

R/V *Hero* cruise 79-4. Preliminary results of this work are being prepared (Forsythe and Allen, 1979).

Also with cruise 79-4, Don Elthon continued petrologic and geochemical sampling of the ophiolitic complexes to further our understanding of the igneous and metamorphic evolution of the rocks of the so-called fossil marginal basin.

Within the remote outer Pacific perimeter of the canals, Randall Forsythe expected to use cruise 79-5 to investigate the north and south continuations of the pre-Upper Jurassic basement assemblages that were studied in previous years within the Madre de Dios Archipelago (Forsythe and Mpodozis, 1979a; Forsythe and Mpodozis, 1979b; Forsythe, 1978).

Laboratory investigations and analysis of field data associated with all of the above field projects, as well as with previous field seasons in both Antarctica and the Andes, are continuing at Lamont-Doherty Geological Observatory.

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Rubidium-strontium geochronology of plutonic igneous rocks from Hobbs and Walgreen coasts, Marie Byrd Land

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Rubidium-strontium (Rb-Sr) radiometric age analyses have been carried out on biotite concentrates and total rock specimens of plutonic igneous rocks collected by

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members of the Texas Tech University Antarctic Research Center. A primary objective of this research center, while under the direction of the late F. Alton Wade, was the preparation of geologic maps of Marie Byrd Land at a scale of 1:250,000. Radiometric dating of the ubiquitous igneous rocks was to assist in establishing a chronology of geologic events within Marie Byrd Land for comparison with other circum-Pacific areas of continental lithosphere in Antarctica, South America, and New Zealand.

Metamorphosed sedimentary and igneous rocks constitute the basement complex of Marie Byrd Land. The basement rocks are intruded by igneous rocks of predominantly intermediate composition and these are overlain by Cenozoic volcanic rocks. The plutonic intrusive rocks are generally hypidiomorphic-granular. At Billey Bluff, the plutonic rocks are obicular; at Holmes Bluff, they intrude metasedimentary and metaigneous rocks.

Calculated ages for Hobbs Coast and Walgreen Coast igneous rocks are listed in the accompanying table, and their sample locations are shown in the figure.

The whole-rock isochron age for plutonic rock from Billey Bluff is the first whole-rock Rb-Sr isochron date reported from this sector of West Antarctica. Its initial $^{87}\text{Sr}/^{86}\text{Sr}$ ratio of 0.7054 ± 0.0013 is similar to that reported for Cretaceous plutons from the Ford Ranges (Halpern, 1968) and from small islands off the Canisteo Peninsula near Thurston Island (Munizaga, 1972). The biotite dates are apparent minimum ages similar to Rb-Sr and potassium-argon (K-Ar) mineral dates for plu-

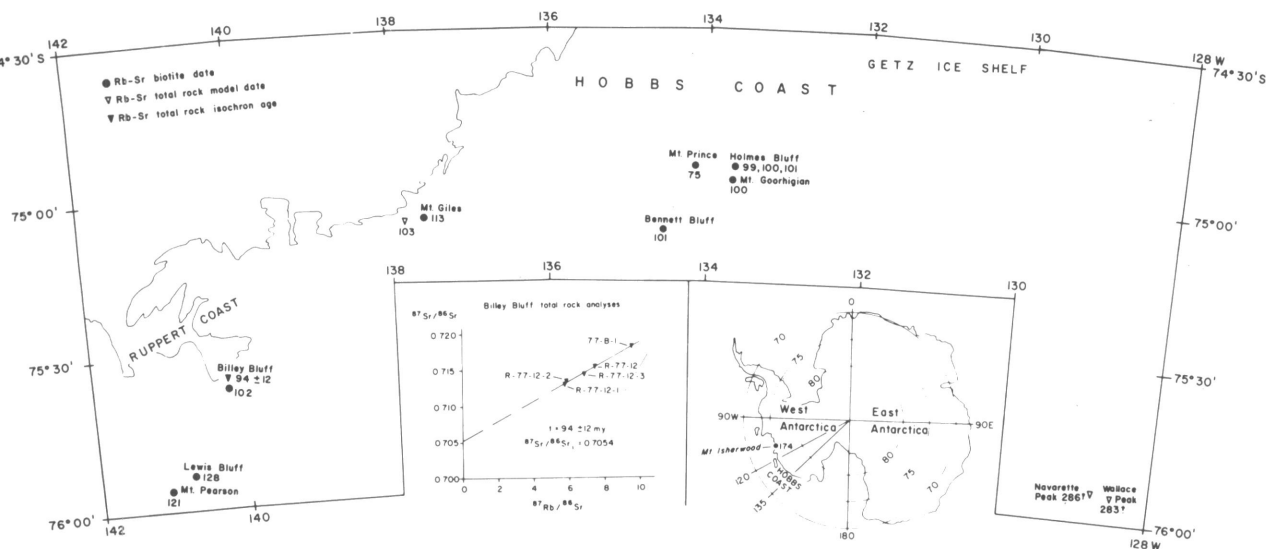
Table 1. Rubidium-strontium dates of Hobbs Coast and Walgreen Coast igneous rocks

Location	Material Analyzed	Calculated age (million years)*
Bennett Bluff	biotite	101 ^a
Billey Bluff	whole rock	94 ± 12 ^b
	biotite	(⁸⁷ Sr/ ⁸⁶ Sr initial = 0.7054 ± 0.0013)
Holmes Bluff	biotite	102 ^a
	biotite	99 ^a
	biotite	100 ^a
Lewis Bluff	biotite	101 ^a
	biotite	128 ^a
Milan Rock	whole rock	101 ^a
Mt. Giles	whole rock	103 ^a
	biotite	113 ^a
Mt. Isherwood	biotite	174 ^a
Mt. Pearson	biotite	121 ^a
Mt. Prince	biotite	75 ^a

* $\lambda^{87}\text{Rb} = 1.42 \times 10^{-11} \text{ yr}^{-1}$

^aAge calculated assuming an initial ⁸⁷Sr/⁸⁶Sr ratio of 0.705

^bIsochron age (95% confidence level)



Location of rubidium-strontium-dated igneous rocks of the Hobbs Coast and Walgreen Coast.

tonic and volcanic rocks from the Saunders and Ruppert coasts of Marie Byrd Land (Wade and Wilbanks, 1972; Craddock, 1972). It is uncertain, however, whether the mineral dates represent initial cooling and crystallization ages or are related to subsequent thermotectonic geologic events.

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Structural geology of Orville Coast and eastern Ellsworth Land

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During the past year, my work on the structural geology of the Orville Coast has consisted principally of compiling structural data and analyzing the paleomagnetism of the igneous rocks.

The Orville Coast, located at the southern end of the Mesozoic and Tertiary Andean orogen (figure 1), was mapped by a U.S. Geological Survey field party during the 1977-78 field season (Rowley, 1978). The area is underlain by a thick folded sequence of Middle and Upper Jurassic volcanoclastic sedimentary rocks of the Latady Formation (Thomson, Laudon, and Boyles,