallow Marine Sedimentation on the Cratonic Margin of the Taconian Exogeosyncline 1100
9. *Kenneth J. White,* David C. Roy*: The Mapleton Formation: An Immediately Post-Acadian Basin Fill 1120
10. *William P. Crowley*: Post-Grenville, Pre-Metamorphic History of the Eastern Maryland Piedmont 1140

*Speaker

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