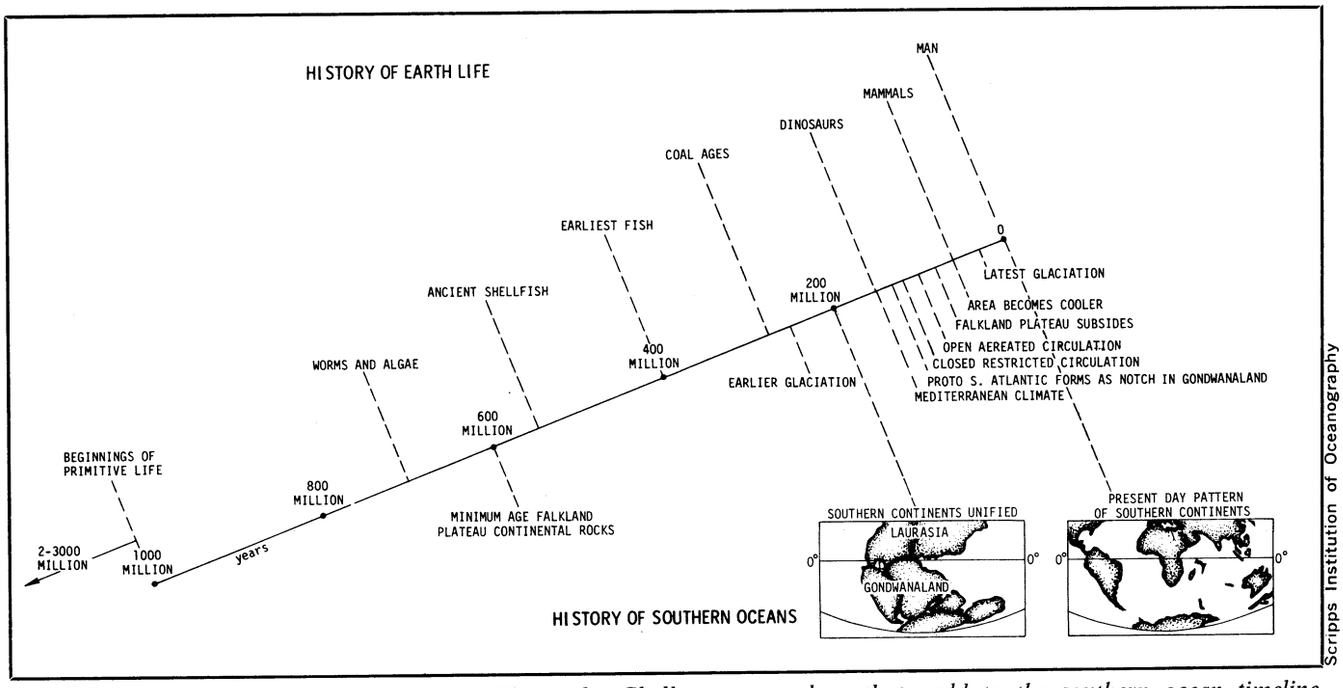

After a storm-tossed journey around Cape Horn, the Challenger moved north to add to the southern ocean timeline.

veneer of algae growth—a constant problem in ocean-borne equipment. Corrosion must be a major consideration in the design of any seaworthy machines. Also, several of the technical advances upon which supporters base their optimism have not been proven outside the laboratory. As one subcommittee staff member observed, much of the work so far represents "back-of-an-envelope type calculations."

Legislation to provide funds to explore the less well known forms of solar energy is now in the drafting stages in Congress, and it is still too early to tell what impact last week's testimony will have. Supporters maintain that sea-thermal plants could be installed along the American coastline as far north as Charleston, S.C., and provide either electricity or stored energy in the form of hydrogen at competitive prices far inland. A spokesman for the National Science Foundation, which is funding feasibility studies by Carnegie-Mellon and the University of Massachusetts, told the subcommittee that, tentatively, at least, "there's a lot of interest in industry." □

Gondwanaland's sub-sea trail

Since the earliest days of ocean travel, the journey "round the horn" —south of Chile's Cape Horn—has been the mariner's hell-trail. On Leg 36 of the globe-spanning Deep Sea Drilling Project, scientists and crew aboard the Glomar Challenger learned the hard way that Neptune in his wrath is still to be reckoned with. Yet like the rest of the fruitful project, the journey has paid off.

Delayed by equipment problems and the uncertainties of long-term planning, the Challenger was unable to embark from Ushuaia, Argentina, scarcely 50 miles north of the Horn, until April 4, dangerously late in the season for sailors in the oceans at the world's bottom. Making its way along Drake's Passage between the cape and the Antarctic peninsula, the vessel was beset at its very first research site by violent, wrenching storms that caused the loss of more than 2.3 miles of the drill "string" that it uses to sample ocean-bottom sediments and underlying rock. Moving eastward into Antarctica's Scotia Sea, the Challenger found itself continuously under siege from raging winds and towering seas, as nervous eyes strained themselves red watching for maverick icebergs.

At last the weary explorers decided that they had had enough. Abandoning their quest into the ancient land links between Antarctica and South America, they moved north into more receptive waters to continue earlier studies of the mighty schism that drove apart South America and Africa during the long-ago sundering of the former supercontinent of Gondwanaland. By the time the ship docked at Rio de Janeiro after almost seven weeks at sea, its dozen researchers and their crew had collected 1,902 feet of cored sediment and basement rock samples from 10 holes in the sea floor.

Even in the earliest analyses, the Leg 36 team, assembled from across the United States as well as from England, Australia and Argentina, is finding out that its weather-wracked mission was a success. The core samples reveal, for example, that the remains of Gondwanaland stretch eastward almost 900 miles from the Argentine coast, submerged thousands of feet beneath the waves. The Falkland Islands, thrusting upward from this vast underwater shelf about 500 miles east of southern Argentina, yielded rocks from their depths that may be more than 600 million years old, almost half a billion years older than the continental movements that opened the South Atlantic. These rocks, together with 150-million-year-old sediments gathered from atop the shelf, are believed to be the oldest rocks and sediments recovered during the entire 258,000 miles and 488 holes of the Challenger's travels. The sediments mark the first coming of the sea onto the shelf, whose weathered rock-tops suggest that the climate at the time was more like the balmy Mediterranean than like its present incarnation.

Tiny fossils in the sediments, together with oil shale produced by the decay of organic matter, are helping to tell the story of the changing climate and ocean circulation as the fractured supercontinent went its lumbering ways. The organic remains suggest poor circulation and poor oxidation in the early history of the then-growing South Atlantic basin. The region did not really begin to resemble its present state until the shelf stopped sinking some 80 million years ago. Within 10 million years of that time, the changed circulation began carrying Antarctic life forms northward to as far as 28 degrees south latitude.

History lengthens. The story unfolds. The Challenger—sails on. □