

Perry, D. G., Klapper, G., and Lenz, A. C., 1974, Age of the Ogilvie Formation (Devonian), northern Yukon--based primarily on the occurrence of brachiopods and conodonts: *Canadian Journal of Earth Sciences*, v. 2, p. 1055-1097.

Read, J. F., 1985, Carbonate platform facies models: *American Association of Petroleum Geologists Bulletin*, v.69, p. 1-21.

Savage, N. M., Blodgett, R. B., and Jaeger, H., 1985, Conodonts and associated graptolites from the late Early Devonian of east-central Alaska and western Yukon Territory: *Canadian Journal of Earth Sciences*, v. 22, p. 1880-1883.

Wilson, J. L., 1975, Carbonate facies in geologic history: New York, Springer-Verlag, 471 p.



BIDARKAH, HOTHAM INLET.

(Healey M. A., Report of the cruise of the Revenue Marine steamer Corwin in the Arctic Ocean in the year 1885: *U.S. Revenue Marine*, p. 58-59).

**SHELF TO BASIN TRANSITION OF SILURIAN-DEVONIAN ROCKS,
PORCUPINE RIVER AREA, EAST-CENTRAL ALASKA**

Donald A. Coleman
University of Alaska
Box 82252
Fairbanks, AK 99708
907-474-7810

ABSTRACT

Exposures of Silurian to lowermost Devonian strata in the Porcupine River region consist of an unnamed carbonate unit and the Road River Formation. Petrographic studies indicate that these rocks display facies representative of five depositional environments: basin, open sea shelf, deep shelf margin, open platform, and restricted shelf.

The unnamed carbonate unit, exposed in the Linear Ridge area, is 390 feet (126 m) thick and records a history of restricted shelf to basinal sedimentation. Stratigraphic relations and paleontological studies suggest a Middle to Late Silurian (Ludlovian) age for this unit.

The Road River Formation is Late Silurian (Ludlovian) to Early Devonian (Lochkovian) in age and is exposed near the confluence of the Porcupine and Salmontrout Rivers and downstream along the Lower Ramparts. It consists of 30-190 feet (10-61 m) of graptolitic shale with interbeds of siliceous limestone. Petrographic studies interpret the shales to reflect deposition in a basinal setting, whereas the siliceous limestones represent deep shelf-margin debris flows derived from nearby, coeval shallow water shelf environments. Together, the unnamed carbonate unit and the Road River Formation represent a shelf to basin transition on a carbonate ramp across the Silurian-Devonian boundary.

Petrographic examination of these rocks reveal that they are susceptible to a wide range of diagenetic processes. These processes include: (1) micritization, (2) neomorphism, (3) syntaxial overgrowths, (4) pressure solution (stylolitization), (5) trapping of dried hydrocarbons, (6) tensional stress (calcite veining), and (7) silicification.