

identify oceanic spreading centers and indications of hydrothermal activity within a convergent plate boundary setting. For bathymetric and geophysical mapping of the survey areas, a multibeam echo sounder, a 3.5-kHz sub-bottom profiler, and a proton magnetometer were used. Ridges and seamounts were sampled with dredges and observed with a TV/photo sledge. Gravity, free-fall, and piston cores were taken within the sediment-covered areas. Areas with fresh lava flows were found in the Lau and North Fiji basins. The fresh volcanic rocks in the Lau basin occur at narrow ridges of a back-arc spreading center. Their occurrence in the North Fiji basin is possibly better explained by a "leaky transform fault." Hydrothermal sulfides, the first seen in that region, impregnate these fresh volcanic rocks in both basins. Sulfides were also recovered from off-axis seamounts in the Lau basin. Precipitates of manganese oxides and iron silicates of hydrothermal origin are common at active and fossil spreading zones in both basins, as well as on seamounts.

VON STACKELBERG, ULRICH, Bundesanstalt für Geowissenschaften und Rohstoffe, Hannover, Federal Republic of Germany, and SHIPBOARD SCIENTIFIC PARTY of *Sonne*

Hydrothermal Sulfide Deposits in Back-Arc Spreading Centers in Southwest Pacific

During *Sonne* cruise SO-35 (December 6, 1984, to February 6, 1985), two areas in the Lau basin and two in the North Fiji basin were investigated, to