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GEOCHRONOLOGIC STUDIES IN MAINE—PART I: PRELIMINARY Rb-Sr STUDY OF THE CASCO BAY GROUP, MAINE

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Rb-Sr whole-rock isochron ages for four units of the Casco Bay Group (see Hussey, 1970) are reported. The ages range from approximately 480 to 540 (± 40) MYBP. The data for these rocks have not been previously published.

ANALYTICAL PROCEDURES

The Rb and Sr contents were determined by isotope dilution, and the data are precise to $\pm 0.5\%$ (two sigma). The $^{87}\text{Sr}/^{86}\text{Sr}$ data were calculated from the Sr isotope dilution experiments and are precise to $\pm 0.0000_6$ (two sigma). Seven runs on the Eimer and Amend Sr CO_3 Standard yielded $0.7080_3 \pm 0.0000_4$ (two sigma). All Sr isotopic data were normalized to $^{86}\text{Sr}/^{88}\text{Sr} = 0.1194$. The decay constant for ^{87}Rb was taken as $1.42 \times 10^{-11}/\text{y}$, and the standard least squares analysis was used to calculate the isochrons shown in the figures.

COMMENT

The data reported here are of a reconnaissance nature but are suggestive of a Cambro-Ordovician age for the

rocks. The possibility of original Precambrian rocks being re-set to yield early Paleozoic dates has been mentioned (A.M. Hussey, personal communication), but the data reported here do not allow such a conclusion.

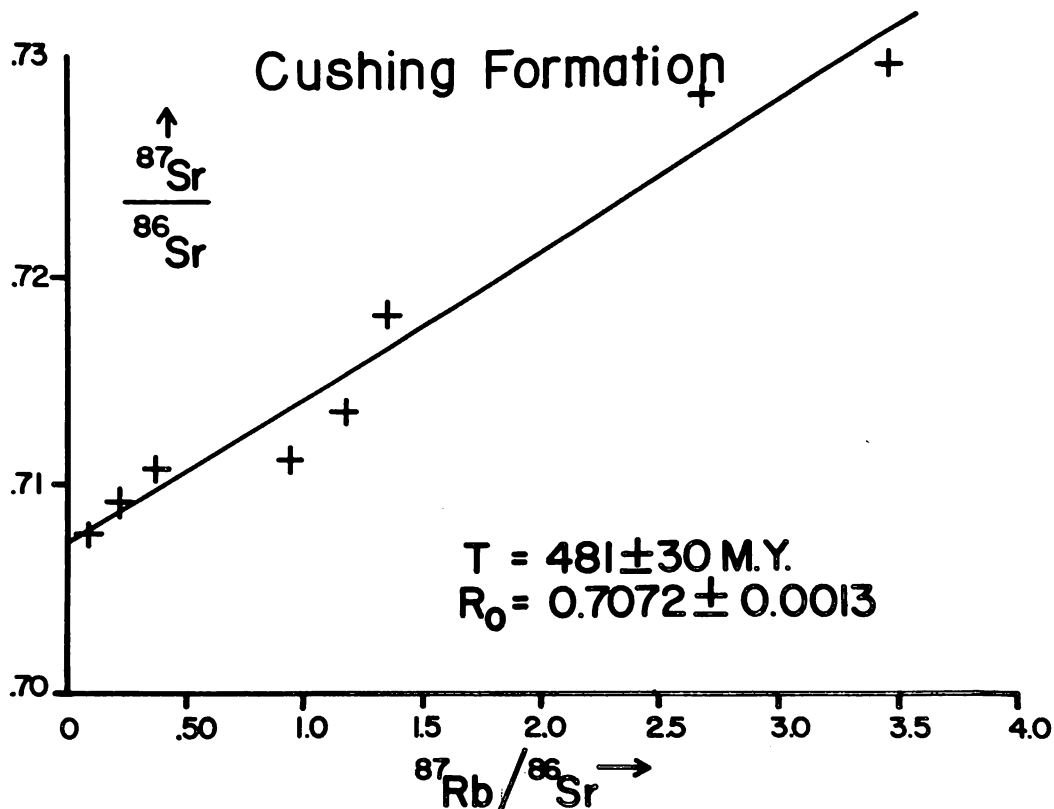
SAMPLE DESCRIPTIONS

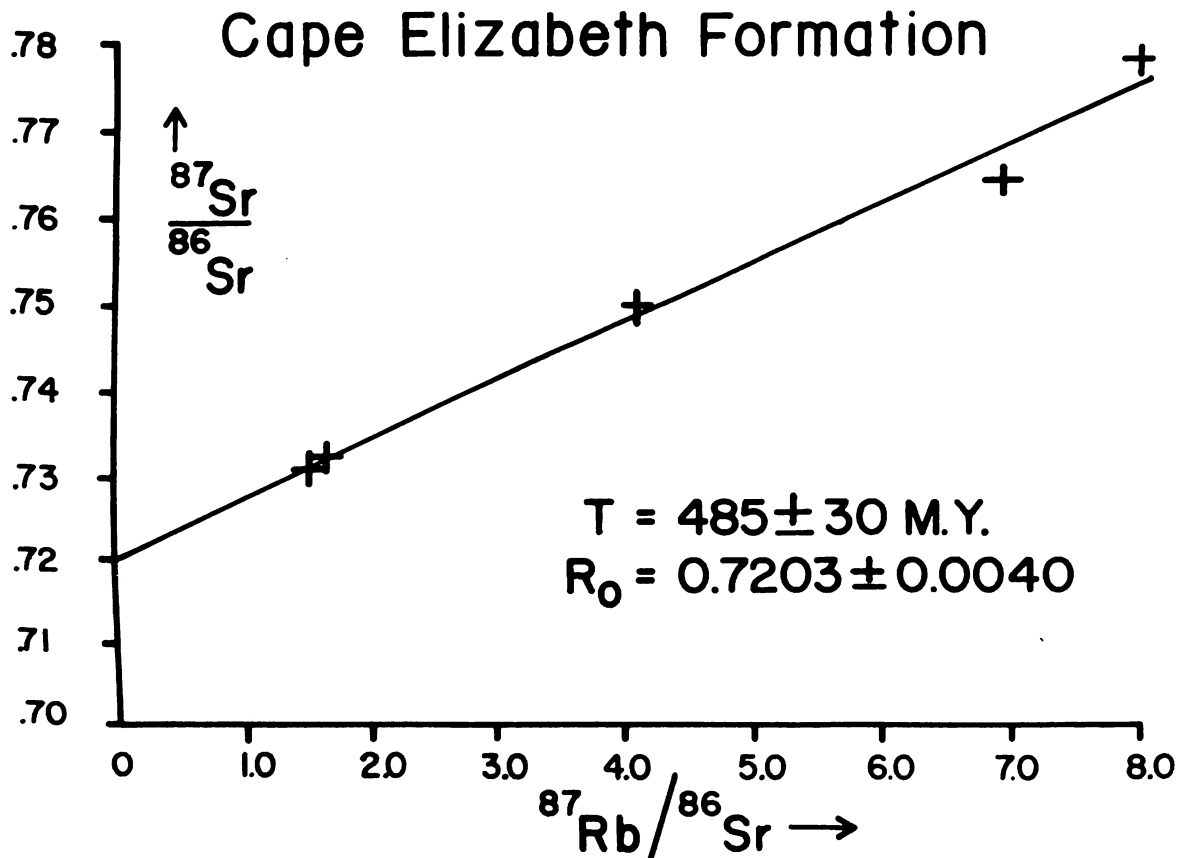
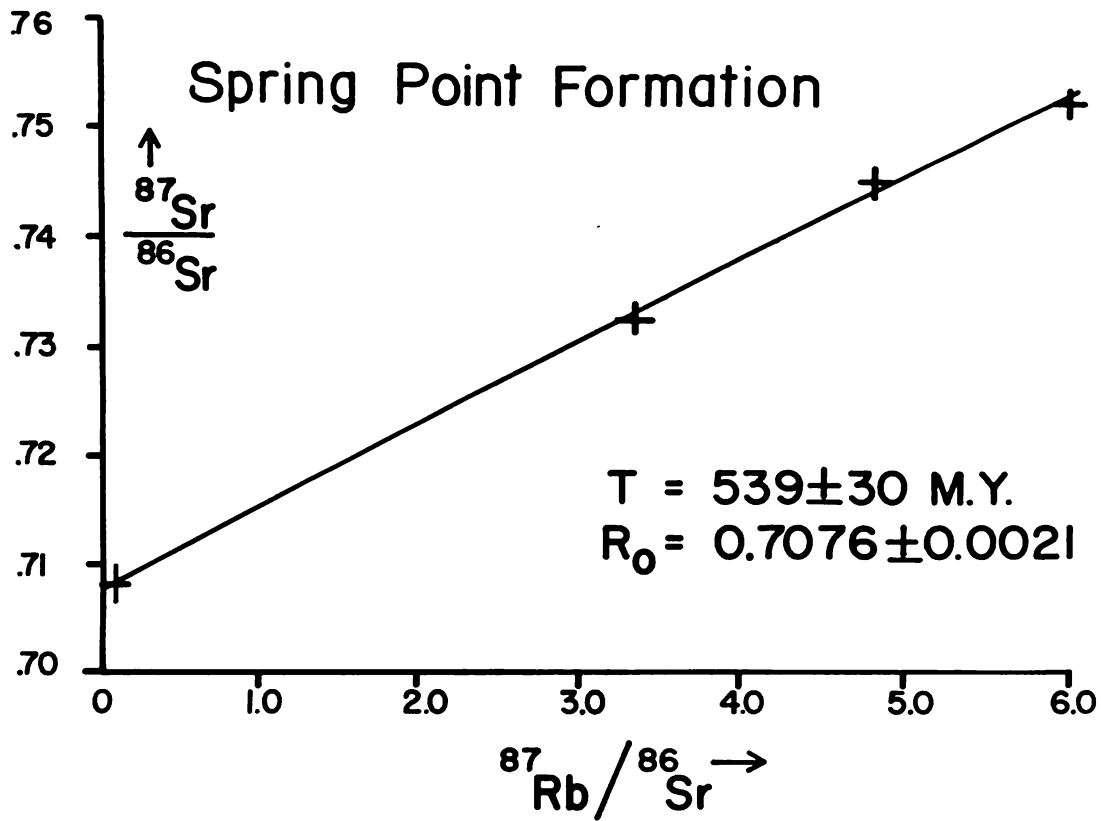
The rocks of the Casco Bay Group have been described by Hussey (1968, 1970). Only four of the formations of this group have been dated, although preliminary Rb-Sr data for several other units have been measured (Brookins, unpub. data).

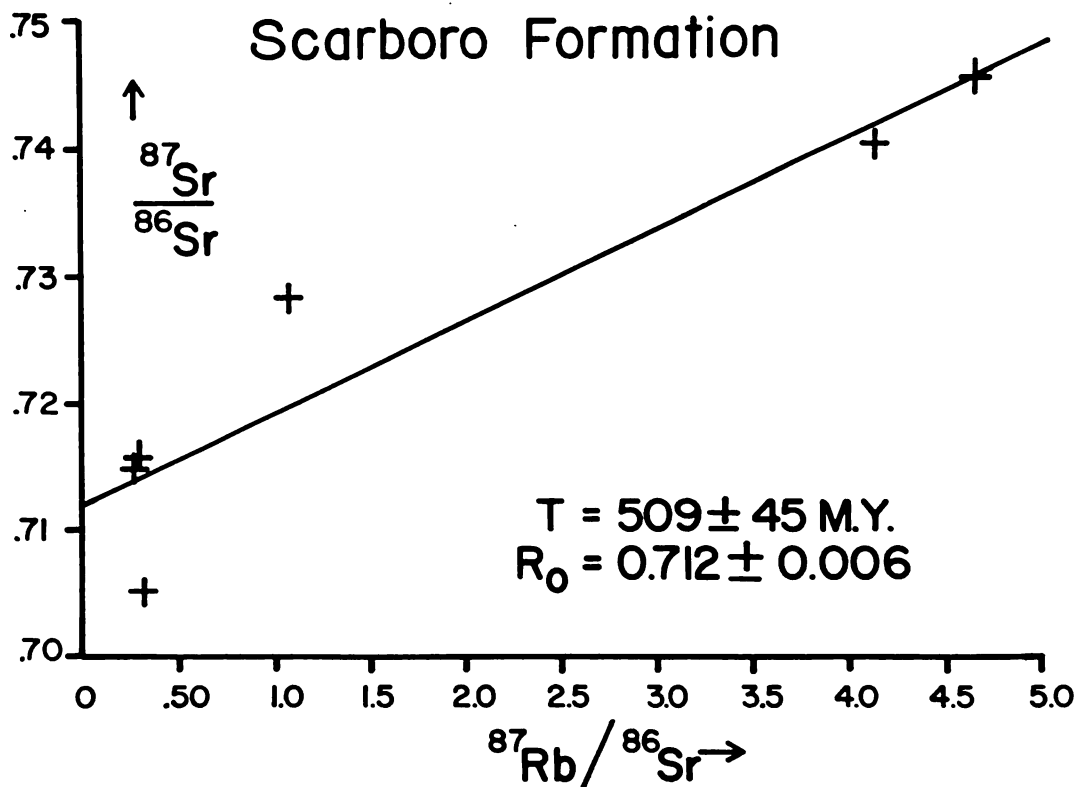
The Cushing Formation samples collected for this study consist of light gray quartz-plagioclase-biotite gneiss, presumably formed from an original dacitic volcanic rock (Hussey, 1970).

The Spring Point Formation samples consist of green phyllite, amphibolite, and quartzo-feldspathic gneisses. These rocks are metavolcanic flows and tuffs of felsic to intermediate composition.

The Cape Elizabeth samples consist of chlorite-zone metasedimentary rocks, mainly metapelites and quartzites. In the sample area the rocks consist of calcareous quartz-







muscovite-chlorite phyllite and muscovite-chlorite-quartz phyllite.

The Scarboro Formation samples consist dominantly of chlorite phyllite (muscovite + chlorite + quartz \pm graphite \pm pyrite phyllite). The formation is similar to the Cape Elizabeth Formation, except the Scarboro Formation contains far less quartz and feldspar (Hussey, 1970).

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REFERENCES

- Hussey, A. M. II (1968) Stratigraphy and structure of southwestern Maine, in Zen, E-an, White, W.S., Hadley, J.B., and Thompson, J.B., Jr., *Studies of Appalachian Geology, Northern and Maritimes (Billings Volume)*: New York, J. Wiley and Sons, p. 291-301.
- Hussey, A. M. II (1970) Geologic map of the Portland quadrangle, Maine (with text): Maine Geological Survey Map GM-1, 19 p.

