Jersey waters. The equation yields a correlation coefficient (r) value of -0.98203 when fitted to yearly height data collected from sectioned valves of 277 specimens from death assemblages in Barnegat Bay. In addition, it predicts asymptotic height values and growth curves that are realistic in comparison to those derived from the logistic and monomolecular growth equations.

Selection of the best fitting growth model for M. mercenaria depends on precise determination of growth parameters in the Gompertz, logistic, and monomolecular functions. A new mathematical procedure formulated in this study and programmed on a PDP-10 computer allows rapid and accurate estimation of these parameters. It requires only two steps (1) the linearization of the growth functions, and (2) a single regression analysis of the observed data.

This method of modeling has great potential application to paleoecological and ecological investigations of bivalve growth in general, because most bivalves exhibit a growth rate that decreases exponentially with increasing age. The Gompertz, logistic, and monomolecular equations seem to provide the most satisfactory description of this type of growth.

STRUCTURAL HISTORY OF PRE-CARBONIFEROUS ROCKS OF SOUTHERN NOVA SCOTIA

KEPPIE, J. Duncan, Department of Mines, 1690 Hollis St., Halifax, Nova Scotia, Canada B3J 2X1

Deposition of (?) Cambrian to late Lower Devonian sedimentary rocks of the flyschoid Meguma Group was followed by the neritic/paralic White Rock & Torbrook Formation. During the Acadian Orogeny these rocks were deformed by major, upright, sub-horizontal folds, F_B, regionally metamorphosed, and then intruded by granitic plutons. Minor kink bands and cross folds of both pre- and post-intrusion age deform the cleavage associated with the major folds.

An earlier set of folds, F_A, with an axial plane foliation deforms the Meguma Group. Chlorite, muscovite and biotite define the early foliation, S_A. Magnetic data, outcrop patterns and overturned bedding suggest major early folds are present. Some structures (e.g. sheet structures, load casts, & primary folds) previously interpreted as primary may be related to F_A structures. The near parallelism of foliation, S_A and bedding may account for the rare record of graptolites. The regional current trends reported by Schenk (1970) are inferred to reflect early strain. This early deformation is not observed in the Lower Devonian Torbrook Formation. It affects the Yarmouth and Cape St. Mary's parts of the White Rock Formation but dies out in the Annapolis Valley. This may be interpreted as either diachronous deformation or incorrect stratigraphic correlation. The age of this early deformation is post-Tremadocian, pre-Devonian and probably Silurian.

Major post-Lower Devonian folds, F_B, with a crenulation/fracture cleavage deform these early structures. Three sets of conjugate kink bands occuring on Bear River may be related to fault movements. Some may be post-Devonian in age.

MEDIAL ORDOVICIAN RIDGE SUBDUCTION IN CENTRAL NEWFOUNDLAND

KIDD, W.S.F., DEWEY, J. F. and NELSON, K. D., Department of Geological Sciences, State University of New York at Albany, Albany, New York 12222

Many previously disparate facets of medial Ordovician and younger geo-

logy in the Notre Dame Bay region of Newfoundland are consistent with interactions during attempted northwest subduction of a spreading ridge according to the general model of DeLong and Fox, and conversion to a transform-dominated borderland as suggested by Atwater for the Cenozoic of California. We propose the following correlations between the geology and these processes: 1) Decrease in grain size and abundance of volcaniclastics below the Caradocian black shale - waning and termination of arc vulcanism due to approach of the ridge; 2) Red argillites below the black shale - detritus from weathering of inactive arc platform uplifted by approach of ridge; 3) Lawrence Head volcanics and gabbro sills - basalts produced when subducting ridge flank separates from non-subducted flank under accretionary prism; 4) Coaker Porphyry etc. - local partial melting of accretionary prism when ridge flanks separate under it; 5) Cheneyville conglomerate - uplift of part of accretionary prism containing Coaker Porphyry; 6) Cobbs Arm Limestone - deposition on outer arc platform during maximum uplift due to ridge approach; 7) Caradocian black argillite - subsidence of margin after ridge-trench interaction; 8) Sansom turbidites/Goldson conglomerates - filling of basins on earlier accretionary prism site during suggested left-lateral transform motion, and southeast down gravity faulting induced by cooling and subsidence of the non-subducted ridge flank; 9) Botwood-Mic Mac Lake-Cape St. John and equivalent Groups - Basin and Range-type tectonics and vulcanism associated with continued Silurian-early Devonian transform borderland tectonics.

SUBDIVISION AND PALEOGEOGRAPHY OF LATE PRECAMBRIAN AND EARLY PALEOZOIC ROCKS OF THE AVALON PENINSULA, NEWFOUNDLAND

King. Arthur, F., Department of Geology, Memorial University of Newfoundland, St. John's, Newfoundland, Canada A1C 5S7

The Avalon Zone of eastern Newfoundland consists of Hadrynian sedimentary and volcanic rocks, locally overlain by Cambro-Ordovician sediments with body and trace fossils characteristic of the Atlantic or European faunal realm.

Seven map-units are recognized within the Conception Group (c. 3 km thick). It is probable that this group with its tillite and Precambrian fossils is related in time to the Vendian of northern Eurasia (the Varangian and Ediacaran Periods respectively on the chronostratigraphic scale of Harland, 1975). The overlying Hadrynian clastics (c. 8 km thick) are divided into two new groups and eleven new formations; a regional stratigraphic profile of the peninsula is presented in an attempt to clarify nomenclatural as well as sedimentological problems.

Stratigraphic and sedimentologic relationships indicate an early history of widespread marine deposition around a volcanic terrain, eventual infilling of the basin by an advancing delta (major coarsening upward sequence), intermittent deposition of volcanic ash followed by alluvial plain conditions with a rising mountain front on the northern periphery of the system. Late Hadrynian and Cambro-Ordovician sediments accumulated as tidal and offshore deposits.

The Avalon Zone may represent a wide distentional belt and partly marine basin and range domain, which developed as a precursor to the actual opening of the Early Paleozoic proto-Atlantic. Comments on the recognition and nature of the "Avalonian Orogeny" will be made, based on a model (Beuf et al., 1971) for Pan-African events.

BRYOZOAN MINIBIOHERMS IN THE UPPER ORDOVICIAN OF NORTH-CENTRAL KENTUCKY

KISSLING, Don L., Department of Geological Sciences, State University

9. *Michael R. Grieco:* Accretional Drumlin Origins as Indicated by Till Fabrics 1110
10. *Paul R. Kopsick:* Quaternary Geology of the Lower Shawangunk Kill, Wallkill River Valley, Ulster County, New York 1130

TECTONIC AND REGIONAL GEOLOGY I: NEWFOUNDLAND AND THE MARITIMES

West Gallery, 0830 hours

Terry Engelder and William MacDonald, Presiding

1. *Richard T. Haworth:* Appalachian Structural Trends Northeast of Newfoundland as Delineated by Detailed Seismic Reflection, Magnetic and Gravity Surveys 0830
2. *J. T. Bursnall:* Deformation Structures of Probable Acadian Age within Fleur-de-Lys Rocks of the Western Burlington Peninsula, Newfoundland . 0850
3. *Harold Williams:* The Coney Head Complex—Another Taconic Allochthon in Western Newfoundland 0910
4. *Jeffrey A. Karson:* Lewis Hills Ophiolite Complex: Early Ordovician Fracture Zone and Adjacent Oceanic Crust 0930
5. *W.S.F. Kidd,* J. F. Dewey, K. D. Nelson:* Medial Ordovician Ridge Subduction in Central Newfoundland 0950
6. *C. F. O'Driscoll,* E. Hussey:* The Avalonian Orogeny of the Western Avalon Zone, Newfoundland. 1030
7. *N. R. Jayasinghe, T. Lomax, A. R. Berger*:* Granites, Diabase, and Late Cataclasis in the Gander Zone North of Indian Bay, Newfoundland . . 1050
8. *J. Keppie:* Structural History of Pre-Carboniferous Rocks of Southern Nova Scotia 1110
9. *Howard V. Donohoe:* The Tectonic History of the Cobequid Mountains Region, Northern Nova Scotia 1130

POSTER SESSION III

Vestal Room

Authors will be present from 1100 to 1200

1. *M. R. Gibling:* Cyclic Sedimentation on Coastal Flats in the Upper Silurian of Somerset Island, Arctic Canada . . . . . Booth 1
2. *O. B. Nye, Jr.,* L. E. Schafer, J. C. Brower:* Spatial Abilities and Other Factors Affecting Success in Introductory Geology . . . . . Booth 2
3. *Brian R. Rust:* The Malbaie Formation: Sandy and Conglomeratic Proximal Braided Alluvium from the Middle Devonian of Gaspe, Quebec Booth 3
4. *Howard R. Feldman,* Sidney S. Horenstein, Michael J. Kennish:* Methodology and Curriculum Innovations for Geology Courses in Urban Secondary Schools . . . . . Booth 4
5. *Peter E. Isaacson:* Ecological Succession, Growth Geometry, and Sedimentation in the Knoxboro "Reef," Deansboro Member of Coeymans Formation (Early Devonian), Central New York . . . . . Booth 5

*Speaker

abstracts with programs

VOLUME 9 · NUMBER 3 · FEBRUARY 1977 · BOULDER, COLORADO
GAAPBC 9 (3) 205-336 (1977)
US ISSN 0016-7592

Northeastern Section
12th Annual Meeting

with
THE EASTERN SECTION OF THE PALEONTOLOGICAL SOCIETY
and
THE EASTERN SECTION OF THE SOCIETY OF ECONOMIC PALEONTOLOGISTS AND MINERALOGISTS

MARCH 31-APRIL 2, 1977
TREADWAY INN
BINGHAMTON, NEW YORK

PLEASE BRING THIS PROGRAM TO THE MEETING

THE
GEOLOGICAL SOCIETY
OF AMERICA