

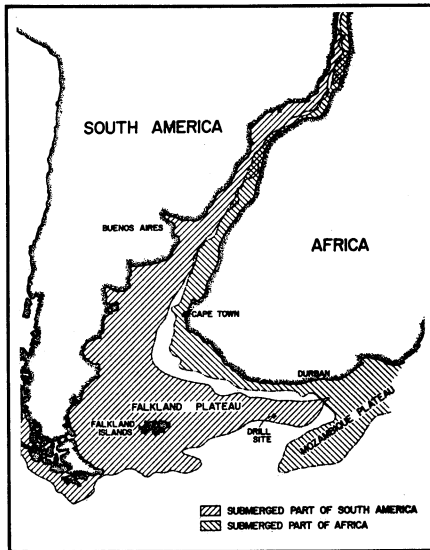
Challenger rounds the Horn

Buffeted by giant swells and imperiled by icebergs, the deep sea drilling ship *Glomar Challenger* rounded Cape Horn in January to seek the nature of the Falkland Plateau, a submerged ridge that lies like the remnants of an ancient umbilical cord between South America and Africa.

The Falkland Plateau extends 1,000 miles eastward from the coast of Argentina. The Falkland Islands, 500 miles from the Argentine coast, mark the western extreme of the plateau; on the eastern cusp lies a submerged rise known as the Ewing Bank. Core samples from Leg 36 of the Deep Sea Drilling Project confirmed in 1974 that the plateau was once attached to the Agulhas Bank of Africa and that it foundered when South America and Africa split (SN: 7/27/74, p. 54). The recent voyage to the plateau, Leg 71, planned to flesh out the picture of the plateau's structure and its role as a barrier to water flow into the early South Atlantic.

According to co-chief scientist William J. Ludwig of Lamont Doherty Geological Observatory, the coring was abbreviated by the weather, but the journey still provided the necessary "ground truthing" for earlier seismic exploration of the area. For example, seismic profiles — obtained by bouncing sound waves off the sea floor — showed that the basin between the islands and the Ewing Bank is probably not made of continental crust. One of the two deep cores taken by Leg 71 confirmed that the basin rock is oceanic in origin. This indicates, Ludwig explained, that the continental connection between the islands and the bank may lie along the escarpment between them.

The core samples also provide pictures of the early southern Atlantic Ocean and of climate changes in the region as the two continents slowly rumbled on their opposite paths. Organic-rich black shales, dating about 180 million years old, indicate a shallow-water, restricted environment — meaning that the south Atlantic was a stagnant pond when the continents began to separate. The disappearance of the black shales and the presence in the core samples of fossils typical of oxygen-rich water indicate increased circulation of water about 135 million years ago. More sediments accumulated as the plateau sank deeper about 80 million years ago. At the point in the core samples corresponding to 65 million years ago, Ludwig and co-workers found a halt in the deposition of sediments and evidence of deep erosion across the plateau. This indicates, he says, that a sudden rush of bottom water flowed into the new sea from the south, possibly as a result of a break in Antarctica as it drifted away. The opening 45 million years ago of the Drake Passage between South America and Antarctica is similarly



Falkland Plateau, recently drilled by the Challenger, is a continental remnant that sank as South America and Africa drifted apart approximately 135 million years ago.

marked in the cores, Ludwig says. To complement work in the southwest Pacific, Leg 71 also recovered a record of the fluctuations in water temperature around Antarctica. Such information, says Ludwig, may aid climatologists in understanding why the region, once as balmy as the Mediterranean, became glaciated. □

How sweet it is: Saccharin update

Although the artificial sweetener saccharin has not reached the end of the risk-assessment obstacle course that continues to frustrate scientists, legislators and the public, it recently cleared several evaluative hurdles — human case-control studies. In fact, the results of these case studies support an earlier finding (SN: 1/5/80, p. 6) that saccharin may not be the potent initiator of bladder cancer it was once thought to be (SN: 3/3/73, p. 133).

One study, conducted by Ernest L. Wynder and colleague of the American Health Foundation, involved 302 male and 65 female bladder cancer patients in New York hospitals and 367 controls matched to them in age, sex, hospital and hospital-room status. Wynder and co-worker classified artificial sweetener users on the basis of whether they had consumed at least 40 to 80 milligrams of saccharin (canned diet beverages contain about 8 to 11 mg per ounce) for at least 10 years. The results, reported in the March 14 *SCIENCE*, indicate no statistically significant difference between case and control groups classified in this manner. Furthermore, the researchers found no evidence of saccharin as a promoter of tobacco-smoking-related cancer.

In another study, reported in the March 6 *NEW ENGLAND JOURNAL OF MEDICINE*,

Alan S. Morrison and colleague of the Harvard School of Public Health gathered the history of artificial sweetener use from 592 patients with lower urinary tract cancer and from 536 controls in the Boston area. While the researchers found that men who consume more than three artificially sweetened drinks per day have a greater risk of developing urinary tract cancer than do men who consume less, the reverse was found in women. "The results of this study," the researchers report, "suggest that, as a group, users of artificial sweeteners have little or no excess risk of cancer of the lower urinary tract."

Morrison and colleague say their results can be interpreted in several ways. "One is that the exposures that have been sustained to artificial sweeteners are not carcinogenic for the human bladder." A second interpretation is that the carcinogenicity of the sweeteners is too weak for its effects to be perceived. Finally, the researchers say, "More time may be necessary for accumulation of carcinogenic level of exposure."

Meanwhile, writes Robert Hoover of the National Cancer Institute in a March 6 *JAMA* editorial, decisions regarding saccharin consumption must be made, even though the controversy is not resolved. "When all the evidence of toxicity is weighed against the lack of objective evidence of benefit," he says, "any use by nondiabetic children or pregnant women, heavy use by young women of childbearing age and excessive use by anyone are ill-advised and should be actively discouraged by the medical community." □

Scale up for new, old gene-splice products

Laboratory bacteria have now been engineered to produce two more materials that are naturally made only by human cells, and large-scale production of such substances appears imminent. At the meeting of the Recombinant DNA Advisory Committee at the National Institutes of Health on March 7, the South San Francisco research firm Genentech requested permission to scale up to 750 liters bacterial production of five human substances.

Two new achievements of the recombinant DNA technique were included in Genentech's request. One is bacterial production of thymosin alpha-1, a hormone that stimulates the human immune system and may help the body resist disease. Thymosin alpha-1 has shown promise in clinical trials for the treatment of brain and lung cancer, the Genentech scientists say, although only small amounts of the hormone, synthesized chemically, have been available. Genentech says the recombinant DNA method potentially could increase considerably availability of thymosin alpha-1 by the end of 1980.

Genentech's second announcement at