

## DEEP DRILLING OF OCEANIC ISLANDS

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Boreholes have been drilled into the islands of Sao Miguel, Azores, and Bermuda. The Azores hole penetrated 981 m of a complex sequence of subaerial and submarine flows, pyroclastics and volcanogenic sediments. Extrusive lavas — alkali basalt to trachyte in composition dominated the core. A 107 m igneous-sedimentary sequence marked the transition from sub-aerial to submarine volcanics; pillowed basalts occurred first at 810 m below sea-level. The entire sequence is normally magnetized, suggesting an upper age limit of 0.69 million years.

The Bermuda hole penetrated 772 m of igneous rocks below a carbonate cap. 64% by volume of 1000 different igneous units were subaqueous altered tholeiitic lavas, dated at 90 my, but which may be as old as the surrounding sea floor. Thin lamprophyres were intruded 33 my ago.

The vertical motion of neither island is consistent with models based on thermal contraction of a spreading lithosphere. Intrusives are of only minor importance during the principal phase of island building. Hydrothermal alteration of the piles has been extensive over a short time span. Both are more complex than would be suspected.