and retrieval, this approach has potential value for future planning of regional subsurface stratigraphic studies.

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MARINE GEOLOGY OF EASTERN CONTINENTAL MARGIN OF CANADA

The outer continental shelf of eastern Canada, from Georges Bank to Ellesmere Island, is mainly smooth compared with most of the land on the west. This submerged "prairie" ranges from 10 to 300 mi wide. It is the northern extension of the coastal plain of the United States that is partly exposed on land as far north as Long Island. North of Long Island there are no documented marine fragments of plain sediments on land. The depth of water on the banks south of 48°N lat. is about 200 ft. In contrast, north of the 48° parallel, the average water depth is about 450 ft. The shelf is partly covered with Pleistocene ground moraine. Cenozoic and Mesozoic rocks crop out or are close to *in-situ* positions along some of the submerged valleys.

It has been known for decades that most of the submerged coastal plain is underlain by fairly low-velocity sediments up to 25,000 or more ft thick. It can be speculated that these fairly soft strata (low velocity) are not older than Triassic because drifting and rifting probably started to make basins available to be filled at that time. The beds are mainly sandstone and shale. The source areas on the west are Precambrian and the folded Paleozoic rocks of the Appalachians. One speculation is that the Precambrian perhaps yielded a sandier section than the Paleozoic rocks because of the dominance of carbonates, volcanics, and shales in the Appalachian area.

Drilling on the Grand Banks and Sable Island has shown that hydrocarbons are present. It is known that almost all the stages are present from Pleistocene to Upper Jurassic. Salt is present but its age is still only assigned to the Jurassic or earlier. It is tempting to speculate that the salt is Permian and a western segment of the North Sea salt.

Salt dome structures are present as are "basement" features.

This large frontier area is an attractive place to look for large petroleum reserves.

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SEDIMENTOLOGIC MODELS FOR CARDIUM OF SOUTH-CENTRAL ALBERTA

The Cretaceous Cardium Formation, throughout 10,000 sq mi of the Alberta basin, is composed of almost contemporaneous, noncontiguous sandstone bodies which are present as far as 100 mi east of the maximum regression of fluvial and lagoonal lithofacies.

Individual bodies are separated by marine shale and consist of 1 or more linear bars, which abut abruptly against shale on the basinward flank. The sandstone is coarser and cleaner toward this flank, which is fringed by conglomerate in many places. The base of the sandstone is transitional with the underlying shale through a sequence that becomes coarser toward the top. These gross features of Cardium stratigraphy are unlike a normal cycle of shoreline regression.

Comparison is made with models based on 4 basic variables: vectors of sediment supply and dispersion, void space due to subsidence, and volume filled by sediment accumulation.

Models representing delta progradation and turbidity-current deposition are characterized by continuity of supply and dispersion and gradational relations between sandstones and basin shales. Models representing shoreline progradation have discontinuity between supply and dispersion resulting in abrupt basinward contacts, but require juxtaposition and diachroneity of continental, littoral, and basinal lithofacies. Reworking on transgression results in a regional disconformity of which there is no evidence in the Cardium.

A model representing vertical accretion (shoaling) on a shallow stable shelf with localized sand accumulation satisfies all critical observations.

Comparison with appropriate modern areas of sedimentation indicates that the post-Pleistocene rise of sea level has imposed limitations on uniformitarian analogies.

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BED THICKNESS IN EXPERIMENTAL TURBIDITES

Turbidity currents were produced by releasing suspensions of glass beads from a lock into a horizontal, water-filled channel. The channel was 15 cm wide and 6 m long. Two sizes of mixing chamber were used with lengths of 29 and 59 cm. Other variables were grain size, d; concentration by volume in the original suspension, C; depth of suspension and water in the channel, H; and sorting of the sediment. These variables were related to the thickness of the bed close to the release gate, t.

For nearly uniform grain sizes, the results may be summarized by a series of power equations: $t = k_1 d$; $t = k_2 C^{0.7}$; $t = k_3 H^{0.4}$; $t = k_4 L^{0.5}$ (L is the length of the mixing chamber). The relation between t and d differs from that in natural turbidites, where the exponent of d is generally less than unity. Preliminary results with sediment mixtures indicate that poor sorting changes the shape of the bed to a more tapering profile, and results in transport of coarse particles farther down the channel.

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INTEGRATED EXPLORATION ECONOMICS IN WYOMING: VIEWPOINT OF GEOLOGIST

Wyoming's general economy is dependent on its exploration geologists and the half-billion-dollar productivity of its minerals industry. Extraordinary uranium discoveries in sedimentary rocks, broad-scale leasing for coal, and an abnormally high, record-setting, wildcat success ratio of 10:1 in the petroleum industry have been contributing factors.

Integration of mining and petroleum activities in Wyoming have prompted modifications in exploration programs and resulted in improved evaluation techniques. Increased intercompany communication and improved industrial-related services have helped to broaden the economic perspective.

Although economics continues to influence the ebb and flow of exploration at the individual company level, it plays only a subordinate role in the overall statewide picture. Geologic prospects rejected by 1 company as not economic are quickly absorbed by another. Marginal prospects have become successful ven-