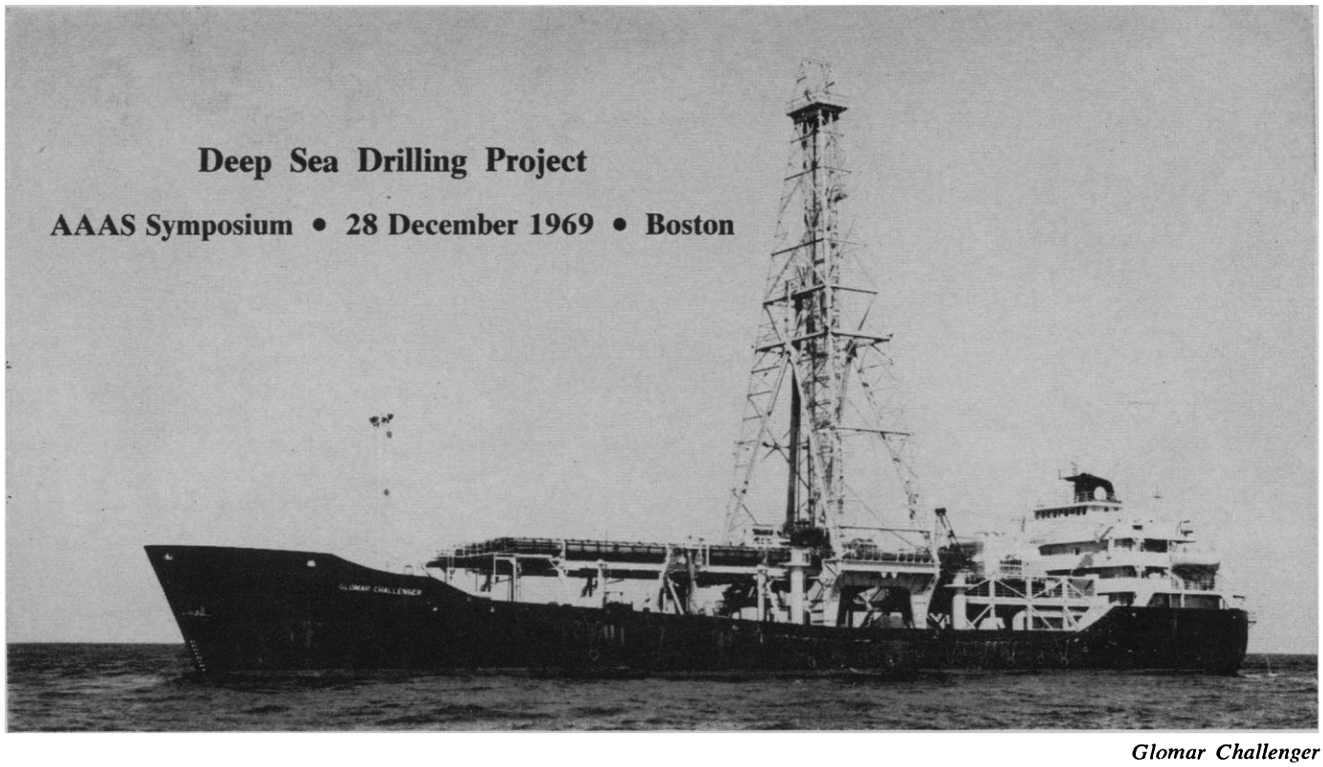

Glomar Challenger

The Deep Sea Drilling Project has captured the interest and imagination of scientists and laymen across the nation. It is a program to recover, by drilling in the deep ocean basins, information about the age and history of the ocean basins. In order to do this, long cores from deep beneath the floor of the ocean are taken by the drilling vessel, *Glomar Challenger*.

The project is a part of the National Science Foundation's Ocean Sediment Coring Program. It receives guidance and support through a nationwide panel structure of scientists organized through JOIDES, a consortium of oceanographic institutions. At the present time, there are five member institutions in JOIDES: Lamont-Doherty Geological Observatory, Institute of Marine and Atmospheric Sciences at Miami, Scripps Institution of Oceanography, University of Washington, and Woods Hole Oceanographic Institution.

Scripps Institution of Oceanography is prime contractor and managing institution for the project.

Glomar Challenger, the 400-foot 10,500-ton drilling vessel of the project, was constructed and is owned by Global Marine, Inc. Both Global Marine, Inc. and the operating institutions are gaining a wealth of information and experience in the operation of heavy equipment on the high seas. *Glomar Challenger*, named for Global Marine, Inc. and after the *H.M.S. Challenger* of oceanographic fame, is specially designed for the task of remaining on station and drilling in water depths up to 20,000 feet and with penetration of several thousand feet into the floor of the ocean. A computerized, sonic-based, positioning system automatically holds position above a sound source, to within about 100 feet and has operated in continuous winds of up to 40 knots and gusts as high as 65 knots, and in surface current of about 2 knots. *Challenger*'s drilling rig, which rises almost 200 feet above the waterline, and the automatic drill string handling are ideally suited for deep-sea operation.

Fundamental questions concerning the age of the ocean basins, their history of development and modification, the nature of the sediments, the potentials for marine resources, and the whole subject of global tectonics can now be approached by direct sampling.

The advent of *Glomar Challenger*, with its deep-water drilling ability, may be judged exceedingly timely. It comes when geophysical investigation of the oceans has matured through 20 to 30 years of vigorous growth to the point where we have some knowledge about much of the formerly unknown oceanic areas of our planet. About one million miles of traverses have been made which tell us much about the global pattern of gravity, magnetic and thermal anomalies, and about the composition, thickness, and stratification of the sedimentary cover of the deep-sea and continental margin floor. We have adequate coverage with such data to enable us to pick choice sites for drilling and, by extrapolation, to extend the knowledge gained from each hole into the surrounding area.

A second factor that lends timeliness to the drilling campaign is the recent maturity of earth science from an empirical status to one in which substantial theories and hypotheses about major tectonic processes are flourishing. Theories about the origin of magnetic fields and magnetic reversals, about ocean floor spreading and continental drift, and about thermal history of our planet, lead to specific predictions that can be tested best by an enlightened program of sampling of deep-sea and continental margin sediments and underlying rocks. We are, in fact, already well on the way to obtaining definitive tests, even in the first few months of drilling. It is difficult to imagine another project of national scope that might produce such profound results for so many branches of science.

This symposium will lead all the way from an immediate report on the results of the most recent cruise, which will end in early December, to discussions concerning various aspects of the scientific results, to broader questions that are raised by this deep water-drilling capability, such as the economic, national, and international implications.

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