<table>
<thead>
<tr>
<th>Page</th>
<th>Subject</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Samples JB 1 etc</td>
</tr>
<tr>
<td></td>
<td>locality 0-200</td>
</tr>
<tr>
<td></td>
<td>Reg No 6928</td>
</tr>
<tr>
<td></td>
<td>True North</td>
</tr>
<tr>
<td></td>
<td>All compass bearings adjusted for</td>
</tr>
<tr>
<td></td>
<td>70° Declination (west) 0-</td>
</tr>
<tr>
<td>2</td>
<td>Mousinho Rock</td>
</tr>
<tr>
<td>5</td>
<td>Miller Gillock 6</td>
</tr>
<tr>
<td>9 28</td>
<td>Haigh Mt</td>
</tr>
<tr>
<td>10 27</td>
<td>Pickering Mt</td>
</tr>
<tr>
<td>40</td>
<td>Mt. McCarthy</td>
</tr>
<tr>
<td>40</td>
<td>Radok Lake Area</td>
</tr>
</tbody>
</table>
PRINCE CHARLES MOUNTAINS
ANTARCTICA

1969 Survey
John Bain

Please return to:

Bureau of Mineral Resources
P.O. Box 378
Canberra City 2601
ACT.

Survey by approx. 140 m. at Camp at Pickering

001 Magnetite Foliation
80° 51/7.5°
Coarse banded up to 30 cm in places concordant elsewhere discordant with the general foliation.

The coarse granitic material is very kersocratic 95% rich. The granite host rock forms about 80% untoned. Sample JB1. It is garnetiferous 95 bi gneiss.

The rocks are coated with a polished layer of brown iron-rich material. In places the granitic fraction in particular has a yellow oxidation coating.

Also present in small cracks is a white powdery material Sample JB7 (For analysis).
Grain size varies from a fraction of a millimetre to 5-6 mm within the host rock - granite.
Jointing is pronounced. 020° giving angular blocky boulders and very fractured low bouldery outcrops. JB 2, 3 & 4.
There is much loose material and much of it has been sorted into 'stake' polygons approx 2-3 metres across but many up to 10-12 metres.
All rock material is reddish brown on the weathered surface.

In crest of Monzeinho Rocks:
- 50% of rock is coarse grained with foliation 85° S/075°.
- Thinly banded (1cm - 1mm)
- Highly fractured outcrops
- A well developed set of joints trend 015°-025°
Discordant lenses and veins of coarse leucocratic granite material with a pronounced granitic texture occur at several spots. These bodies vary from 1/2-1 metre across to several metres long to 2 large bodies about 4 x 3 1/2 m. near the summit. These bodies are clearly visible from some distance away.

Sample JB6 is of this body.
Sample JB5 is from 2 metres away in the host rock.

The granitic rock (leucoc) is roughly concordant but actually intersects the solution at its extremities.
West Side Gilrock Is
First rock south end giving
north
A sea of broken rock. Average
size 30-60 cm. Very angular.
Some boulders up to 2-3 metre.
Rock type: Garnetiferous Qtz
Biotite gneiss i.e. the host rock
of the pegmatite. Vol similar
to 001 but less of the leuco
fraction also the gneisses are
better developed and show
light folding.

Average rock: Jb 8
Other bands more leucoe others
more anapfi
Generally med. grain.
Foliation: v 85-89 1080-085
Small black brittle lichen (5-10 mm x 2-4 mm) is common on many rock substrates here - doesn't appear to favour particular sheltered spots.
Coarse garnet qtz felsic green forms bands, 10-100 cm thick, concordant with general foliation (085°). Garnets are up to 1 cm in diameter. Qtz forms up to 30% all rock type.

JB 8: Most common
JB 9: Part of type 8
JB 10: Common hence fract
JB 11:
JB 12: Slightly less common

Alt 1000 ft
003: Northern most of 2 prominent bluffs about midway along west side Gilrock Is.

003 X rocks
92 X bluff
140 X bluff
1004 X bluff
Sample 2 type lichen

003 Long hairy type yellow
Green short mossy type also present but not collected

Small black patchy type
And yellow moss

Black type most common
Rock type is very coarse grained Leucos granite grey
similar to Landing Bluff Blocky rounded boulders
result from pronounced jointing pattern
This bluff appears fairly homogenous in rock type
Sample JB 14 Rep 75.0%

Small angular pebbles from thick scree between large (2-3m)
boulders

Sample JB 15 from patch 3 x 3 metre
is much more Leuco and much finer grained. Relationships
observed.

JB 14 contains garnet and feldspars up to 3 cm long
004 Very similar to 003 but only type TB 14 present. Sample JB 16. Fresh for TS. Weathered rock brown.

005 JB 17 sample. Very similar to smooth end of Gilrock TS. Foliation 135° Vertical
006 More than 60% of rock
here is moraine.
Rock outcrops is thinly banded
granular gneiss, biotite 95 fels
gneiss - medium grained
Foliation dips South 70° 165'.
Sample JB18 of typical gneiss
from chopper.
Sample JB 18
apparently look from helicopter.
But Hugh NTK late [24/1]
revisited and resampled
in more detail. JB.
Pickering Nunatak 17-1-69

At campsite: Alt: 850 ft approx.

Samples

JB 19 lencio granite
JB 20 mafic gneiss
JB 21 granite (bi)
JB 22 mafic gneiss
JB 23 lencio granite
JB 24 mafic gneiss

50 meters east of

 Summit (survey peg) 140 ft above camp.
Rocks dip south approx 45-50°
Bands of granite (lencio) 2-3 m.
with host rock-migmatite
bands of gneiss 1-2-4 m.
Gneiss contains about 20-40% white and is thinly layered
Medium to fine grained with
Stringers of coarse/fine
grained granite (lencio) material
parallel to banding.

Mostly banding is parallel.
But in places there is much small scale folding (tectonic folds). The grain varies from mixtures of felsite and all gradations and combinations. Some coarse layers interspersed with the fine bands.

Bands of felsite, granite are mostly discontinuous but persist for up to 100m or so or as short as 20-30m. Small (20-30cm wide) bands of granite are only a few metres long.

The foliation & banding has a general strike, but the bands twist and them around.
Within these bands, the gneiss is often quite strongly folded. Photos (colour neg)

1 metre

Folds as above

Banding

Strike
Foliation
dip

12
Simpler for age determination taken from AD1, point 007 just near campsite.

TB 19 - leuco granite
TB 20 - mafic - bi gr. fels gneiss
TB 21 - mafic gr. bi leuco granite (White)
TB 22 - mafic bi gneiss
TB 23 - leuco granite - mafic gr.
TB 24 - mafic gneiss.
008 - Small rise in saddle
North of Survey pt. Summit
forms South eastern limb or spur.
Rise is about 150 ft below survey station.

Rocks in vicinity are:
50% Granitic < predom mafic varieties
      minor lense  "
50% coarse gr. lense granite.

The granite is to some extent
porphyritic containing very large
(5-7 cm) K-felsp crystals in
a 95% -felsp gm. which is also
coarse - l to medium grained.
Biotite is very minor, and forms
about ½-1% generally and up to 2-3%
Near the margins.
K-felsp is by far the major
constituent.
The granite forms bodies
~ 3 x 30 metres some smaller
Jew larger. They are
genernally lensoidal and
arranged slightly in echelon although some continue along strike for several hundred metres with only small breaks of 20-50 metres. These bodies, roughly parallel to the regional foliation 125-130°, but tend to intersect it at low angles regionally and high angles locally. Small xenoliths of mafic grains are common and correspond closely to the enclosing country rock, indicating local derivation. The granite forms rounded knobsly outcrops and commonly forms the high points of the ridges on Pilkernig. These ridges all roughly parallel the regional dip direction.
The mafic rocks are thinly banded, 1-2 mm layers, 0.5-2 cm layers.

biotite felspar gneiss. They are mostly fine-grained, and appear to have been folded about an axis roughly 125°-130°.

Age set samples:

JB25 Kuno granite 50 cm from edge

JB26 Kuno bi-fels 95 gneiss

South of 25

JB27 Melanocratic bi-py 95 fels gneiss

North of 25) Most common gneiss at this locality.

All samples from within 10 metre diameter circle. Some small veins in 273B contain garnet. The veins are felsp and much coarser go.
JB 28  Extreme mafic
  Variety contains pyroxene

009  150 metres west of 008

JB 29 sample of extreme mafic bi-py greiss green bands 15-20 cm

Proceeding to eastern end of northern ridge
As before with small pods and veins of biotite with felspar pegmatite
Greiss all rather mafic
Small garnet porphyro clast erratics and feldspar common
but no amphibole.
North East Col., Pickering, N.Y.

Rock type: predominantly garnetiferous biotite granite. Guess (c. 80%) with minor granite and pegmatite on South side.

The granite is very coarse with large pink crystals of K-feldspar.

Sample JB 301. There are very many varieties of this granite and no boulders are homogeneous. The granite is very homogenous and contains 1-2% biotite.

The garnet granite JB 31 is leucocratic, 95% rich in and contains whole 75% biotite flakes and randomly scattered garnets up to 1cm diameter. The rock is a greasy colour on the broken and weathered surfaces. It has a pronounced
gneissic texture a part, elsewhere it is granitic
in texture with a slight foliation evident. The
rock is quite heterogeneous
and biotite can found up to 60% of the rock in places.
 Mostly biotite is minor.

JB 32
JB 33
JB 34
JB 35

011 40 metres from Campside
001, survey beacon 20/1/69
One rounded erratic boulder of
bluish rich rock ?? or diorite.
Samples JB 36 This rock as
possibly an erratic from an
earlier glaciation as no other
similar boulders or erratic
were seen. However it
is only about 35 metres below the summit
of Picketing.
Alt. at Camp 800 ft  
21-1-69
at 1400 hrs.

At summit 2 m. north of survey beacon.
Banded migmatite gneiss: Bands of granitic material 2 mm to 3 cm.

Bands of mafic material 2 mm - 4 cm are layered medium grained 0.5-1 mm
biotite - 93% gneiss. The granitic bands are deficient in bi and contain a higher % of feldsp.

This migmatite gneiss appears very similar to the photo
of the Palmer migmatite in White's paper.

Small concentric folds and myrmatic folds occur in the gneiss.

Very coarse grained granitic bands 2 m wide, parallel with foliation and dip S 41°. 45'.
Breite selvages against the granite veins and bodies are not common here although well developed at other localities.

Breite (<1%) occurs as scattered clusters of flakes throughout the coarse granite.

Large (up to 10cm) crystals of pink or blue calcite perlitic are common in the body immediately north of the Survey Beacon.

Regional Foliation 45°/125°

Mineral foliation Strike 160° at 40°

(This may be altered somewhat by rotation of the fractured country by joint action but amount would be virtually insignificant in this case I think)

Plunge 40° at 160°.
South of Camp Sel____
Low Saddle

Common rock types: bi-porphyroblastic granite gneiss containing veins and bands of leuco granite or bi-grtite (0.5-5.0 cm wide)

Foliation:
The gr. gneiss, forms more than 70% of the rock.
Rubble of pink biotite bearing aplitic (gneiss) is present.

There is no coarse grained leuco granite as beam, in the northern ¼ of the Wkh

Up on to the southern most ridge
Through rocks as above + maphi gneiss similar to that at 009
Many minor pink split vein.
Southwest ridge is composed of dark, dense, coarse grained biotite granite. It is massive, weathering into rounded boulders. There appears to be an alignment of mafic minerals (mainly biotite) along 135°. The rock is dark grey in colour and forms the boulders at the southern end of the ridge. In place, it is cut by small aplite and pegmatite veins. It may be a granite, or pegmatite.

Age Data Samples:

- JB 37: Leuco bands associated with porphyroblastic granite (JB 41)
- JB 38: Leuco bands or veins in the mafic gneiss (JB 41)
See photo of these lense veins (1.5 - 1.5 meter wide)

JB 39 Veins and irregularly shaped pods within the aplite gneiss

JB 40 Aplite gneiss from edge of southern bluff

JB 41 Porphyroblastic granite gneiss - north of major gneiss - Forms bulk of rocks in saddle between Cams and S. bluff

JB 42 Very weathered but most common variety of major gneiss - May be weathered portion of JB 40

JB 43 Major gneiss - biotite-rich variety - biotite - bi + qz gneiss

JB 44 a) Red coating commonly on many rock faces, partic. on lense veins in deg. rock

{b) Olivine or epidote rock } north of S. Survey beacon
The samples J8 42 and J8 41 are the most common rock types in the Southern part of the NTH with many small aplite veins. At Kjebo bi pegmatite forms small veins or lirag shaped in most rock type J but was not collected.

J8 45. Pink bi aplite was collected further afield from 013 cluster # (37-44) (about 200-80 metres).
2 Rocks approx 8m S of Pickering 24/1/67

Northern most rock

014 large amount of till only. Mounds 10-20 metres high of rounded boulders of metamorphic (nothing new). All sizes up to 3-3 metres or so.

Southern most rock

Handmark is only a very deep melt lake with 3-4 metre cliffs of ice on eastern side. A small apparent to be 2 small rocks on longer not more than 1 metre square and inaccessible.

Many melt lakes, streams in this area.
Haigh Nth

015 (sec 150 006)

Rather leuco-graniticgneiss contain some garnetiferous sands. Overall biotite is ~10-20°.

Foliation near vent: ± 20° S 065°

(No. 165 as shown at 006)

This foliation is tightly folded on a small scale (80° 165°.

and cut by coarse granite almost pegmatitic bi-tie granite dykes ad veins up to 30 cm (average size 30 cm) there strike at various angles to the foliation. Commonly 180°.
Outcrops are massive rounded and covered with scattered rounded boulders and fine bence. The migmatite (gneiss) is similar to part of same at Pickering, but the overall nature of the Ntk is different. No concordant granite bodies, only intersecting late stage dykes.

Sample JB46 gneiss
Sample collected by previous collector taken from a mafic band and does not rep. the common rock type.

JB47 gm
JB48 gm
Mount McCartney 2447
016 Summit Station ~ 5625 ft.

Mostly dense granite gneiss (massive)
with thin bands of more foliated
gneiss. Shot gneiss ~ JB49
At the Survey peg there is a ten
(30cm) dyke

JB49 20 metres east of Summit
This rock type occurs as small
shattered fragments ~ no large
boulders

JB50 Summit 10cm from top (1800m)
at survey peg
Forms most of summit contours
and weathered to large rounded
tors and small rock shattered
boulders with a red stained
weather surface which is
in part polished and elsewhere
corroded and drilled out by
017 50 meters below Summit at top of drift on west ridge down to camp site. Outcrops of fresh garnet fels 9/3 griss. JB 51. Most of rock same as 016.

018 2/3 of way up slope from camp site to ridge leading to Summit (where snow drifts start (NW side)). Outcrops JB 52. With small 2cm pegmatite veins cutting rough foliation. Pegmatite JB 53, 54, 55. Contains gr. ? Tourmaline and some metal (unidentf) JB 55.
JB 52 - gr. - bi - ?fels - qtz gneiss
rather similar to gneissic granite or granite gneiss. Very poorly developed foliation - evident only on regional scale.

Rocks along the ridge (or spur) from summit to the camp are almost entirely as at the summit. In places gneiss, foliation more evident. Also some more biotite rich varieties

See Nat Map Terrestrial Photos
Mt McCarthy No 5 Nth End Base
No 8 Sth "
019 Prominent ridge of rock on slope west of camp (at edge of large snow slope)

JB 56 - greasy lence grai

or lence fels 95 grai

with v. minor bi - gut.

020 on eastern face of large peak immediately east of Wignal Peak.

Outcrop 20 x 50 metres of dark fine grained biotite 75%

Feb? Graite. JB 57

possibly cone of small alkalic regional evolution as before

The Mt. McCleanth rocks are almost entirely poorly to well foliated leucite 75 vs. leucite 95 with minor amounts of bi- and 95.

The leucite varieties tend to be far more massive and more poorly foliated than the major (bi-rich) types which occur mostly as small (10-15 cm) fragments in the scree. These dark cobbles form 1-10% of the scree in most instances, but their presence in the scree, although widespread, is not uniform — reflecting...
the underlying bands or pods of more mafic material in the Democratic green. Small areas of actual outcrop (e.g., 0.20) are easily visible on the hilltops from a distance but are not common and may only 5% or so at the most of the total rock outcrop. Foliation // the regional foliation is well developed in most cases.

No basic dykes were seen cutting across the regional foliation. Minor (2-3 cm wide) veins of pegmatitic material are fairly common in places. They have random orientation. No shear zones as reported by Crowe were observed although if parallel to the foliation, they would be hard to pick from that foliation.
022 2/3 of way to 0.23
picked up drifter of common
gmt 9/3 - Feb Green. JB 59
North western spur from Mt. McCarthy. Photos 18, 19, 20 view of western peaks of Mt. McC. Shows outcrop 667 Hb1. gnt - q'ty. gneiss / JB60. * Foliation / 70° N/100-105°*

JB61 - ? Charnockite? Float from higher along ridge. These boulders scattered amongst other types all over the place. Only small outcrop area.

JB62 - ? Calc silicate rock? From rubble over outcrop 20 mts. from JB60. It is little bedded with the Lewis sandstone greensand.
Along this spur below Pt 02B the spur turns north and about 40-50% of the overhanging rock is of the extremely mafic gneiss (VB 60). It forms small strongly foliated outcrops which cap small knobly rises along the spur.

Other rock types present are seric bi-gneist-qtz-fels gneiss, granite gneiss, new granite pegmatite veins which cut across the mafic gneiss at right angles and about 30-60 cm wide and contain flakes of biotite. These veins have disturbed the foliation in places.

The various rock types form bands at least 20-30 m wide.
JB 63  Orsite (?tourmaline)
JB 64  Lemo granite grains
JB 65  Grt-fels mafic grains coarse fraction
JB 66  Lemo granite grains
JB 67  Lemo pegmatite.

All specimens from unit 30-40 mtha radius
024. 150-200 metres down the spur. Outermost of granulite - (hornblende - fels) granulite text.

JB 68. Grt. g.t. gneiss

JB 69. Granulite. g.t. gneiss (50 cm³ above 68)

JB 70. Granulite (1.5 m. above 69)

JB 71. Granulite

JB 72. Coarse gr. granulite or hornblende

Granulite is about 5 metre thick. All rocks have surface striking 120° dipping NE 25-30°

Granite gneis underly granulite. Strike 65° dip 25° NE

39
TB73  69230064
TB79  69250070
TB77  69250068
025  JB 73  Prodon rock type is fine-grained pink granite or granitic gneiss called the aplite. It is not homogenous and contains coarse feldspar (JB 74) and narrow bands of biotite make mafic gneiss (JB 75) parallel to the regional strike. Joints which cut the bands are NNW grains to the south of (down glacier). This pink granite forms the rocks on both sides of the mouth of the glacier.

026  JB 76  Most common bi-type 9:2 fels.
JB 77  Mafic biqte fels gneiss
JB 78  Gnei. 9:3 fels gneiss

Very similar to Fifteen.
PB 79  - 9:2 fels gneiss
There are banded gneisses of pre-Emu. (Gntx(bi))

qtz-fels gneiss.

Bandings of 2 types:

a) micro — Alternating light

and dark colored gneisses

about 2-10 meter bands

b) macro — Banding of from

10 mm to 2 cm in the

Darker gneisses. This grades

into foliation (or alignment)

of the qtz in the leuco gneiss

In places bi defined the

Foliation.

Some of the qtz-fels gneiss

appears very similar to

funic or graphic granite

with the alignment of the

qtz crystals.
South end of Radioback 2

about 53 feet above

area of sediment 5 m

silt of clay-clay 2-3 m

thick the Permian Bed

call tapper to the west (meta-
morphics side)

It is

mostly fine grained (J380)

with coarser variclab

and some porphyritic mafic (J381)

Alex has collected from here

so get specimens

Slope between outcrops of

metamorphics and sediment

appear to be meta sence

(overlying meta outcrops)

mixed with moraine / Visual

extent of tests may be

unconfirmable on metamorphics.

basement
028  Amanda Hooker
SP4 Survey camp before more
Banded gnt. 9½ ft. grass
With major faults and
Numerous 9½ blows
Samples  JB 82
     83
     84
     85
     86

82-85 may be suitable for age
determination

Outcrops are cut by numerous
Small faults (random orient)
Which have pulled the regional
foliation ground tightly

Regional fol~  135° true
but varies greatly

13-2-69
Filla Island 14-2-69
Rauer Group

Victinity of Survey Station

Banded quartzes are garnetiferous felsitic rocks with large areas 20-30 m wide of massive unfoliated grains with interbeds of more mafic grains. Garnet-biotite, garnet-felsite, and pink felsite pegmatite. (all only a metre or so across)

78. Pink pegmatite vein
88. Lense of felsite-garnetite
89. Biotite garnetite
90. Biotite garnetite
91. Garnet biotite felsite
92. Biotite garnetite
93. Biotite garnetite
030 Complete in small saddle chest of survey pt.

TB 94 Lance 9t2 fel gneiss
95 Gnt bi 9t2 gneiss
96 Malic gneiss (P& - Feb)
97 Lance 9t5 fel gneiss
98 Pink peg. vein
99 Bi gnt gneiss
100 Bi 9t5 fel gneiss (gnt)
101 Bi 9t2 fel gneiss (gnt)
102 Bi 9t5 fel gneiss (gnt)
King. Nothing is wrong.

031
Sight: 1940 ft.
Distance: 940 ft.
Grain: 41/2 in.

032
Isi west and dry. 350.
Fine ground. 81 - jet. 93 grains.
Very small. Estimated weight: 8.1 pounds.
Small (1 - 1.5 cm wide x 1 - 4 m long).
Breaks: White green (bi-pigment).
General habit: Stick. 130° true
with general steep southwesterly.

033
Sight: 41/2 in.
035

At base of most easterly gap
on small hill between station
huts & radar dome - about 15metres
beneath the sea from radar tone
in 3m wide shallow pool.

JB 106 - Or rather Camp 4
for pelagomag.

JB 107

Hello

Bearings true north
70° declination adjustment.

JB 108 - Sample guess (approx.

Dr. 27° do 167. 4 metres from
sample JB 107.
20 metres, up slope from beach towards radar dome.

No acoustic activity.

JB 109 Green, bright green, for age.

20.2.67

JB 110 R, 9½' felt ground.

In vicinity I felt a strong 7 Davis to Act.

Meter edge, JB 111: 8 bright green

JB 112

110½ & 111½ separated by about 50 metres.
Glossopteris Gully 6-2-69

First trip from Camp ascending Gully to 550m. Succession of upwads is

1) Mud coarse well washed

2) Quartz 550 (occas. bi flakes same thin bands) cross

bedding. Very mixed not constant angle - varying current intensity and directed.

Thickness > 5m.

2) Coal (4m) rather fissile bedded Coal Seam

Sharp contacts top and bottom.

3) Light grey shale and silty

shale (5m) with thin

interbeds 1-2 cm of fine sand.

(cross bedded) contains

abundant plant remains.
4) Coarse bi-beating gravel 55 ft, (1-1.2 m) marks an erosive surface cross bedding.

5) 1.5 m grey shale as below; (i.e., Seq.) cross bedding on very small scale marked by limonite coating on surface.

6) 3+ m silt as before with current bedding and lenses and ripples of thinly bituminous layers coarse to medium gravel, up into thin interbeds of silty to fine silt and shale.
David Triacasa (Restaurant)

Recommended by tudi Dart
Antarctic Field Equipment
Improvements to

1) Light waterproof jacket
2) Foam rubber/plastic mat
3) Sponge type door mat
4) Glove harness
5) UV lamp & lanolin
6) Broad brimmed hat
7) Gas stoves (Blue)
8) Other working tools e.g. climbing boots
9) Trapezi gear packed complete for each party
10) A1 foil for field parties
Items for NG.

1. Canteen- Saucepan Set.
2. Meta tabs
3. Swallow-Heads Slices
4. AI Oil
5. Army Watch - sealed Omega type

$7 cost to Army.