

# Echinoderms as Guide Fossils in the Correlation of the Windsor Group Subzones of the Minas Sub-Basin

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features of rocks probably of Tertiary age in the Stanwell-Fletcher basin, Somerset Island, N.W.T. They believe they have discovered raised lake beds, of probably Pleistocene age. Work on these topics will continue during 1966.

M. F. TUKE has completed work started in 1964 by G. E. BENSON on the stratigraphy and sedimentology of the Aston and Hunting Formations (Proterozoic).

B. R. RUST also has been studying the sedimentary features of the Horton Group (Mississippian) of Cape Breton Island, N. S. He is attempting to reconstruct the various Horton depositional environments of central and northern Cape Breton. Further investigation is planned on interesting sedimentary structures in the Pictou Group (Pennsylvanian) near Sydney, Nova Scotia.

B. P. WILLIAMS (N.R.C. POST DOCTORAL RESEARCH FELLOW) and D. L. DINELEY have been currently engaged in a study of the Devonian sediments of Escuminac Bay, P.Q. and Campbellton, N.B. The work, which has been undertaken from a sedimentological viewpoint, is now nearing completion and the results, it is hoped, will shed some new light on the problems of correlation and environmental interpretation of the Devonian rocks of the Chaleur Bay area.

Echinoderms as Guide Fossils in the Correlation of the  
Windsor Group Subzones of the Minas Sub-Basin

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A study of the echinoderms in the Windsor Group of the Minas Sub-basin is in progress as partial requirement for the degree of Master of Arts in Geology at Acadia University. This work is supported by the NOVA SCOTIA RESEARCH FOUNDATION and is directed by R. G. MOORE.

Echinoderm fragments belonging to the classes Echinoidea and Crinoidea are abundant in the limestone units of the Windsor Group.

Crinoid fragments belonging to the division Crinostyli (Columnals) (Moore, 1939) have been found in the Subzones B, C, D and E. These include:

- a. Simple circular columnals with circular lumens (all 4 subzones)
- b. Circular columnals with hexagonal lumens (C Subzone)
- c. Spine bearing circular columnals with circular lumens (C Subzone)

- d. Circular columnals, with circular lumens, bearing numerous regularly placed projections (C Subzone)
- e. Pentagonal columnals with circular lumens (C and D Subzones)
- f. Pentagonal columnals with possible pentagonal lumens (C and D Subzones)
- g. Octagonal columnals with hexagonal lumens (E Subzone)

A single crinoid calyx has been collected in the C Subzone. Identification is in process of this first reported calyx from the Windsor Group.

Fragments belonging to the class Echinoides have been found in the C and E Subzones. These are the first reported echinoids in the Windsor Group and include:

- a. Echinoid plates (Ambulacral and Interambulacral)  
(C and E Subzones)
- b. Spines (E Subzone)

Some Tentative Conclusions:

1. Morphological differences exist among crinoid columnals and these appear to have stratigraphic significance.
2. Isolated echinoid plates have been tentatively identified as belonging to the genera Echinocrinus and Melonechinus.
3. Echinoid remains appear to be restricted to the C and E Subzones. They are particularly abundant in the lower coral zone of the Kennetcook limestone.
4. Units composed of echinoderm fragments have extensive geographic distribution in the Minas Sub-basin.

Modification and extension of Moore's (1939) classification of crinoid ossicles is proceeding.

The writer would be pleased to hear from anyone having any information regarding the Echinodermata of the Windsor Group.

H. EDWARD CLIFTON of the UNITED STATES GEOLOGICAL SURVEY at Menlo Park, California, is preparing manuscripts concerning research on rock of the Maritimes. These concern the origin of the Pembroke Breccia in central Nova Scotia, and the stratigraphy of the basal Windsor Group in the Minas basin. CLIFTON has studied also the petrography of the basal Windsor limestone (Macumber) in central Nova Scotia, and the sedimentary structures, particularly those of directional nature, of the Horton Group in central Nova Scotia.

REGINALD G. MOORE of the Department of Geology, ACADIA UNIVERSITY, WOLFVILLE, Nova Scotia is studying the stratigraphy and paleoecology of the Horton and Windsor groups (Mississippian) in the Minas sub-basin of Nova Scotia. The NOVA SCOTIA RESEARCH FOUNDATION sponsors the work. Two papers presented at the Nova Scotia Institute of Science are entitled "Litho and biofacies in the Miller limestone (Mississippian)" and "A study of the basal member of the Horton Bluff Formation". MOORE is studying the geographic distribution and fauna of the Mississippian Upper Windsor limestones. Two master's theses problems in progress or completed are "A taxonomic and paleoecologic study of the Bryozoa of the Windsor Group" and "The New Canaan Formation".

L. M. CUMMING of the GEOLOGICAL SURVEY OF CANADA, was Chairman of a Stratigraphic Paleontology session at the XXII International Geological Congress at New Delhi in December, 1964. He reports that H. DOMBROWSKI, PALEONTOLOGICAL INSTITUTE, FREIBURG, West Germany described viable Carboniferous bacteria isolated from salt at Pugwash, Nova Scotia. The title of this paper was "Geological Problems on the Subject of Living Bacteria from Paleozoic Salt Deposits". C. G. I. FRIEDLAENDER, Department of Geology, DALHOUSIE UNIVERSITY assisted in the collection of Nova Scotian halite specimens for this study. He also aided in translation of the paper. FRIEDLAENDER also presented a paper entitled "Zeolites from North Mountains, Nova Scotia" co-authored with F. AUMENTO.

ROBERT GREGGS, QUEEN'S UNIVERSITY, KINGSTON sends the following information on a Ph.D. thesis problem now studied at Queen's. N. PETERSON is making a detailed sedimentation study of the Ordovician limestones of the Kingston area. This study involves inch-by-inch microscopic examination of cut limestone samples. He hopes to determine as nearly as possible the probable environment of each unit sampled, to reveal vertical and lateral changes in the lithosomes and to establish correlation. The GEOLOGICAL SURVEY OF CANADA has granted funds to drill six holes to basement at critical localities north of Kingston.

D. LILLY reports on the sedimentary studies at MEMORIAL UNIVERSITY of Newfoundland. R. K. STEVENS has completed his thesis work on the stratigraphy of the Humber Arm Group in western Newfoundland and has joined the Geological Survey of Canada to work on the Humber group in the Great Northern Peninsula.

JOHN UTTING has completed his thesis on the spores of the Carboniferous sequences of the Codroy Valley. The spores are from otherwise unfossiliferous strata so they should prove useful as well as academically interesting.

A. C. NAUTIYAL has made a real contribution to the knowledge of the sedimentary rocks of Bell Island and adjacent areas in

Conception Bay of eastern Newfoundland. Much of his work lays emphasis on heavy mineral separation and paleontology as well as the general stratigraphy of the area.