Consider, for instance the Mid-Atlantic Ridge. From here, at about 2 cm per year, the North American plate (on which Canada rides) moves away from the Eurasian plate; all along this ridge, as fissures gape in the spreading sea floor, lava rises. Sometimes these undersea eruptions rise above the waves; in 1963 the cook of a fishing boat saw the sea boil up as Surtsey, a new volcanic island, was born just off the shore of Iceland. As molten lava cools it is magnetized by the Earth's field; thus, frozen into ocean floor rock there is a record of compass readings from the past. Welded to the trailing edge of the departing plates, new rock begins its slow journey away from its birth place. Spread across the ocean floor, then, are fossil compass readings, magnetic patterns which map, in space, a temporal history of the Earth's varying, wobbling, flipping magnetic field.

In 1971, Jim Hall came to Canada to teach at Dalhousie University and to investigate the ocean floor. He sailed out of Halifax that year on board the research ship *Hudson*, seeking data with which to test the new ideas about sea floor spreading. But the *Hudson*'s dredge can only skim small rock samples from the bottom of the sea and provides no way to pinpoint where these samples came from. To get hard facts, Hall learned on his first marine geology field trip, one has to drill.

A year later, Hall and his colleagues began drilling into ocean floor from the margin of the mid-Atlantic volcanic islands: Bermuda in 1972, and in the following year, San Miguel in the Azores (where, quite literally, they got into hot water: their borehole pierced a reservoir of geothermal steam which is now being harnessed for electric power). In 1974 he was on board the deep ocean drilling ship *Glomar Challenger* when, for the first time, its drill string probed downwards through 3 km of ocean, through a thin veneer of muddy sediments, and then some 600 m into basaltic ocean crust. In 1978 he and his co-workers set up a temporary field laboratory in Iceland, and there, all summer long they examined rock cores that were being recovered by a drill rig from Noranda, Quebec; the cores presented a continuous, vertical profile of 3.5 km of sea floor.

Drilling ever deeper, from ships and from shore, organizing ever larger scientific teams, raising funds for ever larger budgets, publishing extensively, Hall became a driving force in marine geology. Much has been learned from the efforts of Hall and of scientists from many countries whom he has

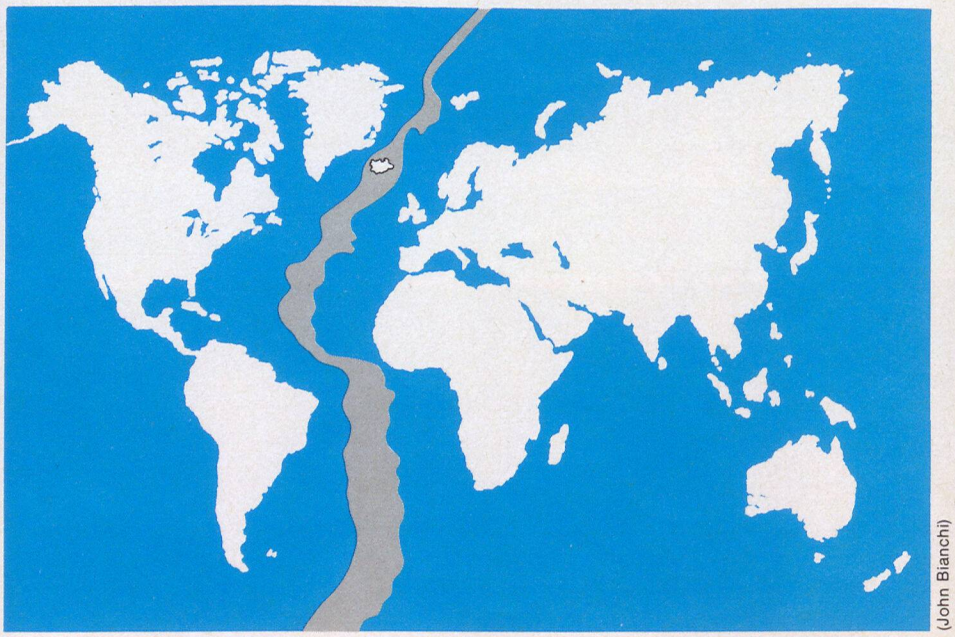
(Dalhousie University) (Université Dalhousie)

James Hall examines a map of Iceland indicating where the Mid-Atlantic Ridge emerges from the sea.

James Hall examine une carte de l'Islande indiquant où la dorsale médio-atlantique émerge de la mer.

Oceanic ridges, especially the spine of mountains bisecting the floor of the Atlantic, provided the most vivid clue leading to the continental drift model.

Ce sont les dorsales océaniques, et tout spécialement celle qui bissecte le fond de l'Atlantique, qui ont fourni les indices qui militent le plus en faveur du modèle de la dérive des continents.



(John Bianchi)