

beach and deltaic sandstones hold reserves of about one third the marketable gas and a quarter of the oil. The Lower Cretaceous also contains the Athabasca oil sands with reserves of 266,000 million barrels of recoverable upgraded oil. Coal deposits are lignite to high volatile subbituminous in rank.

The Arctic Platform. Thick Paleozoic carbonates and basal clastics constitute most of the Arctic Platform. They are divided into several basins and embayments by arches and uplifts of Precambrian basement, toward which the strata generally thin and converge. The core of Boothia Uplift is formed of fault-bounded Precambrian crystalline rocks, uplifted and exposed during the Devonian. The derived clastics were trapped in adjacent basins, and the bordering Lower Paleozoic strata deformed to form Cornwallis Fold Belt.

The Hudson Platform includes the Phanerozoic rocks in the basins and graben underlying and adjoining Hudson Bay and Hudson Strait. Ordovician to Devonian carbonate, gypsum, shale and marginal sandstones have lithological and faunal affinities with the three other platformal regions. Moose River Basin, which contains Lower Cretaceous clastics and lignite, is bounded on the south by a basement uplift that was active during the Devonian.

1.2.3 Phanerozoic orogens

The Appalachian Orogen consists of a fold belt of late Precambrian and early Paleozoic strata that were deformed in the Hadrynian Avalonian, Ordovician Taconian and Devonian Acadian Orogenies, and the Fundy Epieugeosyncline of late Paleozoic strata involved in the Maritime Disturbance.

The Appalachian Geosyncline developed on the southeast flank of the Grenvillian Orogen with the deposition of thick, Hadrynian clastic and volcanic rocks. During the early Paleozoic, clastics, turbidite breccias, thick volcanics and ultrabasic intrusions accumulated, bordered on the northwest and southeast by thin carbonate and shale sequences. Deformation was mainly northwesterly thrusting and close folding; some older rocks were deformed several times. Parts were metamorphosed and intruded by granitic stocks and batholiths. Asbestos, copper, zinc, silver and lead are produced.

Late Paleozoic non-marine sandstones and shales were deposited in the intermontane basins of the Fundy Epieugeosyncline and derived from intervening, fault-bounded uplands. Subsidence of the basins generally occurred contemporaneously with uplifting and faulting. Some marine deposits are limestone, gypsum and salt which are all mined, and are also the host rocks of a barite deposit beneath which is a lead-zinc-copper-silver sulphide orebody. The non-marine beds have yielded high volatile bituminous coal for nearly 200 years. Upper Triassic red beds and basalt underlie the Bay of Fundy. During the Mesozoic and Cenozoic, the Appalachian Orogen was undergoing erosion, the products being deposited on the Atlantic Continental Shelf.

The Cordilleran Orogen of Canada is part of the circum-Pacific orogenic belt. The eastern part underwent superficial deformation in the Jura-Cretaceous Columbian and Tertiary Laramide Orogenies. Natural gas, oil and coal are produced. More westerly parts suffered multiple deformation, metamorphism and plutonism, these regions yielding lead, zinc, silver and copper, most of the molybdenum, antimony, bismuth, cadmium and tungsten produced in Canada, and all the tin and mercury. Also mined are asbestos, coal, gold, nickel, iron and barite.

The Cordilleran Geosyncline was initiated in the early Helikian with the deposition of very thick, shallow-water carbonates, sandstones and shales, host to the Sullivan lead-zinc orebody (1,340 million years) which has yielded about half of the mineral wealth of British Columbia. The Helikian strata were gently folded, metamorphosed and intruded by granite. The unconformably overlying Hadrynian consists of thick slate, grit and conglomerate, partly of glacial origin, and chert-hematite iron-formation.

The Cambrian to Devonian sequences are composed of sandstones and carbonates which grade westward into a widespread shale facies and thence, into chert, argillite, sandstone and volcanics with ultrabasic bodies. The metacarbonates, mainly Cambrian, of the Omineca Crystalline Belt and the Selwyn Fold Belt, host lead, zinc, silver and tungsten deposits.

The Mississippian lies unconformably on older rocks deformed in the Devonian Caribooan and Ellesmerian Orogenies, but near the craton rest conformably on the Devonian.