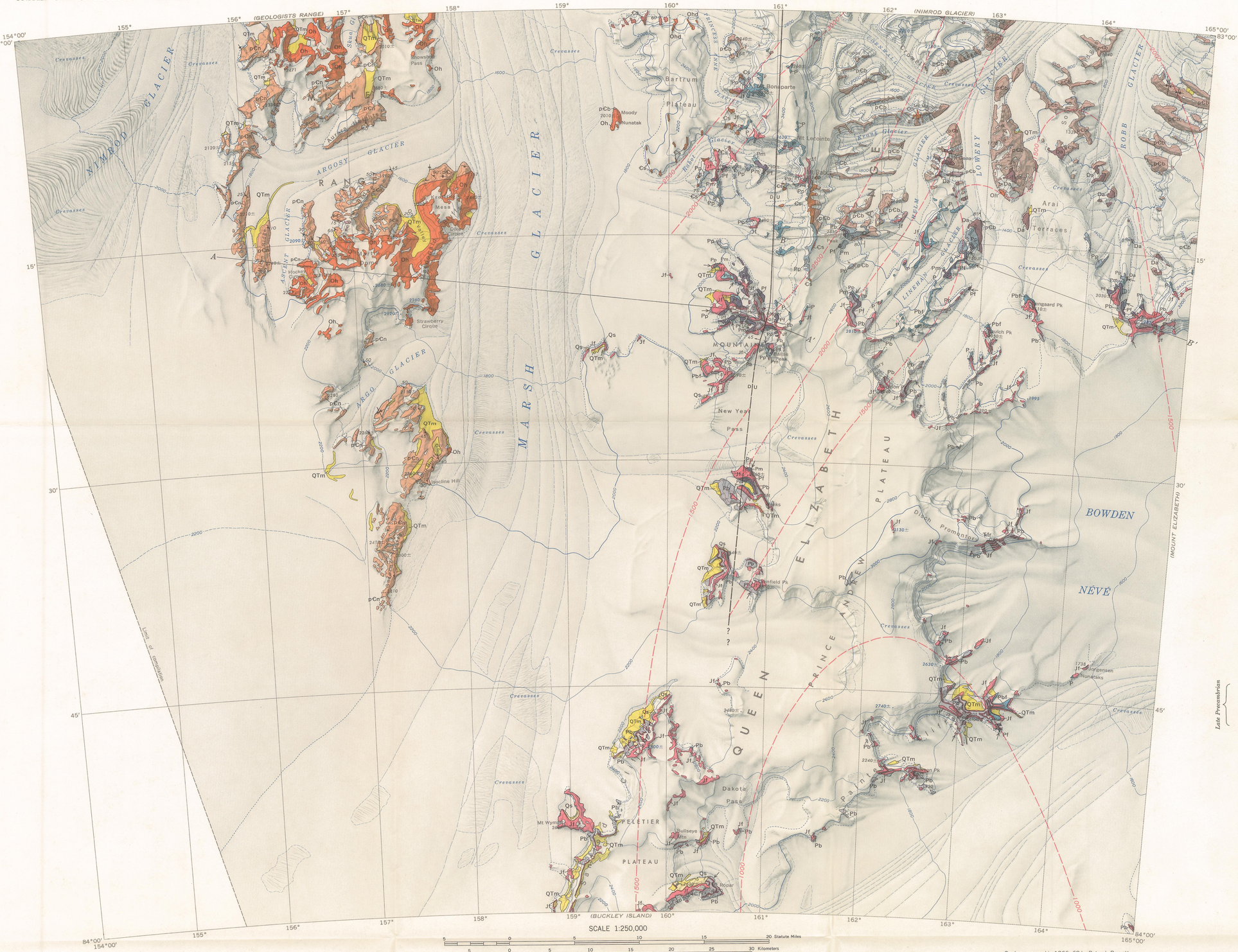
DEPARTMENT OF THE INTERIOR
UNITED STATES GEOLOGICAL SURVEY

PREPARED BY THE
INSTITUTE OF POLAR STUDIES, OHIO STATE UNIVERSITY
UNDER THE AUSPICES OF THE
NATIONAL SCIENCE FOUNDATION

U.S. ANTARCTIC RESEARCH PROGRAM
MOUNT RABOT QUADRANGLE
ANTARCTIC MAP NO. 1



Base from U.S. Geological Survey, 1966

Polar Stereographic Projection—Standard Parallel 80°14′
CONTOUR INTERVAL 200 METERS—DATUM IS MEAN SEA LEVEL

Geology mapped in 1966–68 by Peter J. Barrett, John Gunner, John F. Lindsay, Ralph J. Baillie, David H. Elliot, David Johnston, and D. Kenyon King

E X P L A N A T I O N

QUATERNARY

Qs — Scree

QTertiary(?) and Quaternary

QTm — Moraine

JURASSIC

Jf — Ferrar Dolerite
Tholeiitic diabase sills intruded into Permian and Triassic strata; rare dikes. Measured sills as thick as 150 m; thicker sills observed. May include rafts of sedimentary strata

TRIASSIC

Tfr — Fremouw Formation
Only lower part of formation present. Cyclic very light-colored quartzose sandstone and greenish-gray mudstone. Labyrinthodont jawbone fragment found at Graphite Peak in Plunket Point Quadrangle. About 100 m thick.

PERMIAN (Beacon Strata)

Pb — Buckley Formation
Cyclic light-colored sandstone, carbonaceous shale and high-rank high-ash coal. Lower contact is normally marked by the appearance of white rounded quartz pebbles or by a coarsening of the sandstone or both. Quartz pebbles occur at higher levels also. Sandstone is subarkosic to arkosic low in formation but volcanic fragments become abundant 100–200 m above base; volcanic sandstone dominates upper part. Logs, stems and glossopterid leaves common. Cross-bedding, erosion surfaces and shale fragments normally present in and near the base of sandstone units. Extensive laumontization in the volcanic sandstone. Thickness about 720 m

Pbf — Buckley and Fairchild Formations, undivided

Pf — Fairchild Formation
Light reddish-brown massive subarkosic to arkosic sandstone with well-developed crossbedding and parting lineation. A few dark shale stringers. Coalified stems and metaquartzite pebbles common in the Queen Elizabeth Range. Rare Gangamopteris. Thickness 150 to 220 m

P — Permian strata, undivided

Pm — Mackellar Formation
Light-gray and greenish-gray fine-grained thinly bedded subarkosic sandstone alternating with dark-gray to black finely laminated or thinly bedded shale. Ripple-drift crossbedding widespread; ripple marks and slump folds at many localities. Thickness 60 to 140 m

Pp — Pagoda Formation
Grayish-green sandy tillite with boulders up to 2 m across, interbedded with tan or white quartzose sandstone and minor conglomerate, limestone and shale. Locally basal tillite is very quartzose. Features on grooved surfaces beneath some tillite beds indicate paleo-ice flow to southeast. Crossbedding common in sandstone. Rare plant fragments. Thickness 125 to 295 m

DISCONFORMITY

DEVONIAN(?)

Da — Alexandra Formation
White to light-brown medium- to coarse-grained well-sorted quartzose sandstone with abundant crossbedding. Thin beds of black shale and gray fine-grained limestone in Holland Range. Formation pinches out to west. Thickness 0 to 240 m

NONCONFORMITY AND ANGULAR UNCONFORMITY

ORDOVICIAN

Oh — Hope Granite
Microcline-biotite granite (Oh) and quartz-diorite (Ohd), porphyritic to equigranular, unfoliated and of magmatic origin, intruding pre-Devonian rocks. Includes associated pegmatite and aplite dikes. K-Ar ages mainly Ordovician

CAMBRIAN

Cs — Shackleton Limestone
Gray, white, cream and black limestone and dolomite, with minor conglomerate, quartzite and shale. Tightly folded on north-south axes. Limestone metamorphosed to marble in Bartrum Plateau area. Overlies Beardmore Group unconformably in Nimrod Glacier area, where it contains Middle Cambrian Archeocyatha and is at least 8000 m thick

PRECAMBRIAN (Late Precambrian)

p€b — Beardmore Group
Interbedded graywacke, argillite and quartzite, mainly of the Goldie Formation, isoclinally folded and thermally metamorphosed to the albite-epidote hornfelsfacies. Total thickness unknown; at least 6500 m thick north of Nimrod Glacier

p€n — Nimrod Group
Mica schist, quartzite, biotite- and hornblende-bearing banded gneiss, microcline-augen gneiss, marble, amphibolite and subordinate calc-silicate schist. Intensely deformed and regionally metamorphosed to almandine-amphibolite facies (staurolite-almandine subfacies) in Precambrian time. Thickness at least 2500 m

SYMBOLS

Contact

Fault, showing dip
Dashed where displacement is due mainly to monocline.
U, *upthrown side;* D, *downthrown side*

Strike and dip of beds

Inclined — Vertical
Strike and dip of foliation

Syncline in foliation

Structure contour
Drawn on base of Beacon Strata. Contour interval 500 meters; datum is mean sea level

Base of measured stratigraphic section

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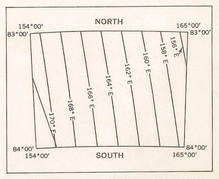
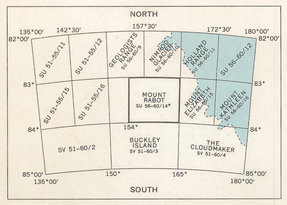
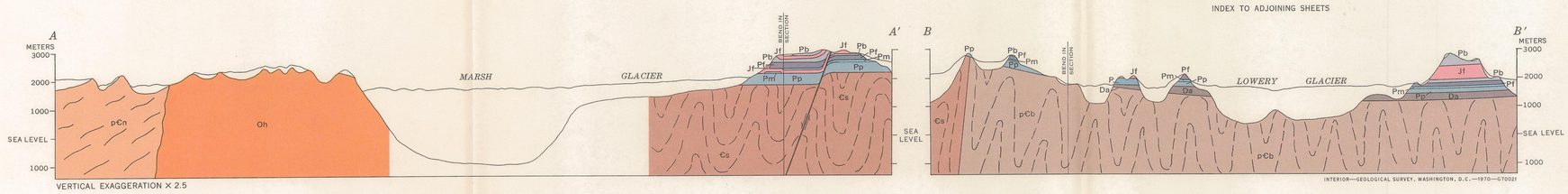


Compiled from U.S.N.O.O. Chart 1706 S, 1960
ISOGONIC LINE DIAGRAM



Sheet numbering system based on International Map of the World

INDEX TO ADJOINING SHEETS



VERTICAL EXAGGERATION × 2.5

INTERIOR—GEOLOGICAL SURVEY, WASHINGTON, D.C.—1970—G70021

RECONNAISSANCE GEOLOGIC MAP OF THE MOUNT RABOT QUADRANGLE, TRANSANTARCTIC MOUNTAINS, ANTARCTICA

By
Peter J. Barrett, John F. Lindsay, and John Gunner

1970

For sale by U.S. Geological Survey, price $1.00