

329001

LYELL E.Z. EXPLORATIONS

STRUCTURE OF
SOUTH WEST TASMANIA

60-319

STRUCTURE OF SOUTH WEST
TASMANIA.

AMG REFERENCE POINTS ADDED

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60-319

AMG

LYELL - E.Z. - EXPLORATIONS

329002

7th June,

195^{x60}

To: Mr. G.F. Hudspeth

Structure of South West Tasmania

Attached is the last contribution which Lyell-E.Z. Explorations was asked to make to the projected book on Tasmanian Geology by the Geological Society of Australasia. It is a summary of the much larger manuscript "Structural Geology of Western Tasmania"



Chief Geologist, L.E.E.

329003

7th June, 195⁶⁰Structure of South West Tasmania

The broad regional structural geology of the area is detailed by Carey (1953, p.1108) and Banks (1956) who show that the major structures produced by the Tyennan Orogeny in the late Cambrian were a series of major anticlinoria and synclinoria. Banks (1956) extends the centrally placed Zeehan-Melrose Synclinorium from the Huskisson River in the north through Zeehan to Macquarie Harbour and the present work allows its extension southwards to Elliott Bay. This synclinorium, which had been the site of the main trough of Dundas sedimentation, was divided on its eastern side by the meridional trending Porphyroid Anticlinorium. Flanking the Synclinorium were two meridional or N.N.W. trending structures, on the east the Tyennan Geanticline and on the west the Heemskirk Anticlinorium (?). However, it is apparent that the Precambrian rocks which these two structural highs at present expose do not always parallel this regional trend. The Tabberabberan Orogeny marked the final phase of folding; it folded the great thickness of the sediments of the Junee and Eldon Groups which had been deposited since the Tyennan as well as the older sediments; within or near the Tyennan Geanticline the major fold directions usually follow the earlier Tyennan meridional trend, although some folds trend north-west. This influence is particularly noticeable in the Queenstown-Macquarie Harbour area where the West Coast Range Anticlinorium follows the meridional trend and approximate position of the earlier Porphyroid Anticlinorium. Further to the west in the main trough of sedimentary deposition the major folds trend north west (Carey, 1953). These folds are evident as the Zeehan-Magnet and Huskisson Synclinoria which preserve the sediments of the Junee and Eldon Groups in the Zeehan and Huskisson River areas. South of Macquarie Harbour there is no visible counterpart of this stratigraphical preservation but structurally it is considered reasonable to assume that the large north-west folds which occur in the Dundas Group between the Harbour and Pt. Hibbs (the Modder Synclinorium¹) can be structurally equated with the Zeehan and Huskisson fold structure. South of Modder Synclinorium the bedding in the Dundas Group

1. Named after River Modder.

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has a meridional trend with steep or vertical dips. The major north-south structures appear as the West Coast Range Anticlinorium, then eastwards towards the Tyennan Geanticline, the King-Sophia Synclinorium, the Elliott Anticline¹, and the Franklin-Hardwood Synclinorium². Approximately 8 to 10 miles east of the Franklin River there is evidence which indicates another major north-west - south-east trending syncline containing Palaeozoic rocks in the Lodden River-Warne's Lookout area; this structure is provisionally named the Lodden Syncline³. The West Coast Range Anticlinorium had been traced to Farm Cove by Carey (1953) and its limits can now be extended further southwards to Mt. Osmond, 7 miles north of Elliott Bay.

Influencing these meridional fold structures are at least three east-west major fault systems: these are from north to south the Linda Disturbance (Bradley, 1954, p.193), the Eagle Creek Disturbance⁴ and the Moore's Valley Disturbance⁵. This influence is particularly noticeable in the West Coast Range Anticlinorium where the type and plunge of the folding changes across these structures. An example of the large scale variation in type of folding can be seen from the Moore's Valley Disturbance where south of the Disturbance the folds are broad, open, slightly asymmetrical structures with an absence of overturning or thrust faults. However, north of this feature the folds are decidedly asymmetrical with an overturned or vertical east limb which is associated with a probable thrust fault. The Eagle Creek Disturbance coincides with a regional change in plunge of the West Coast Range Anticlinorium; south of it the plunge is either horizontal or to the north but north of it it is either horizontal or to the south.

The Tabberabberan Orogeny marked the final phase of folding, but vertical movement continued in the major faults associated with the West Coast Range Anticlinorium and those further to the west, as now shown by the vertical displacement and preservation of the Permian sediments at Pt. Hibbs and the Upper Cainozoic sediments at Macquarie Harbour and Moore's Valley. Fault movement during and after the deposition of these latter sediments (probably post Pliocene) is indicated by studies in the D'Aguiar Range area.

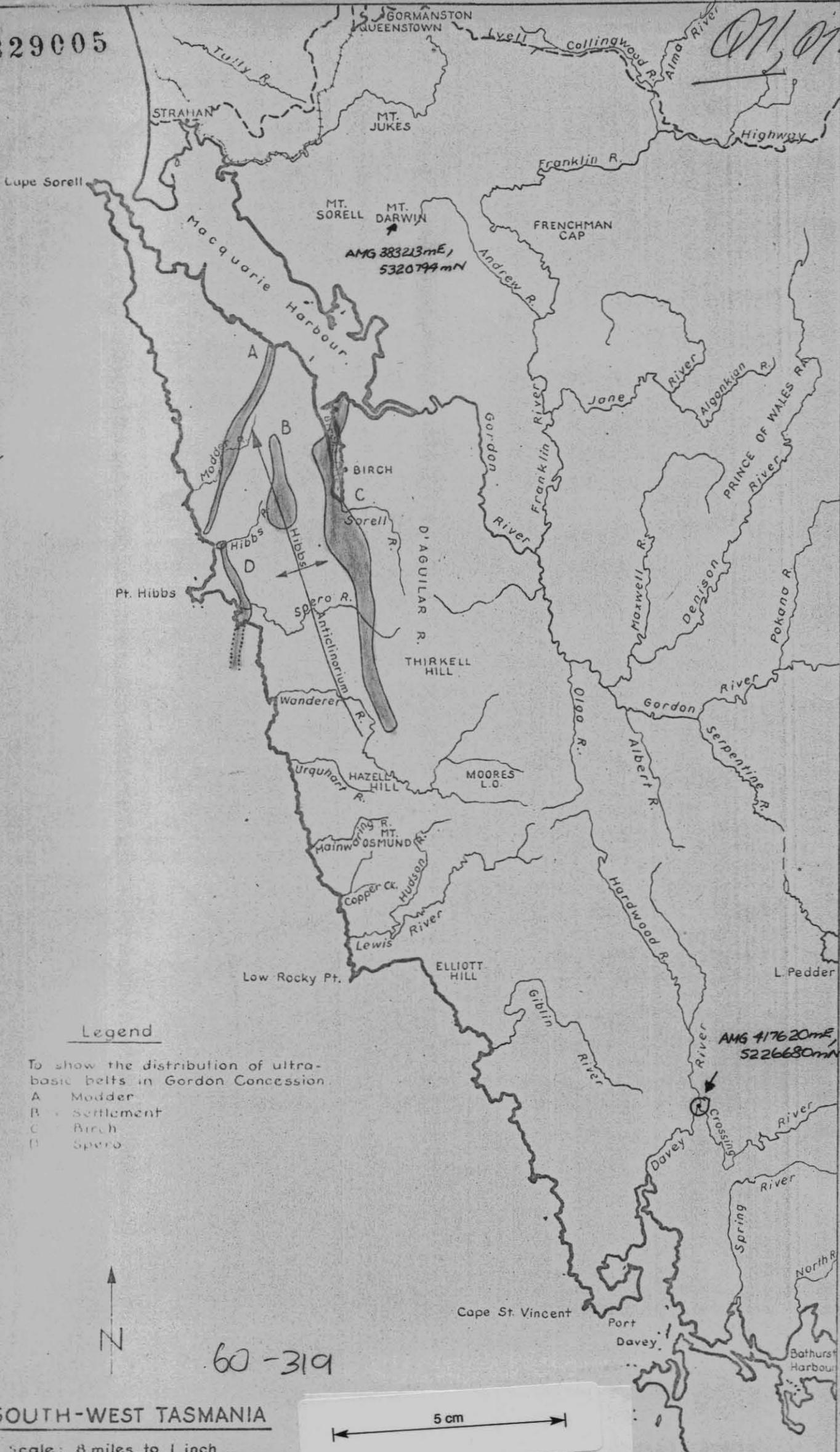
Chief Geologist, L.E.E.

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1. Named after the Elliott Range.
 2. Named after Franklin and Hardwood Rivers.
 3. Named after Lodden River.
 4. Named after Eagle Creek, an east bank tributary of the Gordon river approximately 8 miles from its mouth.
 5. Named after Moore's Valley (T.B. Moore an early explorer of the period 1880-1910)

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329005

Q11, Q12



Legend

To show the distribution of ultra-basic belts in Gordon Concession.

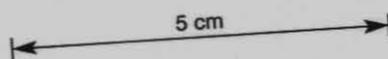
- A Modder
- B settlement
- C Birch
- D Spero



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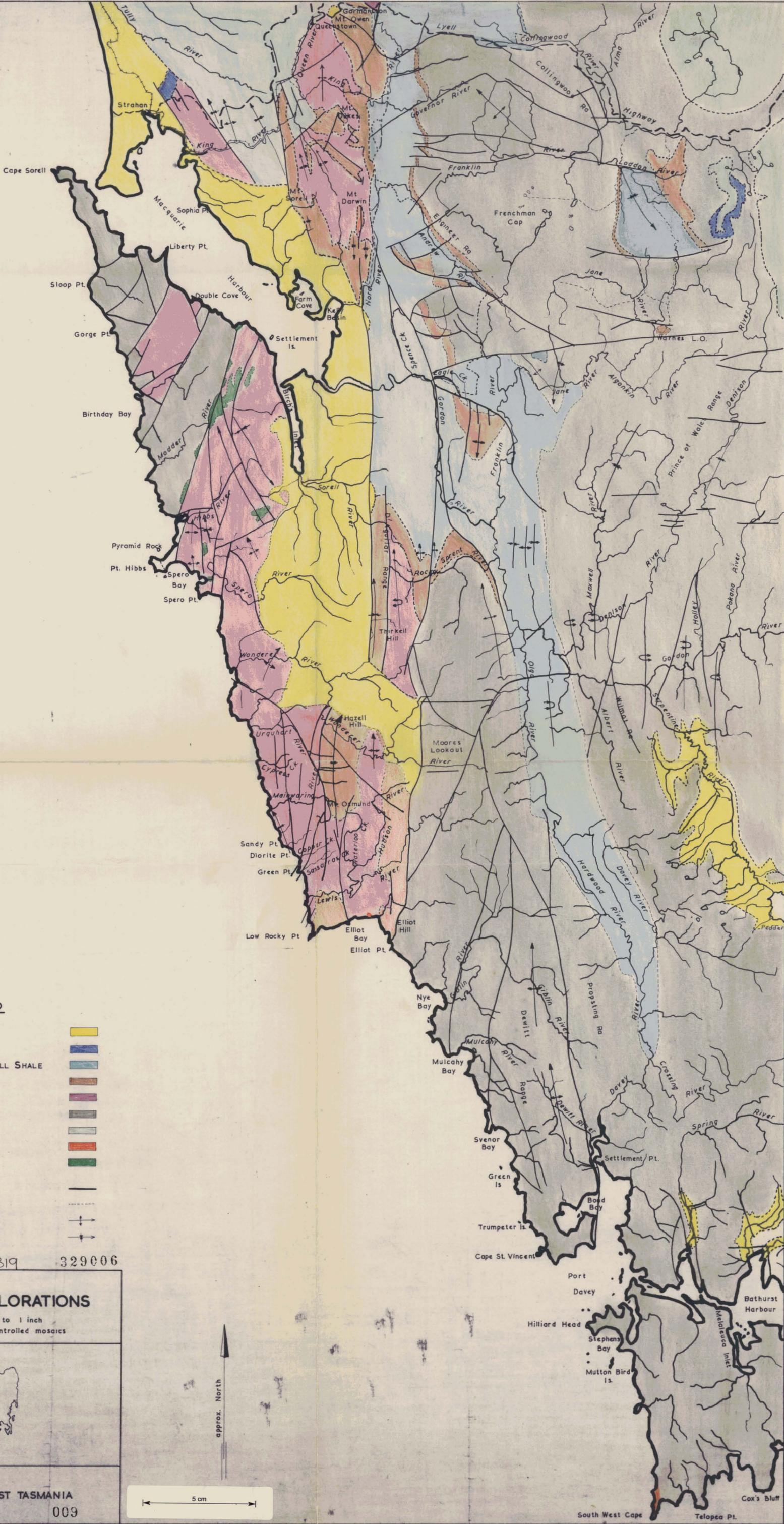
SOUTH-WEST TASMANIA

Scale: 8 miles to 1 inch



AMG REFERENCE POINTS ADDED

N.A.C. Nov. 1958



LEGEND

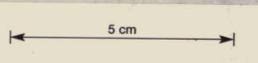
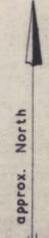
- TERTIARY & RECENT
- PERMIAN
- CAROLINE CK. BEDS TO BELL SHALE
- OWEN CONGLOMERATE
- DUNDAS GROUP
- PRECAMBRIAN
- DOLERITE JURASSIC
- GRANITE
- SERPENTINITE

- FAULTS
- BOUNDARIES
- ANTICLINES ↑
↓
- SYNCLINES ↓
↑

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LYELL E.Z. EXPLORATIONS

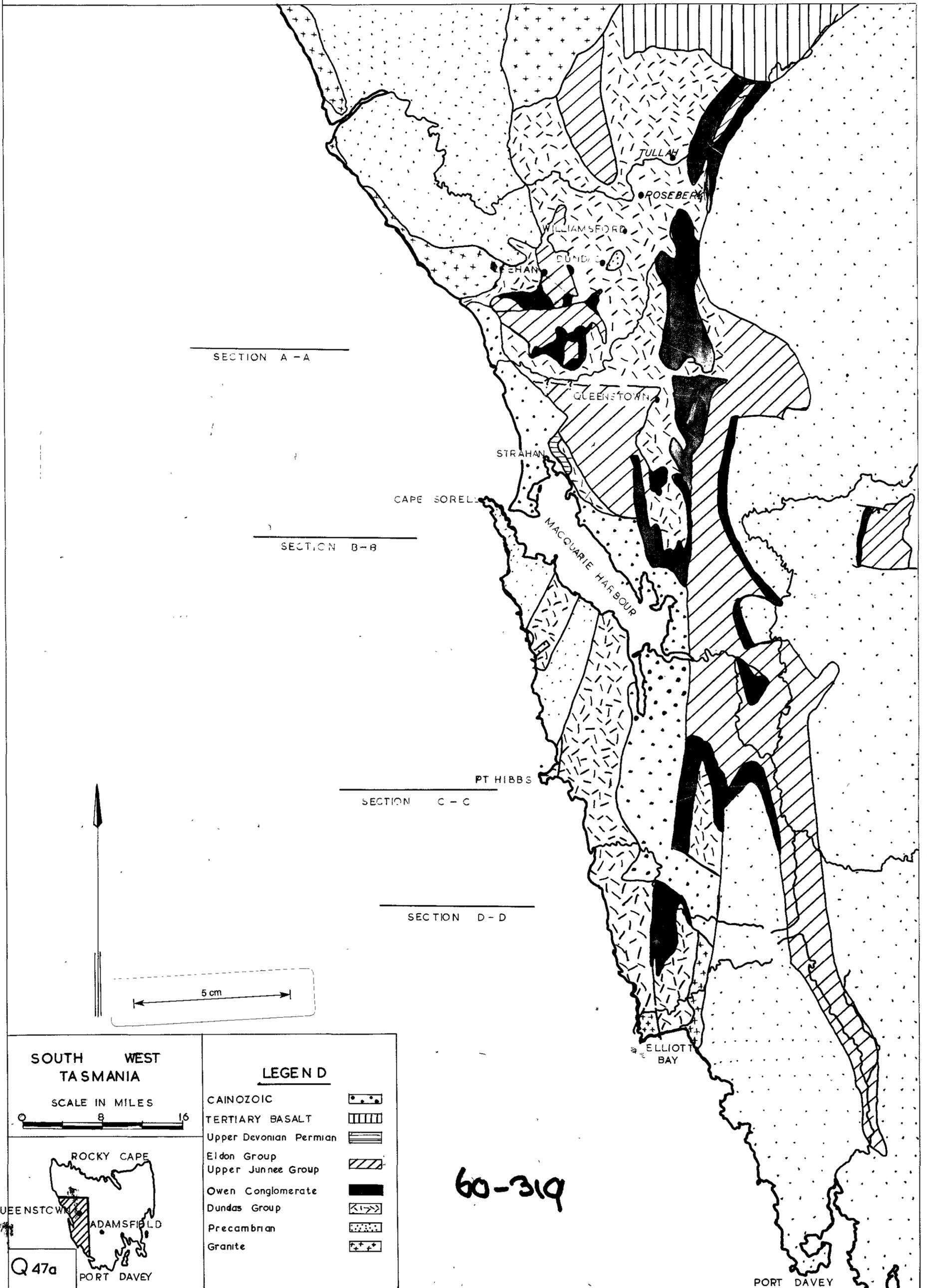
Scale: 4 miles to 1 inch
Compiled from uncontrolled mosaics



R6b

SOUTH-WEST TASMANIA
009

South West Cape Telopea Pt.



60-319

SOUTH

NORTH

SECTION D-D'

SECTION C-C'

SECTION B-B'

SECTION A-A'

ELLIOT BAY

MT OSMUND

MOORES VALLEY

D'AGUILAR R A

GORDON RIVER

MT DARWIN

MT. JUKES

MT. OWEN

MT LYELL

MT. SEDGEWICK

MT. TYNDELL

MT. MURCHISON



LEGEND

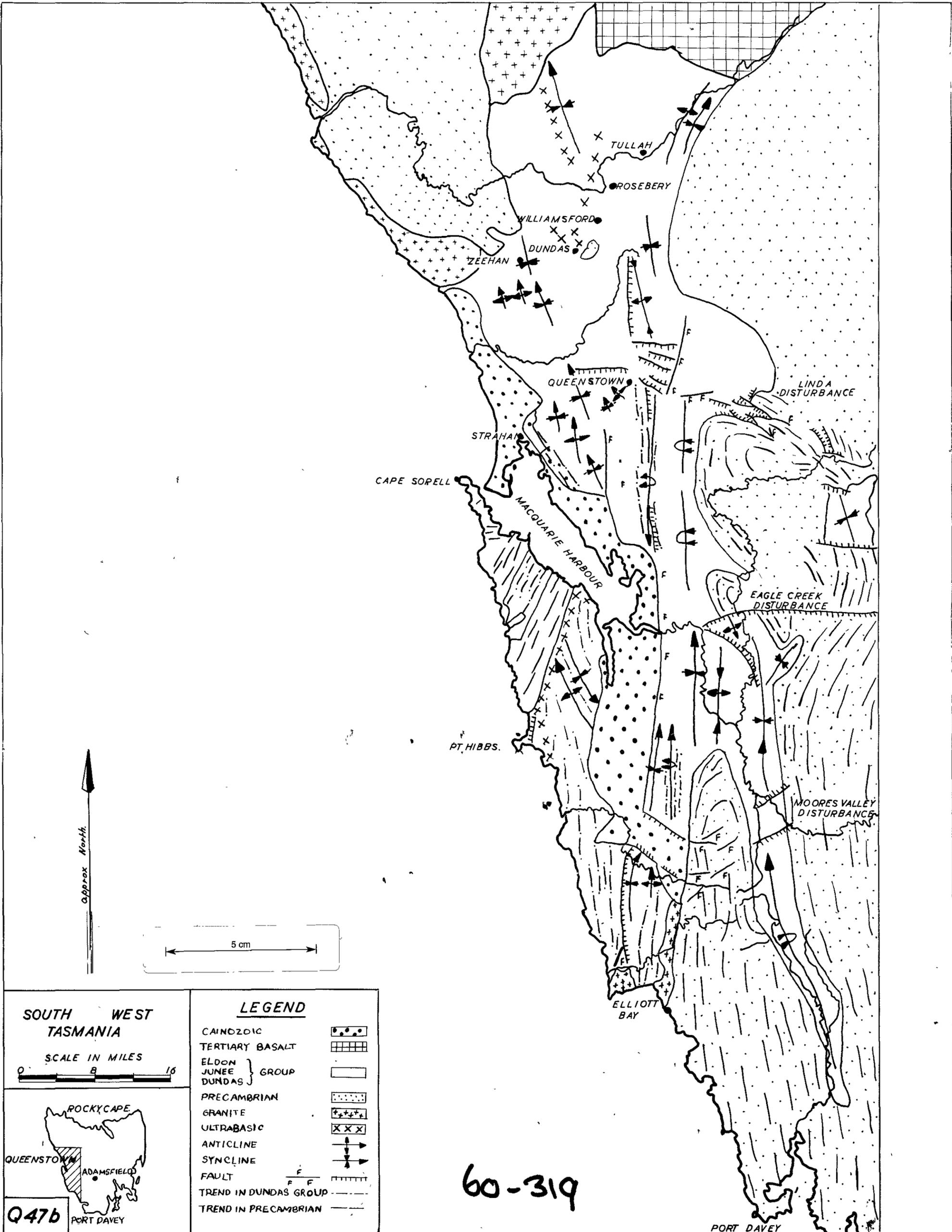
- CAINOZOIC
- ELDON GROUP UPPER JUNEE GROUP
- OWEN CONGLOMERATE
- DJINDAS GROUP

EZ CO WCD Geol Dept S 139 Lee N9 108

P 108.

006

329008

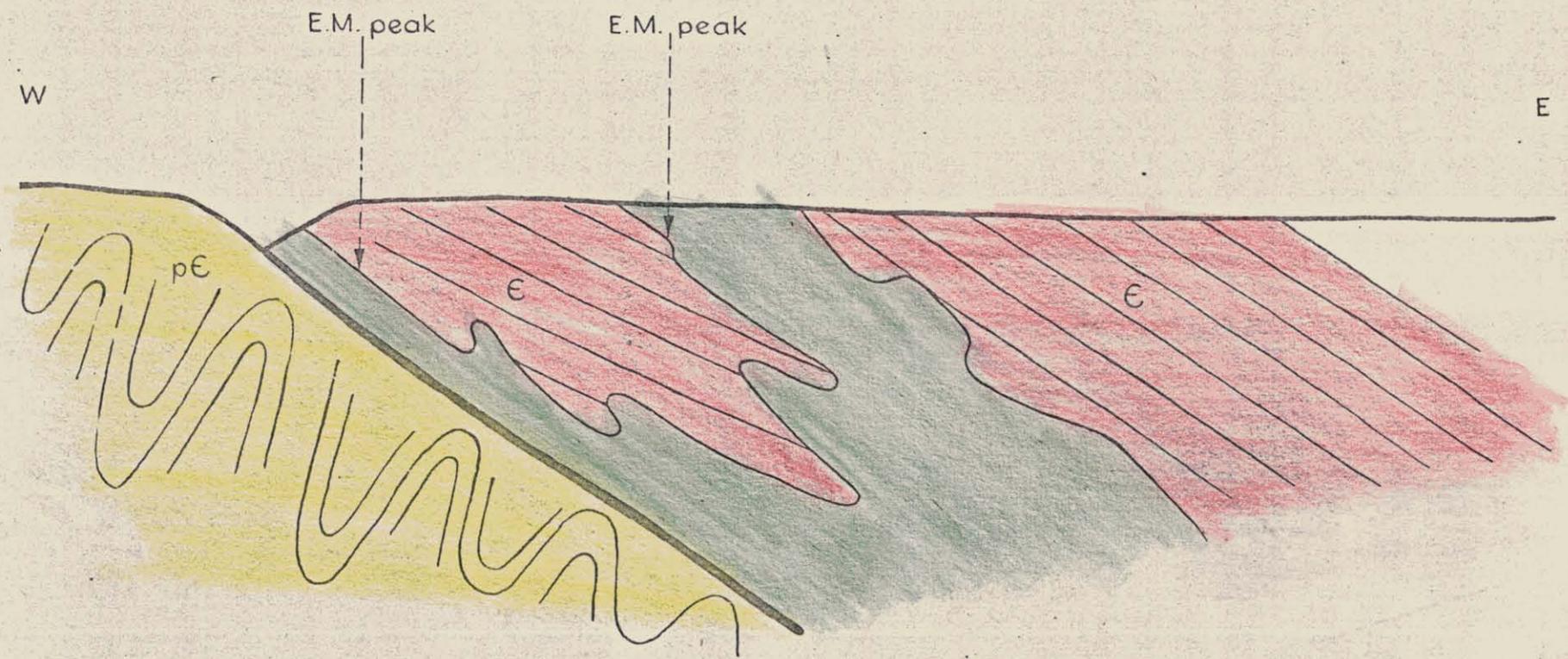


E.Z.Co. W.C.D. Ged. Dept S 137 Lee N°Q47b

329010

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Diagrammatic section
showing suggested position of conductors



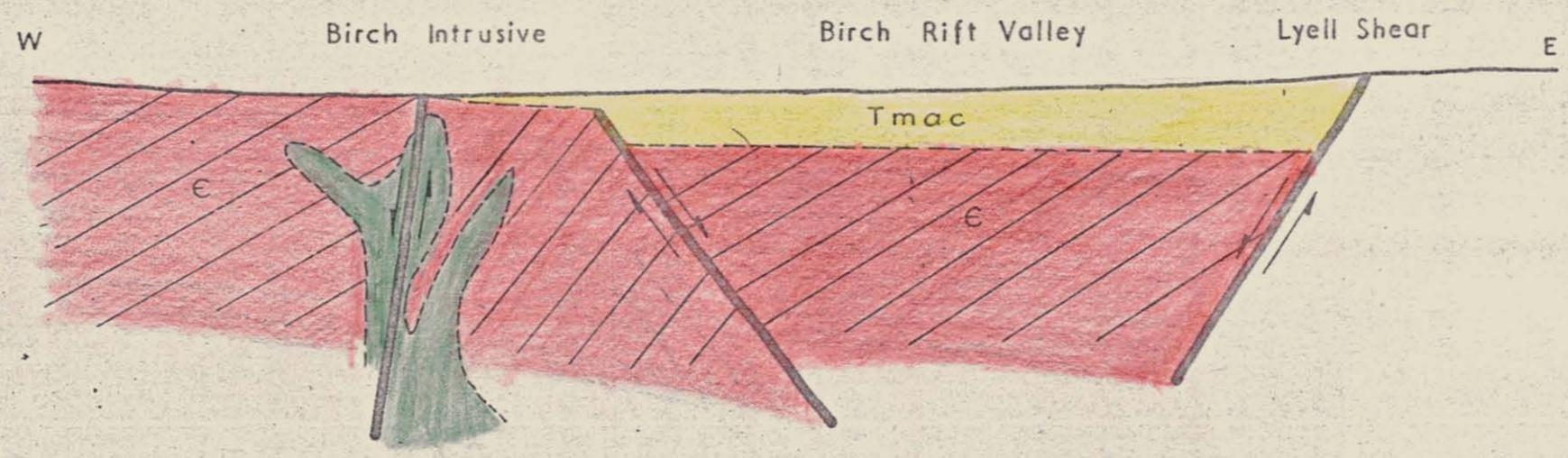
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M. A-C. Nov. 1958

Diagrammatic section of Birch Rift Valley
to show relationship of ultrabasic intrusions to
faulting on the western margin of rift.



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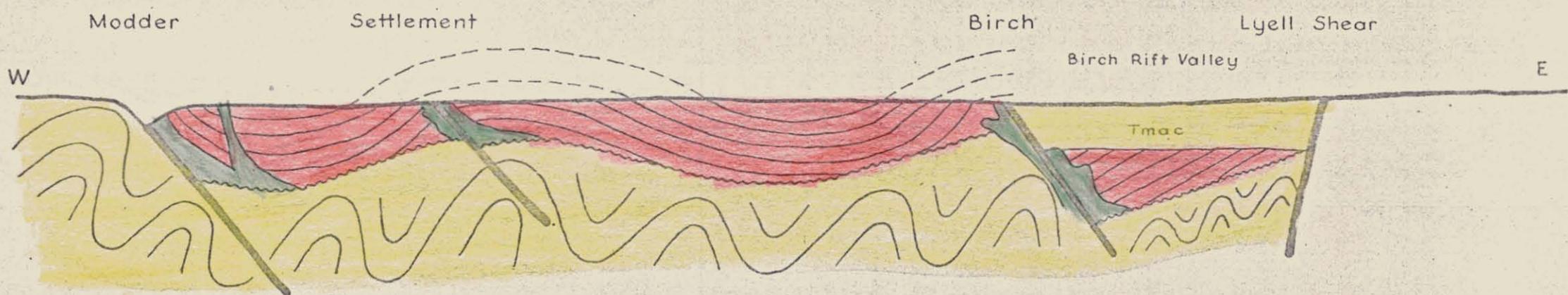
NOT TO SCALE

329012

M.A-C. Nov. 1958

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Diagrammatic section
to illustrate the intrusion of the ultrabasics

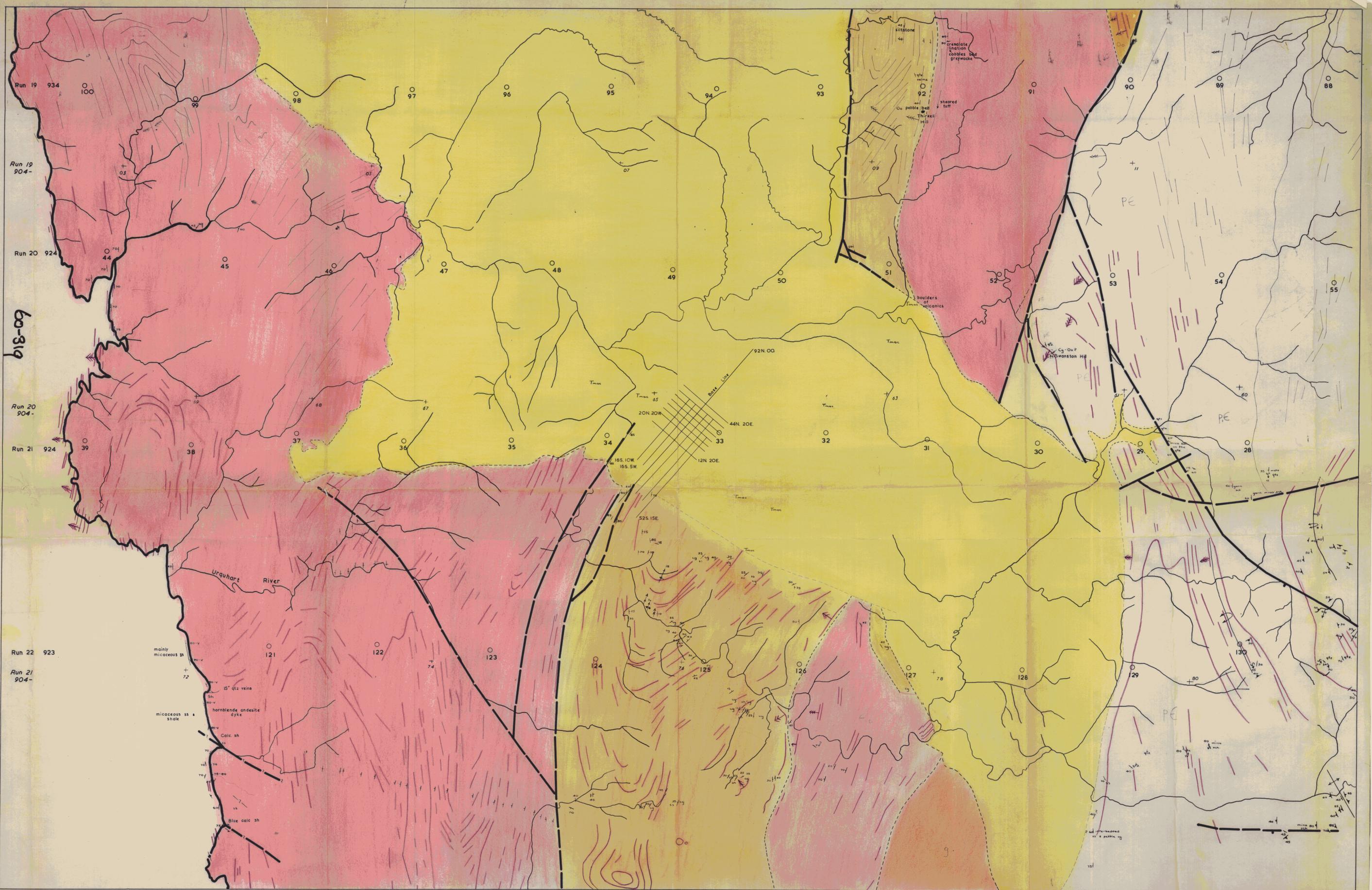


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M.A.C. Nov. 1958

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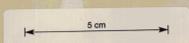
Run 19 934
 Run 19 904-
 Run 20 924
 Run 20 904-
 Run 21 924
 Run 22 923
 Run 21 904-

010

MOSAIC UNCONTROLLED

LYELL-E2-EXPLORATIONS
Queenstown

Scale: approx 34 Chains to 1 Inch



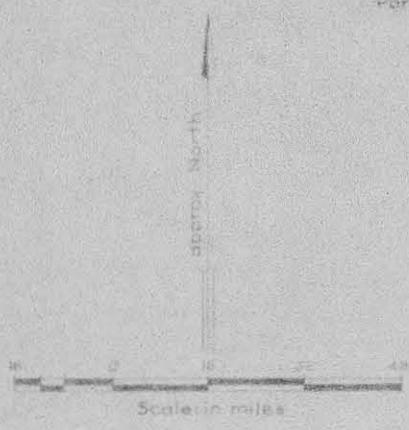
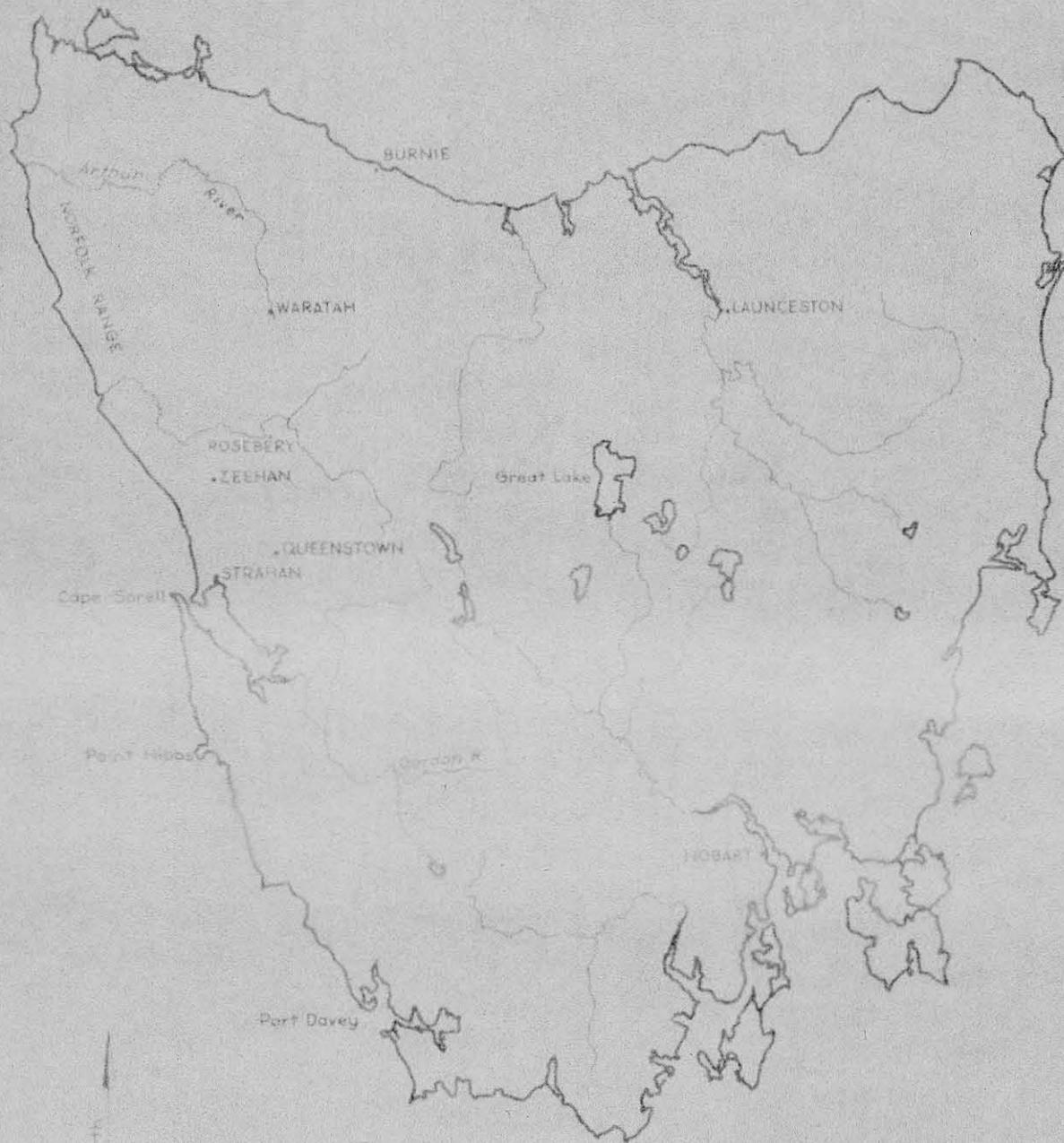
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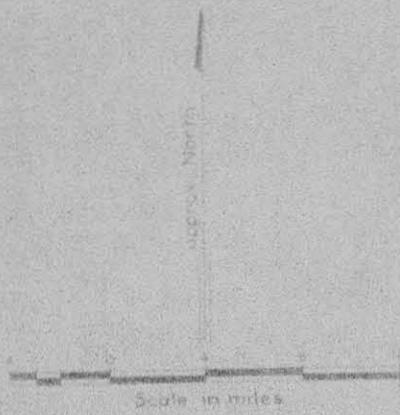
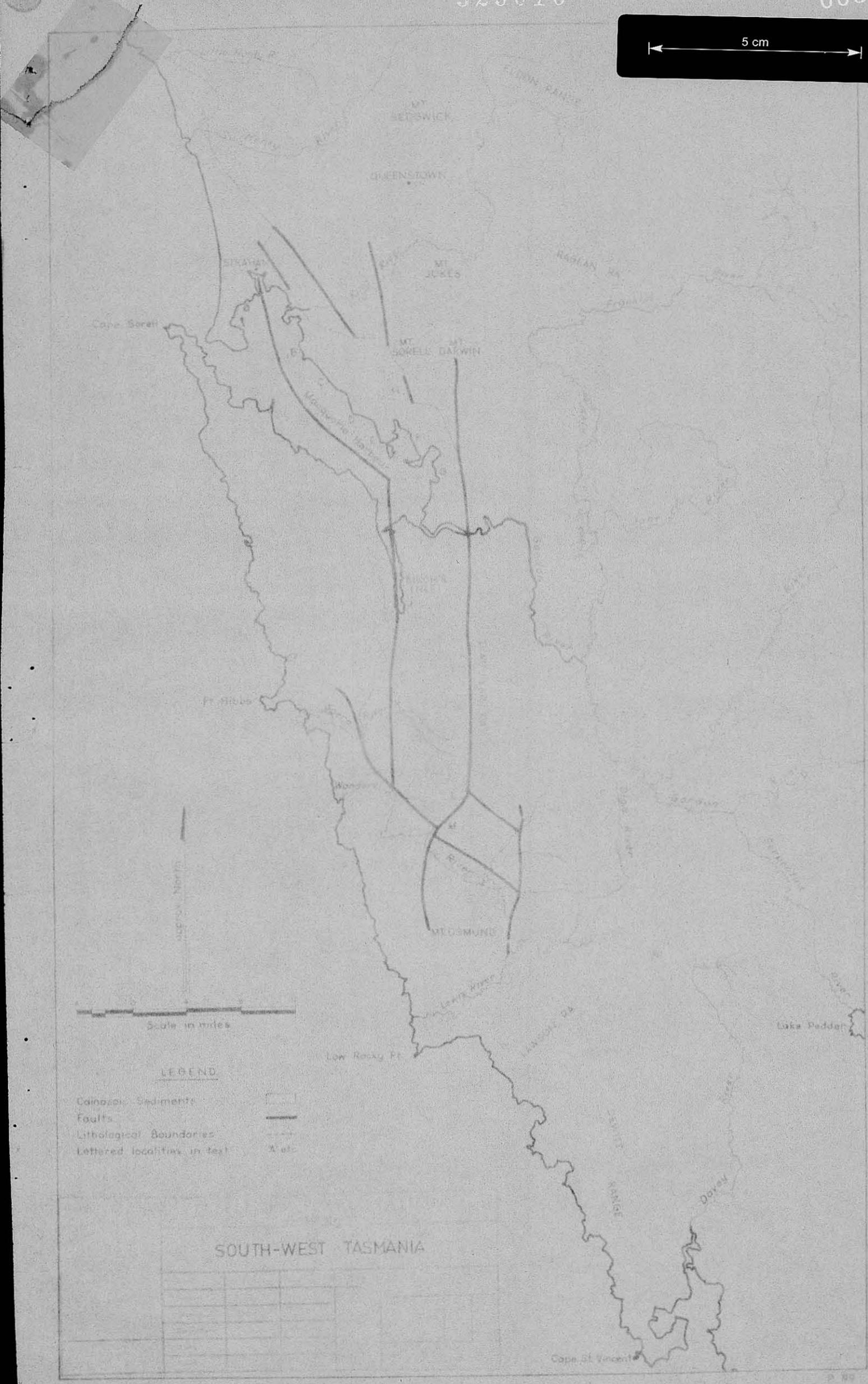
17	18
1c	2c
4c	8c

T 1c

329014

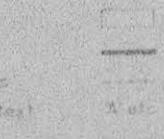
TASMANIA





LEGEND

- Cambrian Sediments
- Faults
- Lithological Boundaries
- Lettered localities in text

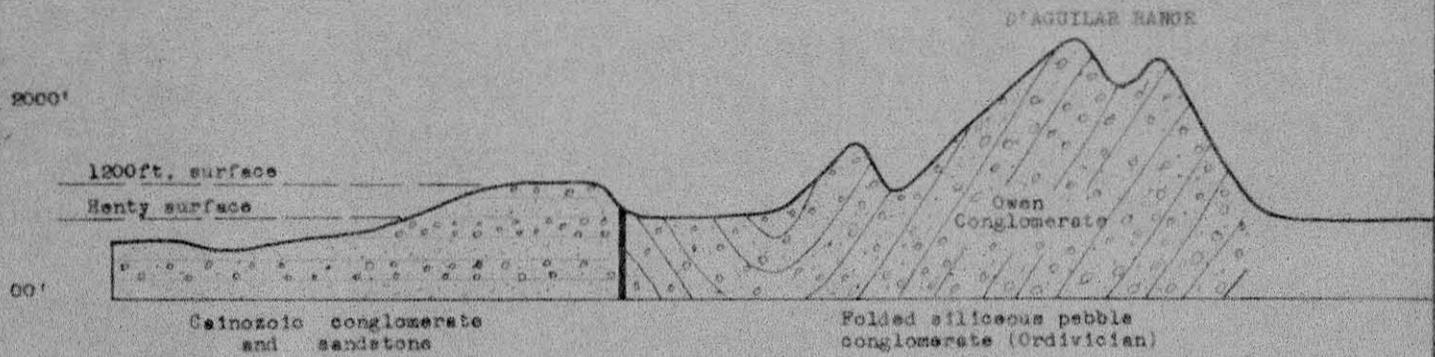


SOUTH-WEST TASMANIA

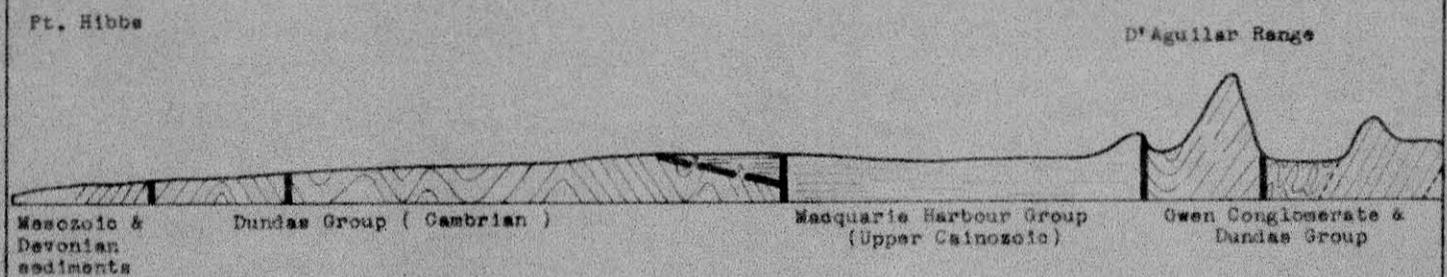
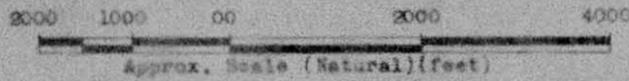


FIG. 3

DIAGRAMATIC SECTIONS
SHOWING RELATIONSHIP OF SURFACES
TO STRUCTURE AND LITHOLOGY



Section through locality '1' on fig. 2
Looking North



Section Pt. Hibbs — locality '1' on fig. 2

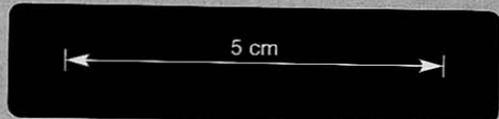
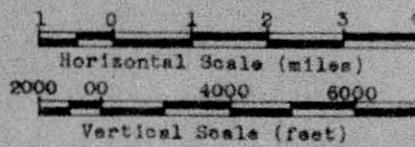
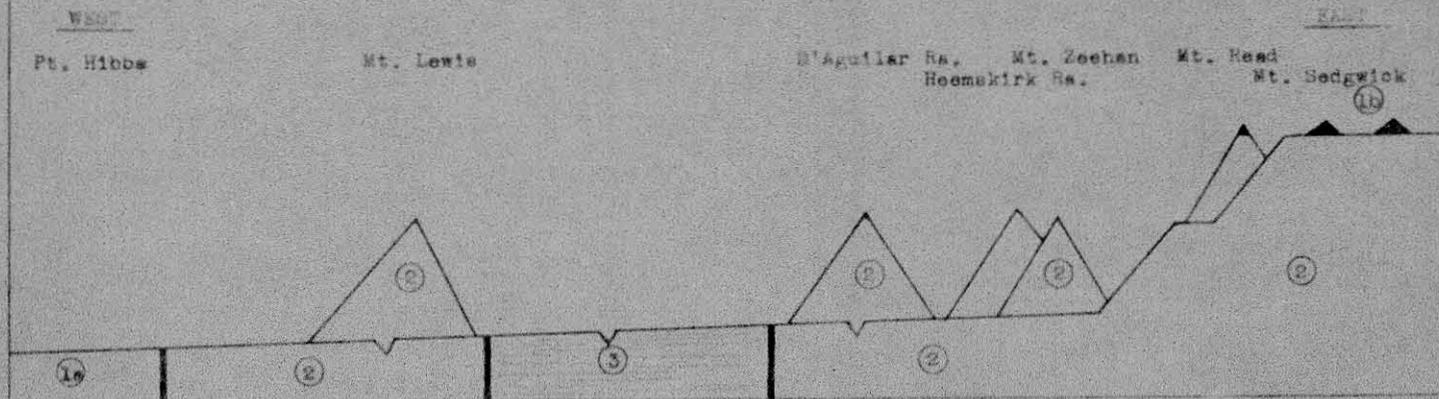


FIG 4

DIAGRAMATIC RELATIONSHIP OF THREE EROSION SURFACES



- ①a Devonian, Permian sediments, Lower Jurassic(?) dolerite.
- ①b Permian, Lower Jurassic(?) dolerite.
- ② Dundas Group to Bell Shale (Cambrian to Lower Devonian)
- ③ Macquarie Harbour Group (Upper Cretaceous)

2000 0 4000



Vertical Scale (feet)
No Horizontal Scale

