match descriptions of subglacially erupted volcanic rock in Iceland (Thorarinsson *et al.,* 1959; Saemundsson, 1967).

Mounts Murphy and Takahe are composed almost entirely of pyroclastic rock, whereas all other Marie Byrd Land volcanoes appear to be composite cones, built of tuff-breccia, antarctic kenyte (?), and various feldsparphyric intermediate and acidic lava flows. A few quartz-bearing rock types were found. Basaltic cinders, bombs, and flow rock comprise late parasitic cones on the flanks of most Marie Byrd Land volcanoes. These rocks contain phenocrysts of olivine and plagioclase and, occasionally, ultramafic nodules 2-30 cm in diameter.

The waning stages of volcanism in the Executive Committee Range have evidently extended into historic time. The caldera rim of Mount Hampton is partly encircled by snow-covered pinnacles and towers which very closely resemble inactive fumarolic ice towers that have been described and pictured from the summit of Mount Erebus (Holdsworth *and* Ugolini, 1965). In view of the fragile nature of these features, it is not unreasonable to assume that Mount Hampton is still weakly active.

References

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Biological Survey of Marie Byrd Land

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Poor weather curtailed biological sampling on the 1967–1968 Marie Byrd Land Survey, as it did on the previous year's survey. Although three base camps were established, the total number of field-sampling locations visited was approximately the same as it was last year. The types of life found at each location are listed in the table. (The author made collections in November, and R. Maigetter and D. Greegor continued the survey through January.)

At most localities above 3,350 m, no life could be detected. The highest altitude at which lichens were collected was 3,400 m on Mount Hampton. With one exception (Toney Mountain), algae were not found above an altitude of 600 m. Mosses were most abundant near sea level, but some were found at an elevation of 850 m near Leister Peak.*

The lichen and moss collections were dried and shipped to Ohio State University. Algal samples were collected in quadruplicate; three were placed in separate sterile disposable Petri dishes, each contain-

Types of life found at locations visited.

Locality	Coordinates [1]		Types of Life			
	S. Lat.	W. Long.	Algae	Lichens	Mosses	Petrels
Brandenberger Bluff	75°58′	136°05′	x	x		
Mt. Berlin	76°05′	135°50′		x		
Mt. Moulton (2,000 m)	76°00′	135°20′		x		
Mt. Moulton (3,000 m)	76°02′	135°15′		no life found		
Bowyer Butte	74°55′	134°50′		x	x	
Mt. Prince	74°55′	134°10′	x	x	x	x
Coleman Nunatak	75°18′	133°50′		x		
Holmes Bluff	74°55′	133°50′	x	x		x
N.W. of Mt. Andrus	75°45′	132°40′		x		
Mt. Andrus	75°50′	132°40′		x		
Mathewson Pt.	74°17′	132°30′	x	x	x	x
Mt. Kauffman	75°33′	132°20′	x	x		
Mt. Flint	75°45′	129°00′		x		
Mt. Petras	75°52′	128°30′		x		
Mt. Waesche (2,700 m)	77°12′	126°57′		x		
Mt. Waesche (3,600 m)	77°11′	127°00′		no life found		
Bennett Saddle	77°05′	126°30′		no life found		
Whitney Peak	76°23′	126°05′		x		
Boudette Peaks	76°50′	126°05′		x		
Mt. Sidley	77°07′	126°00′		x		
Mt. Hampton (3,400 m)	76°30′	125°58′		x		
Mt. Hampton (3,700 m)	76°27′	125°54′		no life found		
Mt. Cumming	76°41′	125°58′		no life found		
Mt. Rees [2]	76°37′	118°15′		x		
Mt. Frakes	76°48′	117°53′		x		
Mt. Steere	76°40′	117°30′		x	x	
Boyd Ridge [2]	76°54′	116°30′		no life found		
Toney Mt.	75°48′	116°25′	x			
Toney Mt.	75°48′	115°40′		x		
Siglin Rocks [2]	74°07′	114°40′		x	x	x
Schneider Rock [2]	74°05′	114°39′		x		x
Binder Rocks [2]	74°14′	114°38′		x		x
Morrison Bluff [2]	75°05′	114°15′		x		
Leister Peak [2]	75°09′	113°50′		x	x	
Mt. Isherwood [2]	74°56′	113°30′		x		
Mt. Strange [2]	74°54′	113°20′	x	x		
Jeffrey Head [2]	74°35′	111°45′	x	x		
Dorrel Rock [2]	75°25′	111°20′		x		
Turtle Peak [2]	75°22′	111°18′	x			x
Mt. Murphy	75°22′	111°07′	x			x

[1] The coordinates given are of actual collection sites and do not necessarily agree with those given in the antarctic gazetteer (U.S. Board on Geographic Names. *Antarctica,* 2nd edition, 1966).
[2] Unofficial name.

* Unofficial name.

ing one of three agar media, and the fourth was preserved in CRAF fixative. Samples of soil, as well as of obvious algal mats, were placed on culture media. All of the living cultures were shipped frozen and are now growing at Ohio State University in a controlled-environment chamber at 4°C.

Cultures prepared with material from all algal sampling localities contain specimens of chlorococcalean algae. *Prasiola crispa* was collected at both Mathewson Point and at Jeffrey Head.* *Chlamydomonas* sp. was collected only at the latter site. Cyanophyta, the most ubiquitous of antarctic algae, were present in samples from only 6 of the 10 collection sites. Samples from Mount Murphy were unique in that they contained large numbers of filamentous and flagellated Chrysophyte cells.

Owing to a malfunctioning telethermometer, temperatures were measured only in mid-November and early January. The measured maximum differential between the temperature of the air and of rocks upon which lichens were growing was 27.5°C. (air, −16°C.; rock, +11.5°C.) at 1930 local time on November 16. The maximum water temperature measured was +5.0°C. in a pond near Turtle Peak* on January 6. The air temperature was also +5.0°C. at that time.

The animal life observed was limited to snow petrels at eight locations and Adélie penguins at Mathewson Point. Although a concerted effort was made to collect arthropods by means of Berlese funnels, none were found.

* Unofficial name.

Paleomagnetic Investigations in Marie Byrd Land

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In a continuation of the project begun last year in Marie Byrd Land by Washington University, rock samples for paleomagnetic studies were collected during the 1967–1968 austral summer. Ninety-eight oriented specimens were collected, from which approximately 500 individual cores will be obtained for paleomagnetic measurements.

In the region of the first base camp on the Hobbs Coast, samples were collected at Koerner Bluff, Mount Moulton, and Brandenberger Bluff in the Flood Range, as well as at numerous sites along the western flank of the Ames Range. In addition, samples were taken from Coleman Nunatak, providing a link-up with the termination point of the studies conducted last season. The specimens collected in these areas appear to be basalts and andesites.

The Executive Committee Range yielded oriented samples of volcanic lavas and tuffs from Whitney Peak, Mounts Hampton, Waesche, and Cumming, and a sequence of progressively older rock at Mount Sidley. Additional samples were collected at Benes Peak and Mount Galla on the USAS Escarpment north of the Executive Committee Range.

The second base camp was located near Toney Mountain on the Bakutis Coast. Oriented samples were taken from basalts and tuffs on Spitz Ridge* of Toney Mountain, Turtle Peak* at Mount Murphy, at Boyd Ridge* in the Crary Mountains, and at several sites west of Morrison Bluff* in the Kohler Range. Samples of plutonic rocks and associated dikes were collected at Early Bluff,* Mount Isherwood,* and Mount Bray* in the Kohler Range; at Hunt Bluff and Jeffrey Head* on the Bear Peninsula*; and at Siglin Rocks* on the Martin Peninsula.

Because a large percentage of the oriented samples collected are basic volcanics, it is expected that the paleomagnetic data for them will be reliable and thus yield valuable information about the relationship of East and West Antarctica. Some preliminary suggestions as to this relationship have been made by C. K. Scharnberger and I. Hsu on the basis of a study of plutonic and basaltic dike rocks collected during the 1966–1967 field season along the Saunders, Ruppert, and Hobbs Coasts.

Based on samples of basaltic rocks obtained at four sites, the mean south virtual geomagnetic pole (VGP) is at 62°S. 64°E. These results are considered to be very reliable because of the high susceptibilities and strong remanence of the samples. The granitic rocks, on the other hand, generally have low susceptibilities and weak remanence. A gneissic granite from the Fosdick Mountains indicates that the south VGP is at 28°S. 140°W., which is about the same longitude but a lower latitude than the average position of Jurassic poles for East Antarctica (53°S. 139°W.). An adamellite from the Clark Mountains indicated a VGP at 22°S. 106°E., which is quite anomalous; the result is doubtful, however, owing to the very weak intensity of magnetization. Additional measurements of plutonic rocks will be carried out with more sensitive instruments.

Our preliminary results indicate that further studies must be made in order to fully elucidate the tectonic history of West Antarctica.

*Unofficial name.