

The Age of the Bermuda Sea Mount*

RUDOLF A. GEES

Institute of Oceanography and Department of Geology, Dalhousie University,
Halifax, N. S.

Two basalt samples of the Bermuda Platform were dated by the potassium-argon method. One sample originated from a well which is located about one mile west of the Gibb's Hill lighthouse in Southampton Parish (Fig. 1). The well was drilled in 1912 by means of a churn drill (Pirsson, 1914). The second sample originated from Corehole No. 31 (depth interval 140' - 145') near the Ferry Reach causeway (Fig. 1).

The whole-rock potassium-argon age determinations were carried out by the Geochron Laboratories Inc., Cambridge, Mass., U. S. A. Both samples were crushed to -50 mesh and treated to remove carbonates.

	DEPTH	AGE
Gibbs Hill Well	714' - 716'	$34.4 (\pm 3.0) \times 10^6$ years
Corehole Ferry Reach	140' - 145'	$52.4 (\pm 2.5) \times 10^6$ years

To date the samples have not yet been investigated geochemically or petrologically therefore both ages should be regarded as being somewhat tentative.

Funkhouser et al (1968) pointed out that rapidly chilled submarine basalts appear to be incompletely outgassed of radiogenic Ar and He at the time of their eruption. No definite criteria to judge the validity of K-Ar ages of submarine basalts have been established as yet. However samples containing more than 75% glass should be regarded with suspicion. K-Ar ages of pure pelagic glasses must be considered as maximum ages. Noble and Naughton (1968) established a direct relation between the K-Ar age of submarine, tholeiitic pillow basalts of the Kilauea volcano and the water depth under which they erupted. Basalt probably less than 200 years of age yielded "O" K-Ar ages at a depth of 1400 m. At 3420 m the K-Ar age of the same basalts had increased to $12 (\pm 2) \times 10^6$ years, while at 4680 m the age had already reached $21 (\pm 8) \times 10^6$ years. The authors urge caution in applying K-Ar dates from deep-ocean basalts.

It stands to reason that no information pertaining to the water depth under which the Bermuda basalts erupted is available. Tentatively the emplacement of the volcanics of the Bermuda Sea Mount can be correlated to the time interval from about middle Eocene to middle Oligocene.

We hope to obtain larger and more adequate basalt samples from the Bermuda Sea Mount in the near future, which we intend to date by the K-Ar and the fission track method.

The author is greatly indebted to Drs. F. T. MacKenzie of Northwestern University and H. Lowenstam of the California Institute of Technology for providing the basalt samples for this study.

References cited

- FUNKHOUSER, J. G., FISHER, D. E., and BONATTI, E., 1968, Excess argon in deep-sea rocks. *Earth and Planetary Science Letters*, 5, 95 - 100.
- NOBLE, C. S., and NAUGHTON, J. J., 1968, Deep-ocean basalts: Inert gas content and uncertainties in age dating. *Science*, 162, 265-267.
- PIRRSON, L. V., 1914, Geology of Bermuda Island: The igneous platform, *Amer. Jour. of Sci.* 38, 189 - 206, 331 - 334.

* Manuscript received December 9, 1969.

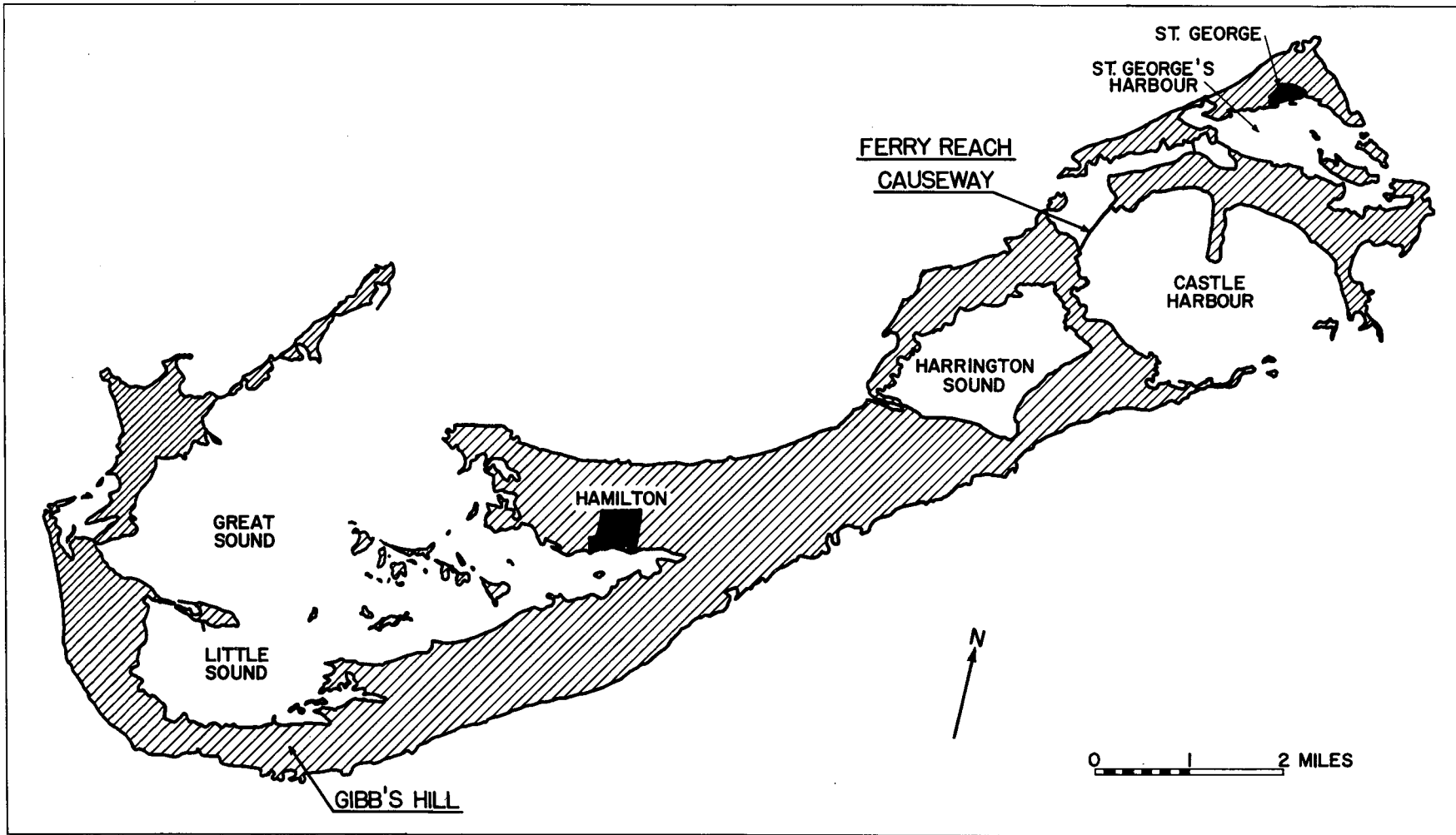


FIGURE 9 - LOCATION OF WELL SAMPLES