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First Radioisotope (Potassium-Argon) Age of Marine Neogene Rionegro Beds in Northeastern Patagonia, Argentina

Abstract. *An average age of 9.41 million years was obtained from radioisotope (potassium-argon) age determinations of three glass concentrates of a tuff from the upper part of the marine Rionegrense at Punta Cracker in Golfo Nuevo, Argentina. This age correlates with the Tortonian marine stage of Europe and the Chasicoan Land Mammal Age of South America.*

Ameghino (*1*) proposed the first classification of the marine Neogene of Argentina. He (*1*) recognized two major subdivisions, the Entrerriense (~ Mio-Pliocene) and the Rionegrense (~ Pliocene) (*2*). Beds of these ages crop out discontinuously over a broad area of northeastern Argentina from the Paraná basin (61°W, 32°S) south to the vicinity of Península Valdés (Fig. 1). Eustatic sea-level changes and gentle warping of this part of Argentina during the late Cenozoic have resulted in a number of transgressive cycles. The discontinuous nature of the outcrops and the similarity in the lithology of these deposits make correlations difficult. As a result, the age and stratigraphic succession of these beds is disputed (*3*, *4*). Earlier age assignments of these beds were based on either comparisons of the molluscan faunas with coeval European faunas (*5*) or by the use of Lyellian percentages (*6*). This has led to age assignments ranging from Oligocene to Pleistocene (*1*, *3*, *4*, *6*, *7*).

Although rocks referrable to these stages are widespread throughout northern Chubut and Buenos Aires provinces, the most complete sequence is exposed along the sea cliffs around Península Valdés. The rocks in this region are nearly flat-lying and consist of nearshore interbedded sandstones and tuffaceous siltstones. The sequence at Punta Cracker on the southwestern shore of Golfo Nuevo (Fig. 1) represents a prograding nearshore-beach facies changing from shallow marine to beach-lagoon deposits. Earlier investigators (*4*, *5*) have referred the shallow marine facies to the Entrerriense and the beach-lagoonal facies to the Rionegrense.

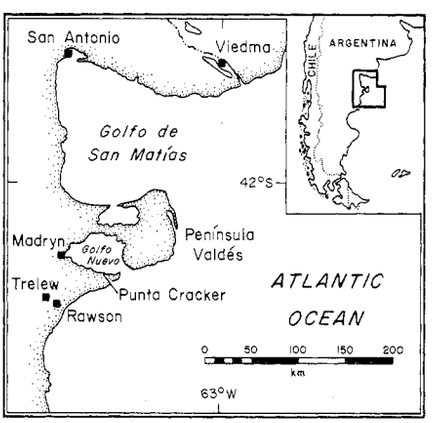

Fig. 1. Map of the northeastern coast of Patagonia, showing the location of Punta Cracker.

Samples of a whitish tuff 2 m thick from near the top of the Rionegrense horizon at Punta Cracker were collected and dated by the ^{40}K-^{40}Ar method (*8*). Three glass concentrates gave dates ranging from 9.11 (sample KA 3509) to 9.56 (sample KA 3633) $\times 10^6$ years (mean = 9.41 $\times 10^6$ years) (Table 1). These dates correlate with the Late Miocene Tortonian marine stage in Europe (*9*) and the Chasicoan Land Mammal Age in South America (*10*). Because of the cyclic nature of the Neogene transgressions in northeastern Argentina, it is probable that deposits elsewhere referred to the Rionegrense may be older or younger than those at Península Valdés.

Table 1. Analytical data for vitric concentrates of tuff dated at Punta Cracker (*8*).

Sample number	Sample weight (g)	K (%)	Radiative ^{40}Ar ($\times 10^{-11}$ mole/g)	Atmospheric ^{40}Ar (%)	Age ($\times 10^6$ years)
KA 3509	1.0193	3.48	5.52	54	9.11 ± 0.1
KA 3633	5.7335	3.23	5.38	46	9.56 ± 0.3
KA 3510	0.3301	3.43	5.69	73	9.55 ± 0.3

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