western hemisphere bounded by latitudes 40°N and 14°S and longitudes 60°W and 108°W, it is concluded that this part of the earth's crust has been segmented into major blocks bounded by wrench fault zones. The absence of "island arcs" in this area is noted. Four occurrences of triangular crustal "building blocks" bounded on two sides by wrench-fault zones and on the third by autochthonous fold belts are pointed out, as are other recurring crustal components.

An interpretation of basement faulting based on the application of the principles of wrench-fault tectonics to observed tectonic features leads to the conclusion that the observed tectonic pattern of Middle America can have resulted from the interplay of essentially meridional crustal compression and equatorial compression, both of which are thought to have been active throughout geological time.

There is a clear relation between the distribution of oil and gas provinces and the basement tectonic pattern.

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SEDIMENTARY FRAMEWORK OF CONTINENTAL MARGINS

The sedimentary framework of selected continental margins of North and Central America has been investigated by means of non-explosive, continuous-reflection seismic systems. These records have been interpreted in the light of present knowledge of distribution of sedimentary facies and the processes of transgression and regression on modern continental shelves.

As a result of these studies, it is concluded that there is no typical continental margin. Fundamental differences exist in regional tectonism, rates of supply of sediments, and oceanographic agents of transportation, deposition, and erosion. Predominantly tectonic-erosional versus depositional types can be recognized, but are not necessarily related by evolutionary sequence. Submerged Pleistocene deltas are important in shaping present continental shelves and slopes. All types of shelves and slopes recognized today, existed prior to the Quaternary, but without the depth uniformity and abruptness of shelf break.

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MIETTE REEF COMPLEX (DEVONIAN), JASPER NATIONAL PARK, ALBERTA*

A small limestone reef complex occurs in the Front Ranges of eastern Jasper Park. From exposures in three thrust sheets, reconstruction indicates a sub-rectangular outline with an area of about 30 square miles. The main reef sequence is in the order of 1,400 feet thick, circumscribed by a slightly thinner succession of shales and argillaceous carbonates. This reef is comparable to the moderate sized biostromal reef complexes of the Alberta basin.

The depositional history of the reef can be interpreted from the reef geometry and stratigraphy, well exposed reef margins, and carbonate petrology. The basal transgressive sediments are represented by a widespread, thin, argillaceous, fine calcarenitic, stromatoporoidal and *Amphipora* limestone (Flume) deposited over a flat erosion surface on Cambrian strata. Due to increasing rates of subsidence the deposition of organic, biostromal carbonates (upper Cairn) was restricted to the areas underlain by a thicker development in the basal limestone of stromatoporoidal carbonates, presumably shoals. Stromatoporoid reefs with thin interbeds of *Amphipora* limestone and calcarenite form the main constituents of the Cairn biostromes. Fine calcarenites (Maligne) deposited adjacent to the biostromes probably represent detritus eroded from their margins. Further increase in the rate of subsidence induced growth of bioherms around the margins of the stromatoporoid biostromes. These bioherms enclosed a central lagoon. In the central part of the Miette reef this resulted in a gradual change from dark-colored, stromatoporoidal carbonates (upper Cairn) to light-colored, fine, non-skeletal, granular limestone (lower Southesk). Black, pyritic shales (Perdrix) deposited during this period in the adjacent basin indicate stagnant, poorly circulated waters. More rapid subsidence appears to have drowned the reefs, and terrigenous muds reduced basin relief (lower Mount Hawk). Gradual emergence of the reef produced a small platform or bank above which non-skeletal lime sands (main part of Southesk) were deposited in the restricted and agitated waters. Carbonate muds derived from the bank were added to the terrigenous muds (middle and upper Mount Hawk), further reducing basin relief. Lime sands (upper Southesk) gradually spread over adjacent Mount Hawk muds. Scattered small coral reefs developed near the edges of the bank. During this final stage of slow sedimentation interspersed with periods of non-deposition, quartz silts were deposited over the region.

The Miette reef was localized above the positive pre-Devonian arch which parallels the eastern Front Ranges and Foothills. Growth of the Miette reef appears to have been largely controlled by continued differential subsidence above this arch and by shoals and stromatoporoid reefs in the upper part of the Flume.

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GEOLOGIC HISTORY AND FRAMEWORK OF GULF-ATLANTIC GEOSYNCLINE

A coastal geosyncline (paraliageosyncline) extends more than 4,000 miles along the eastern margin of North America from Newfoundland to British Honduras. About half of this element, which ranges from less than 100 to more than 500 miles in width, is covered by waters of the Atlantic Ocean and Gulf of Mexico. In the uncovered part, some Jurassic—but mostly Cretaceous and Cenozoic—strata crop out in belts which are progressively younger seaward. Rocks and features which have been considered to be inherent features of either miogeosynclines or eugeosynclines are found in the province.

The geosynclinal sedimentary mass, lithically variable, roughly lenticular in cross section, and built on a basement of differing Precambrian and Paleozoic rocks, is relatively linear in plan between Newfoundland and Florida. Between the latter and British Honduras, it constitutes a great irregular arc which almost encircles the Gulf of Mexico. Maximum thicknesses of the sedimentary materials are on the order of 25,000 feet in the Atlantic segment and 50,000 feet in both the northern and southern Gulf of Mexico. These occur generally near the margin of continental (sialic) material. Notable landward deviations (embayments) exist in the vicinity of the Mississippi River and Rio Grande, whereas significant seaward extensions form the Florida and Yucatan platforms. The thick sedimentary depocenter of the northern Gulf of Mexico