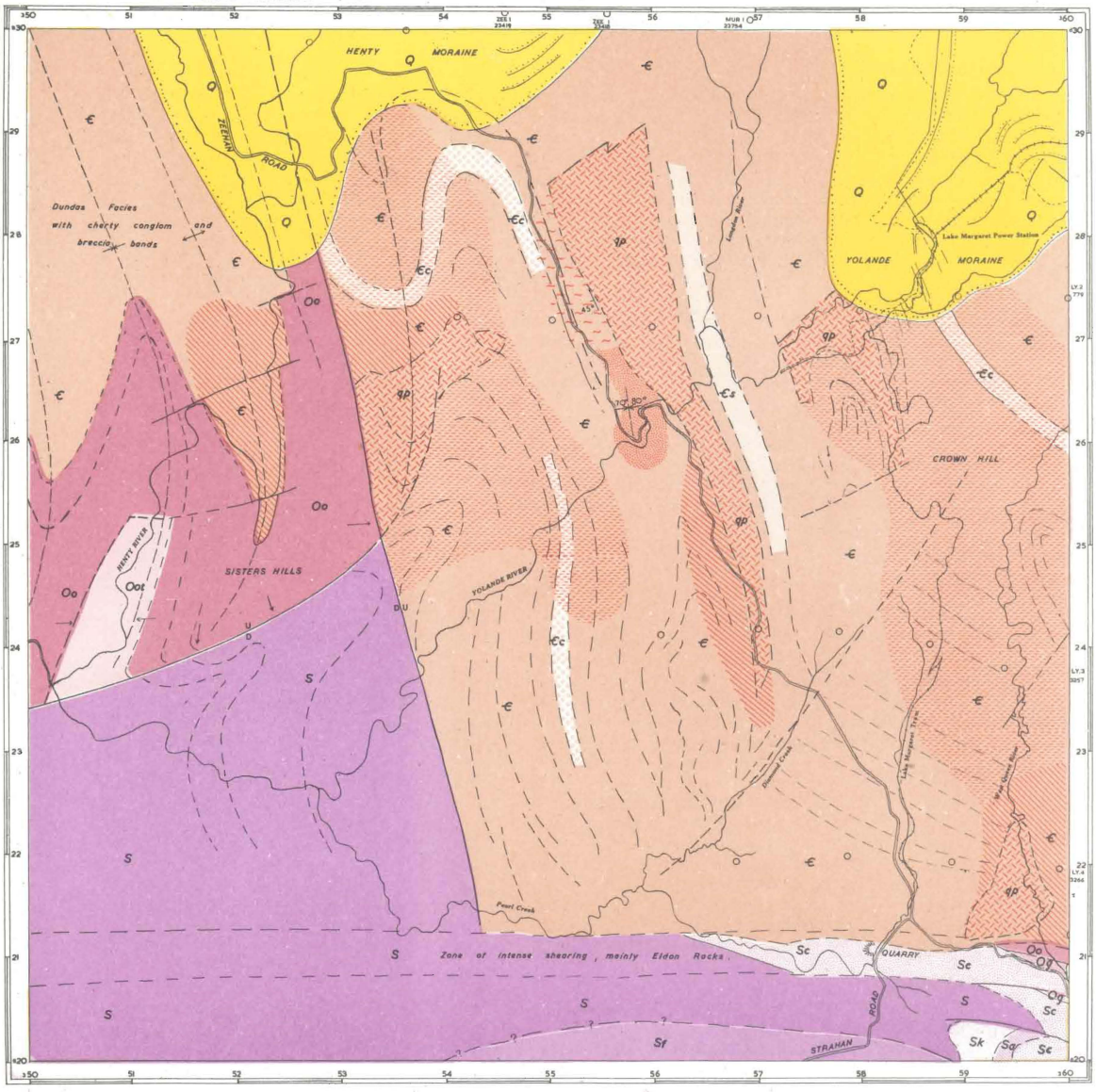
YOLANDE RIVER

GEOLOGY OF TASMANIA

ONE INCH SERIES – UNIVERSITY OF TASMANIA, GEOLOGY DEPARTMENT

MAP SQUARE 3582



LEGEND

Quaternary System
- Q — ALLUVIUM AND MORAINES

Eldon Group
- Sf — FLORENCE QUARTZITE
- Sk — KEEL QUARTZITE
- Sa — AMBER SLATE
- Sc — CROTTY QUARTZITE
- S — UNDIFFERENTIATED

Junee Group
- Og — GORDON LIMESTONE
- Oo — OWEN CONGLOMERATE
- Oot — TUBICOLAR SANDSTONE MEMBE

Dundas Group
- €c — CONGLOMERATE AND BRECCIA
- €s — SLATES
- € — UNDIFFERENTIATED

METAMORPHIC ROCKS
- qp — QUARTZ PORPHYRY MASSIVE
- AREA OF QUARTZ PORPHYRITISED ROCK
- AREA OF FELSPATHISED ROCK
- AREA OF CHLORITISED ROCK
- qss — QUARTZ SERICITE SCHIST

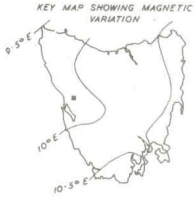
MAPPED AND COMPILED BY
J BRADLEY JANUARY 1951

- FAULT
- FAULT – POSITION APPROXIMATE
- BOUNDARY
- BOUNDARY – POSITION APPROXIMATE
- BOUNDARY INFERRED
- TREND OF OUTCROP
- SYNCLINAL AXIS
- ANTICLINAL AXIS
- 15° STRIKE AND DIP
- MORAINE
- TRAM
- ROAD
- TRACK
- ADIT

— SCALE —
0 1 2 3 4 5,000 10,000 FEET
0 2 MILES

Compilation from Aerial Photographs. Trigonometric Station Control by courtesy Hydro-Electric Commission. Origin of co-ordinates 400,000 yds. West and 1,800,000 yds. South of True Origin of Zone 7.

KEY MAP SHOWING MAGNETIC VARIATION



SUMMARY OF THE GEOLOGY OF THE YOLANDE RIVER
SHEET 350/820.

PHYSIOGRAPHY.

The area has an undulating and mature erosional surface, the Henty Peneplain, rising from 900 feet in the west, to 1,200 feet in the east. The Sisters Hills are conical monadnocks rising 400 feet above the plain while the gorges of the rejuvenated Henty and Yolande Rivers are incised 400 feet. The southern margin of the area is defined by a low, 200 feet range of hills formed of the friable but chemically resistent Crotty Sandstone. The minor drainage, including the heads of Pearl Creek and East Queen River, is mature and of an older cycle. The tributary junctions of the Henty and Yolande are discordant. The Henty, above Sisters Hills, is graded while the Yolande is actively degrading. The topography suggests the relatively recent uplift of this country, perhaps in late Pliocene or early Pleistocene times.

GLACIATION.

The Margaret Moraine, formed by the Lake Margaret glacier, is of unusual character. The steep declivity of Mt. Sedgwick on its western side caused the superposition of almost all retreat stages along this line so that one vast moraine 900 feet high up the west side is built up to the edge of the plateau. Very minor retreat phenomena are visible above this moraine. The scanty Yolande Moraine represents an earlier advance of the ice but is very difficult to date. The Henty Moraine marks a relatively brief advance of the Henty glacier and is shown, 544/290, by perched erratics and thick tills, 520/290. The Henty Valley is V rather than U shaped and shows few signs of ice wear. Grading of the river has been hastened by slight glacial erosion and deposition. Over the rest of this area the absence of glacial till, erratics, and glacial erosion phenomena, along with the presence of deep old soils, indicates that there was no glaciation beyond the moraines.

STRATIGRAPHY.

Eldon Group: Crotty Quartzites occur at the quarry 581/211.

Junee Group: Gordon Limestone occurs only as residual pug. Owen Conglomerate: Tubicolar Sandstone forms most of the Sisters Hills and is about 200 feet thick. The underlying conglomerate beds are quartzose, up to 2" grade and contain pebbles of quartz porphyry.

Dundas Group: Breccias, conglomerates, and chert pebble bands occur in the area (510/290) and pass conformally upwards into Owen Conglomerate. Isoclinally folded strata occur over the rest of the area in indecipherable sequences of slaty beds, tuffaceous breccias, and conglomerates. Folds are traceable, however, and a maximum thickness of about 10,000 feet of strata is deduced.

METAMORPHISM.

Quartz porphyries are concordant and stratiform, and vary laterally into feldspar porphyries and albitised tuffs. At the roadstone quarry, 568/241, occur such tuffs with vughs containing albite, epidote, and galena. In the area 590/250 to 598/262 feldspar porphyries, uniform on broken surfaces and in section, show perfect palimpsests of fragments on weathering. Despite contortion and shearing among these rocks there is little trace of schistosity and slaty cleavage is rare. Adjacent beds react very differently to metamorphism and make it difficult to sort out zones. Chloritised, albitised and silicified strata all appear within distances of $\frac{1}{4}$ mile and interdigitate in a manner dependent on the initial composition and texture of the rock.

STRUCTURE.

A very broad ($\frac{1}{2}$ mile) zone of intense crushing and faulting downthrows Eldon rocks along the southern margin of the area. This fault zone is situated on a tear fault with an easterly displacement on the southern side. The rest of the area is folded on W.N.W. axes with folds tightening to the east. Complementary structures, mainly faults, run in arcs broadly N.E.-S.W. Of these, the fault 500/234-534/250 is a faulted overfold overriding to the S.E. and dying out to the north. All of these are Devonian structures. The fault 523/300-545/210 runs for many miles north and south and dislocates most other structures. It is of a different age, probably Tertiary.

ECONOMIC.

Only road metal is taken in the area but galena showings occur at several points along the crush zone 581/211, at the base of the conglomerates 523/255, and scattered with pyrites in the porphyries. Barytes veins trending W.S.W. occur at 580/220.

POINTS OF INTEREST.

Yolande Hill. 569/246: View of West Coast Range structures, Margaret Moraine, and Henty Peneplain.
Henty Hill. 544/290: Perched erratics and till of Henty Moraine.
Lake Margaret Track and Haulage: View of Henty Peneplain and of glacial features.
Strahan Road. 597/208: Talus breccias are the result of slumping of Crotty Sandstone.
Zeehan Road. 580/220: Barytes veins.

REFERENCE.

Bradley, J., 1954: The Geology of the Queenstown Area: **Pap. Proc. Roy. Soc. Tas. Vol. 88.**

GEOLOGY OF TASMANIA

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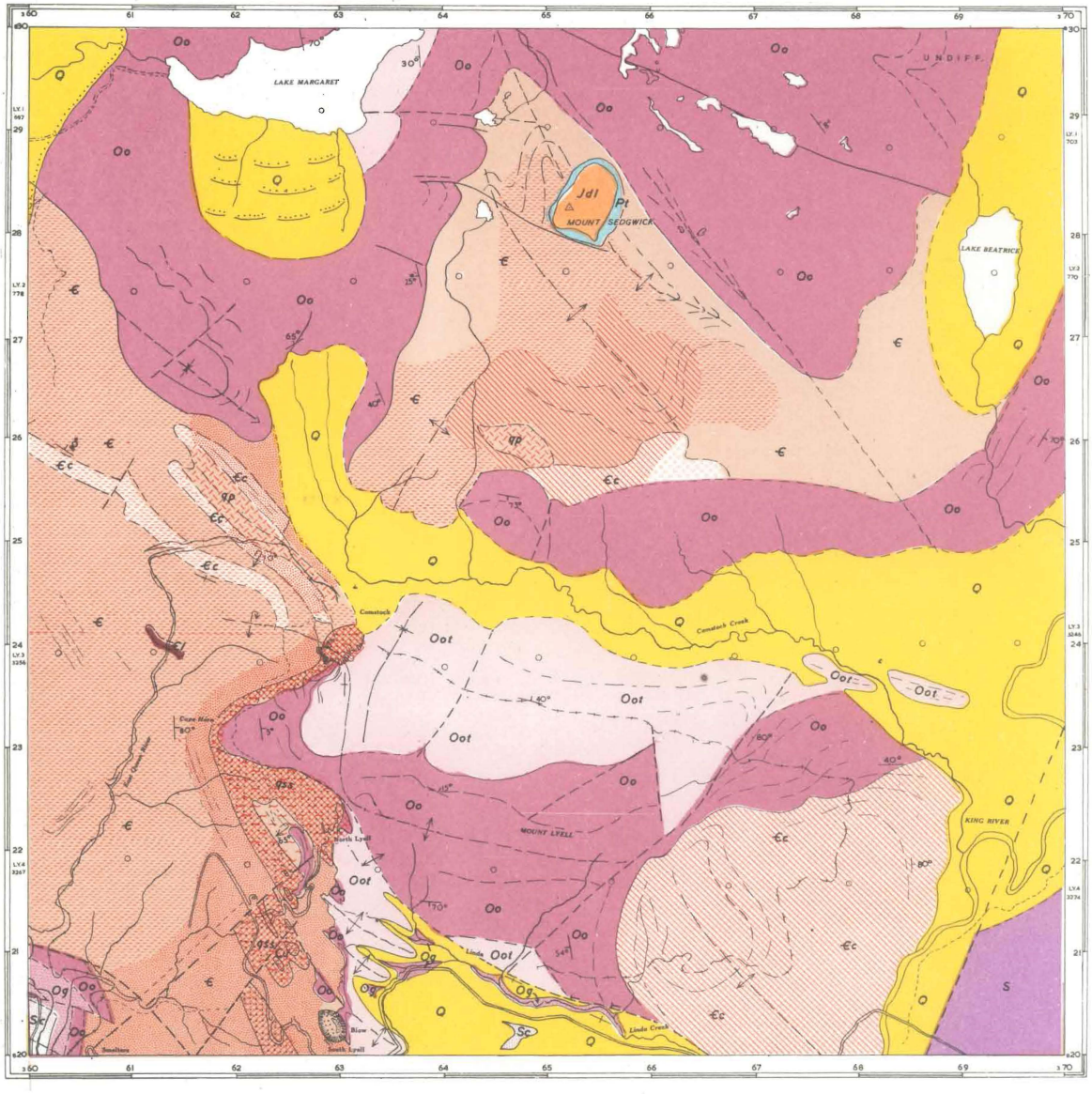
MOUNT SEDGWICK

MAP SQUARE 3682



LEGEND

Quaternary System
- Q — ALLUVIUM AND MORAINES

Permian System
- Pt — TILLITE

Eldon Group
- Sc — CROTTY QUARTZITE
- S — UNDIFFERENTIATED

Junee Group
- Og — GORDON LIMESTONE
- Oo — OWEN CONGLOMERATE
- Oot — TUBICOLAR SANDSTONE MEMBER

Dundas Group
- €c — CONGLOMERATE AND BRECCIA
- € — UNDIFFERENTIATED

IGNEOUS ROCKS

Jurassic System
- Jdl — DOLERITE

Dundas Group
- €l — LAVAS

METAMORPHIC ROCKS
- qp — QUARTZ PORPHYRY MASSIVE
- AREA OF QUARTZ PORPHYRITISED ROCK
- AREA OF FELSPATHISED ROCK
- AREA OF CHLORITISED ROCK
- AREA OF PYRITISED ROCK
- qss — QUARTZ SERICITE SCHIST
- ORE OF 1·5 % CU

LEGEND
- FAULT
- FAULT — POSITION APPROXIMATE
- BOUNDARY
- BOUNDARY — POSITION APPROXIMATE
- TREND OF OUTCROP
- 5° — STRIKE AND DIP
- ANTICLINAL AXIS
- SYNCLINAL AXIS
- ROAD
- TRACK
- RAILWAY
- MORAINE
- OPEN CUT
- VERTICAL DIP

— SCALE —

0 1 2 3 4 5,000 10,000 2 MILES

Compilation from Aerial Photographs. Trigonometric Station Control by courtesy Hydro-Electric Commission. Origin of co-ordinates 400,000 yds. West and 1,800,000 yds. South of True Origin of Zone 7.

KEY MAP SHOWING MAGNETIC VARIATION

9·5°E 10°E 10·5°E

MAPPED AND COMPILED BY
J BRADLEY JANUARY 1951

SUMMARY OF THE GEOLOGY OF THE MOUNT SEDGWICK SHEET 360/820.

PHYSIOGRAPHY.

Mt. Sedgwick is a erosional plateau, altitude 3,000 feet, and is bounded by Lake Beatrice 900 feet, Comstock Creek 800 feet, and the Henty Peneplain 1,000-1,200 feet. The plateau, scored by torrents and ice action, is a resurrected (Carboniferous) peneplain. Forming the Peak is a sugar-loaf residual of dolerite overlying thin Permian tillite which in turn rests on the peneplain.

Comstock Valley, Mt. Lyell 2,700 feet, and Linda Valley 800 feet are structural surfaces being more or less the top of the Owen Conglomerate stripped of softer limestone. The fall on the west from the monadnock-like West Coast Range to the softer rocks of the Henty Peneplain is precipitous and is often controlled by erosion on Devonian fault lines

GLACIATION.

Lakes Margaret and Beatrice are over deepened and their exits are margined by moraines. At its maximum some of the Lake Margaret ice spilled over into the head of Comstock Creek forming a low-level cirque. A minor cirque forms the recess south-east of Lyell Peak. Comstock and Linda Valleys were the sites of proglacial lakes dammed by an ice sheet from the east. This ice occupied the northern end of the King Valley rounding off slate knolls and leaving tills. The Comstock Lake outflow cut a channel, the upper course of the East Queen River 620/250, and the Linda Lake outflow a channel at the Gap 633/198. Varved clays at Gormanston reach as high as the latter (now debris-filled) channel. Ice did not at any stage pass west of Lyell.

STRATIGRAPHY.

Eldon Group: King Slate Bell Shale 689/201 sparsely fossiliferous grey slates. Crotty Sandstone, 647/202, is a typical friable white quartz sandstone.

Junee Group: Gordon Limestone occurs in Linda Creek, 653/205, and as black pug, 641/208. Owen Conglomerate: Tubicolar Sandstone forming the erosional surface of plunging folds 635/212 is 200 feet thick. Unconformity: An angular break is seen at foot of Haulage, 633/204. Conglomerates 2,000 feet: Conglomerates, quartzites and Shales.

----------Unconformity and/or metamorphic contact----------

Dundas Group: Porphyroid conglomerates, slates, tuffs and lavas including fluxion banded trachyte (614/238) occur in various degrees of metamorphism.

METAMORPHISM.

Altered rocks include the Mt. Lyell schists and porphyries, i.e., chlorite, sericite, and quartz sericite, schists and feldspar and quartz porphyries. The porphyries are bedded conglomerates and breccias in which pebbles and matrix have had feldspar and quartz porphyroblasts introduced. The schists are localised in areas of strong shearing and are either schisted porphyry or schisted shaly bands of Owen Conglomerate. Metasomatic replacement is zoned in a descending order of haematitisation, pyritisation, sericitisation and choritisation, and albitisation, but recession of fronts has imposed outer zones on inner. Hence it is common to find sericitised and schisted feldspar porphyry which was originally a conglomerate.

STRUCTURE.

The above processes are controlled by lines of fracture and structures of Devonian age. Mt. Lyell and Linda Valley are anticline and syncline respectively, the Linda Syncline having minor folds. The line Old Blow-North Lyell-Comstock is a vertical and faulted monocline uplifted to the west. The broken intersections of folds are favourable for passage of solutions and ore deposition.

ECONOMIC.

Disseminations of pyrite and chalcopyrite occur adjacent to the metamorphic contact and tend to be restricted to favourable beds in the schists. The present West Lyell mine open-cuts 2×10^6 tons of 0.5% Cu ore which is a chlorite sericite pyrite schist with variable chalcopyrite and quartz Richer bodies occurred at North Lyell, Comstock, and Blow open-cuts in Chocolate Shales of the Owen Conglomerate. These were followed underground.

POINTS OF SPECIAL INTEREST.

North Lyell and Old Blow: contact phenomena.
Comstock Track: Owen Conglomerate, ore bodies at Comstock, and porphyries at 621/250 and 615/250.
West Lyell: Mining operations.
Lake Margaret: Glacial phenomena and view of Henty Peneplain.
Gormanston: Varves.
Linda: Characteristic weathering of limestone, plunging folds of Lyell.
King Bridge: Porphyroid conglomerates.

REFERENCE.

Bradley, J., 1954: The Geology of the Queenstown Area. **Pap Proc. Roy. Soc. Tas. Vol. 88.**

GEOLOGY OF TASMANIA

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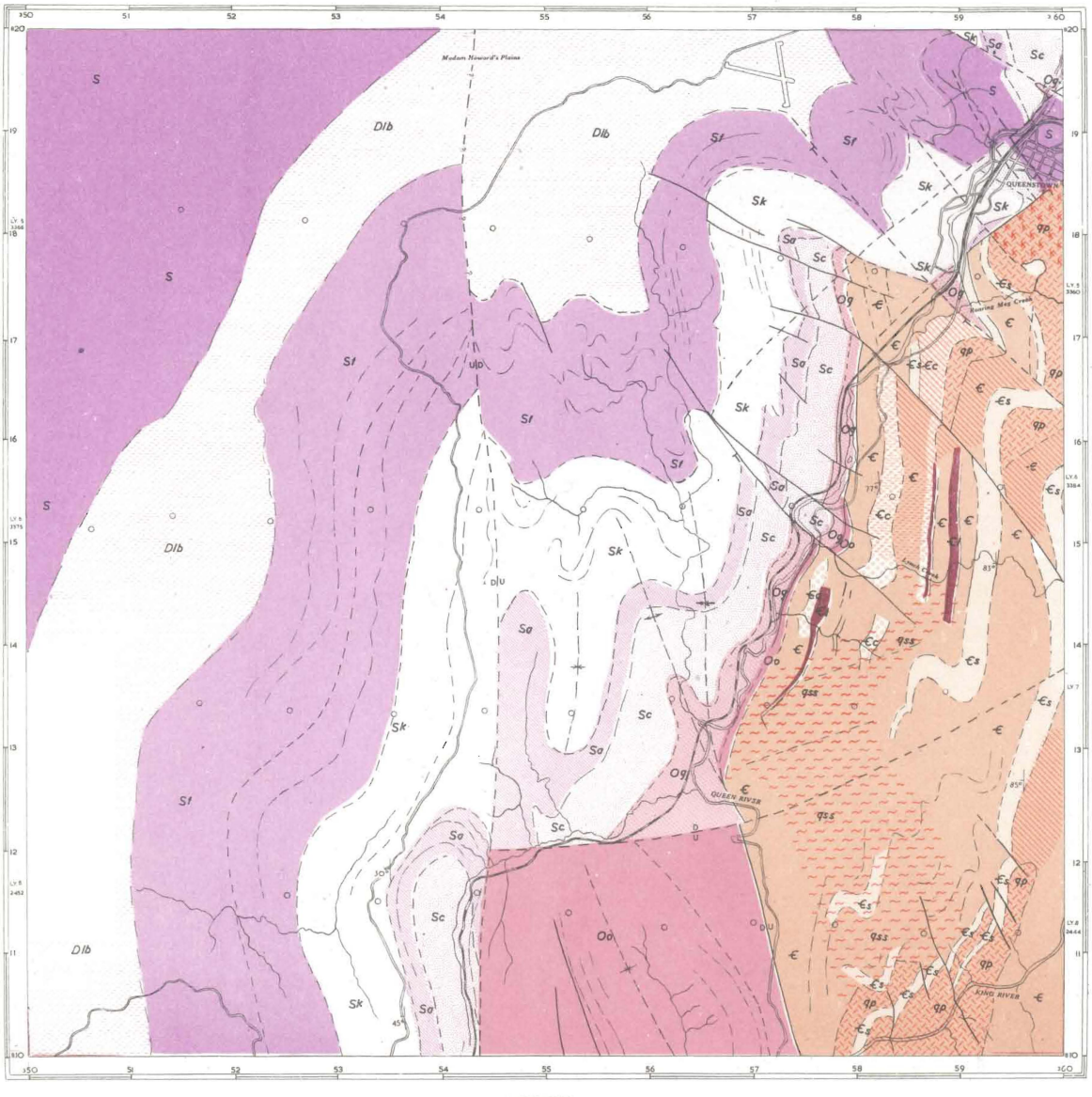
QUEEN RIVER

MAP SQUARE 3581



LEGEND

Eldon Group
- Dlb — BELL SHALE
- Sf — FLORENCE QUARTZITE
- Sk — KEEL QUARTZITE
- Sa — AMBER SLATE
- Sc — CROTTY QUARTZITE
- S — UNDIFFERENTIATED

Junee Group
- Oq — GORDON LIMESTONE
- Oo — OWEN CONGLOMERATE

Dundas Group
- €c — CONGLOMERATE AND BRECCIA
- €s — SLATES
- € — UNDIFFERENTIATED

IGNEOUS ROCKS

Dundas Group
- € — LAVAS

METAMORPHIC ROCKS
- qp — QUARTZ PORPHYRY MASSIVE
- AREA OF QUARTZ PORPHYRITISED ROCK
- K K K — AREA OF KAOLINISED ROCK
- qss — QUARTZ SERICITE SCHIST
- AREA OF FELSPATHISED ROCK

MAPPED AND COMPILED BY
J BRADLEY *JANUARY 1951*

- FAULT
- FAULT – POSITION APPROXIMATE
- FAULT INFERRED
- BOUNDARY
- BOUNDARY – POSITION APPROXIMATE
- TREND OF OUTCROP
- SYNCLINAL AXIS
- ANTICLINAL AXIS
- STRIKE AND DIP
- ROAD
- THRUST FAULT, ⊢ ON UPTHROWN SIDE
- AERODROME

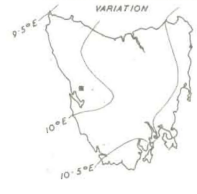
— SCALE —

0 — 2 MILES

0 1 2 3 4 5,000 — 10,000 FEET

Compilation from Aerial Photographs
Trigonometric Station Control by courtesy Hydro – Electric Commission
Origin of co-ordinates 400,000 yds. West and 1,800,000 yds. South of True Origin of Zone 7

KEY MAP SHOWING MAGNETIC VARIATION



SUMMARY OF THE GEOLOGY OF THE QUEEN RIVER
SHEET 350/810.

PHYSIOGRAPHY.

The area is a gently undulating erosional surface rising from 900 feet to 1,200 feet from west to east. This surface was elevated some 600 feet in late or post-Pliocene time and is still in the initial stages of dissection. Lower courses of streams occupy narrow valleys and the lower Queen and King Rivers flow in gorges 400-600 feet deep. On either side of the Queen River adjustment to structure has produced hogback ridges in the hard Cambrian slates and Silurian quartzites. In the Queen Valley erosion of the Gordon Limestone has produced at 600-700 feet a graded reach of the river with small high terrace remnants.

STRATIGRAPHY.

Estimated thickness of formations are Bell Shale 2,000 feet, Florence Quartzite 1,200 feet, Keel Quartzite 1,500 feet, Crotty Quartzite 1,000 feet, Gordon Limestone 700 feet, Owen Conglomerate missing or represented by 20 feet of quartzite at Lynch Creek Bridge. The Dundas Group is divisible into the Lynch Conglomerate 2,000 feet, the Battery Volcanics 3,000 feet, and the Miners Slate 5,000 feet.

The juncture, between the quartzites and greywacke conglomerates at Lynch Creek Bridge, or elsewhere, between the limestone and the Dundas Group, represents a break in deposition and is possibly erosional. There is no angular discordance between the formations.

IGNEOUS ROCKS.

Vesicular spilites of Cambrian age occur in Lynch Creek 587/147 and Specimen Creek 575/142. Tuffaceous breccias associated with these lavas are thick and extensive.

METAMORPHIC ROCKS: 'Porphyroids.'
Quartz porphyries on Roaring Meg Creek and the King River are normal types. They contain numerous slate inclusions and beds of slate. At Queenstown the porphyry is intensely kaolinised, 595/182. From Lynch Creek to Roaring Meg Creek the coarser greywackes grade into feldspar porphyry, quartz feldspar porphyry and quartz porphyry. Palimpsest bedding and fragments are common in the porphyries. The rocks carry veins and vughs of epidote and pink albite. They are massive and lightly sheared. The "slates" are indurated and sheared, but not cleavable, greywacke siltstones and mudstones. They are hornfelsed towards the quartz porphyries.

PETROLOGY.

The Cambrian lavas are spilitic. Feldspars, albite-oligoclase, are secondary in many cases, and augite alters to chlorite and tremolite. Asbestiform tremolite veins the rock and chlorite and calcite fill vesicles. The greywackes are free of quartz and contain augite. Initial stages of alteration show growth of interstitial quartz and albite porphyroblasts. With the growth of macroscopic feldspars (oligoclase) chloritisation and epidotisation occur. Some development of tremolite after augite is common. Growth of quartz phenocrysts is accompanied by sericitisation of feldspar and removal of FeMg minerals.

STRUCTURAL GEOLOGY.

Strata generally dip west at 70°, minor structures, thrusts and overturned folds are aligned N.W.-S.E. Folding is most pronounced in the Eldon quartzites but dies out in the Bell Shale and passes downwards into thrusts and minor shears. A complementary set of folds and faults trending N.E.-S.W are not so prominent.

ECONOMIC GEOLOGY.

Gold occurs in creeks draining the porphyries but is unimportant. Galena in limestone occurs at Queenstown 597/183. Limestone at Lynchford is the only worked deposit.

POINTS OF SPECIAL INTEREST.

Queenstown Limestone Quarry 598/194. This, and outcrops due east across the Queen, are fossiliferous Gordon Limestone. Fossils extracted include **Alveolites** sp., **Protarea** of. **richmondensis Acidolites, Tetradium tasmaniense, Acantholites, Favistella, Favosites,** Aulorporid corals, bryozoa and gastropods.

South Queenstown 583/158. Porphyritised breccias occur alongside timber tracks leading east from the road. These tracks also expose sections of the uppermost Dundas rocks.

Lynch Creek. The section is structurally unbroken for 2 miles. Lavas occur in the track on the northern side of the stream for half mile after passing the King Battery.

Roaring Meg Creek. 595/174. Quartz Porphyry contact with slates.

REFERENCE.

Bradley, J., 1954: The Geology of the Queenstown Area: **Pap. Proc. Roy. Soc. Tas. Vol. 88.**

GEOLOGY OF TASMANIA

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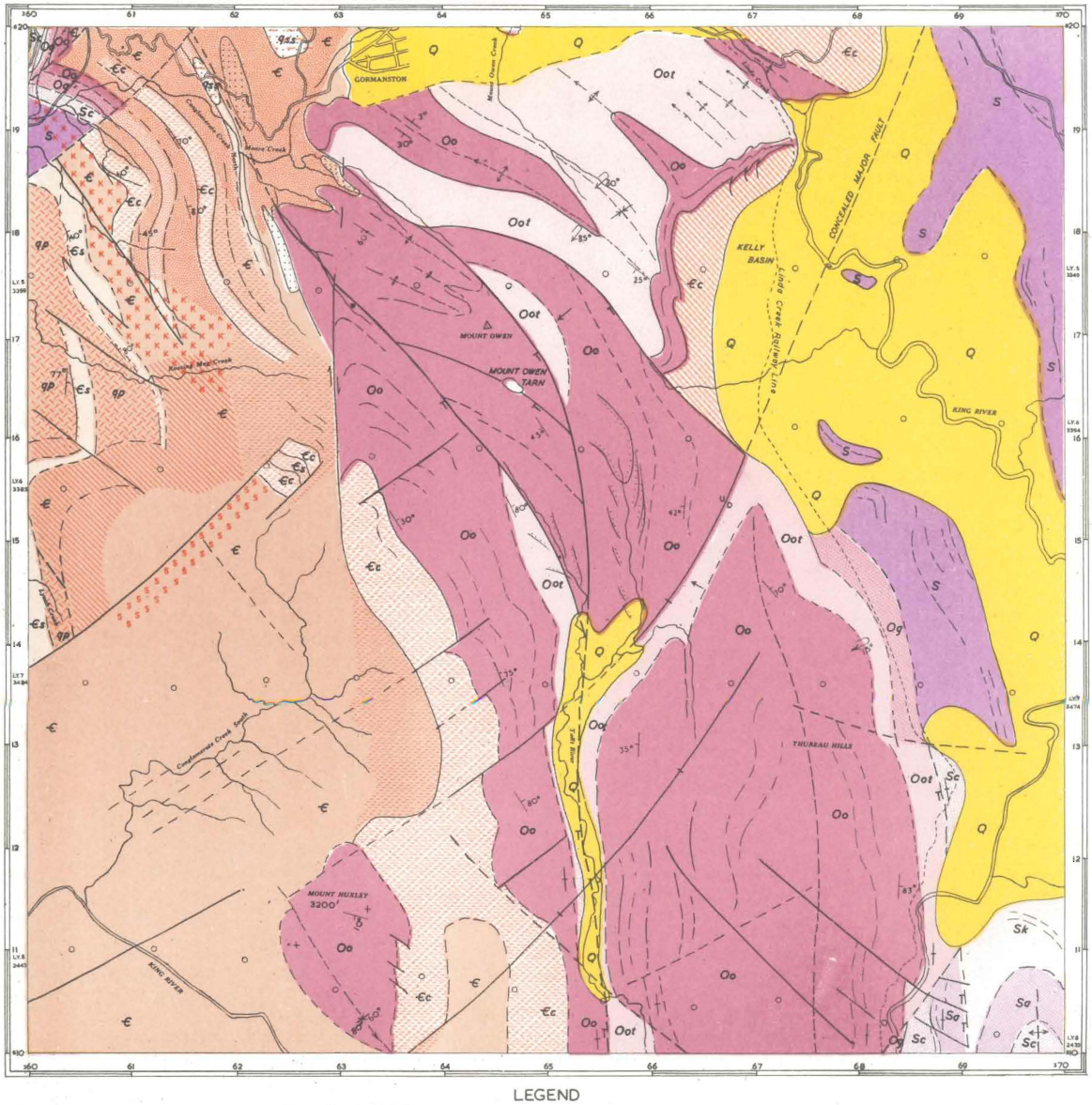
MOUNT OWEN

MAP SQUARE 3681



LEGEND

Quaternary System
- Q — ALLUVIUM AND MORAINES

Eldon Group
- Sk — KEEL QUARTZITE
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- Sc — CROTTY QUARTZITE
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Junee Group
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Dundas Group
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- Es — SLATES
- € — UNDIFFERENTIATED

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MAPPED AND COMPILED BY
J BRADLEY JANUARY 1951

- FAULT
- FAULT — POSITION APPROXIMATE
- BOUNDARY
- BOUNDARY — POSITION APPROXIMATE
- TREND OF OUTCROP
- SYNCLINAL AXIS
- ANTICLINAL AXIS
- 50 — STRIKE AND DIP
- MORAINE
- ROAD
- TRACK
- RAILWAY
- HORIZONTAL CONTROL STATION
- THRUST FAULT — ON UPTHROWN SIDE

— SCALE —
0 1 2 3 4 5,000 2 MILES 10,000 FEET

Compilation from Aerial Photographs
Trigonometric Station Control by courtesy Hydro-Electric Commission
Origin of co-ordinates 400,000 yds. West and 1,800,000 yds. South of True Origin of Zone 7.

KEY MAP SHOWING MAGNETIC VARIATION
9° 50' E
10° E
10° 50' E

SUMMARY OF THE GEOLOGY OF MOUNT OWEN

SHEET 360/810.

PHYSIOGRAPHY.

Mounts Owen and Huxley form a physiographic unit bounded by the Linda Creek and King and Queen River valleys. These valleys lie at 500 to 700 feet and the summits of the range at 3,200 feet+. The mountains are monadnocks. The topography is structurally controlled, the range being an asymmetric anticline and the King Valley a syncline. The Linda Valley and the King Gorge are transverse synclines and the King River, though now incised in quartzite, was originally established in limestones 600 feet above the present river. The core of the range is of hard quartzites and the synclines are of limestone and sandstone. The thrusts of Mt. Owen and the deep syncline of the Tofft River allow the erosion of the country into blocks and pinnacles while N.W. and N.E. shearing determines the minor drainage. South of N160 the King Valley is beautifully terraced and the river, rejuvenated to a point 694/154, cuts through the valley fill of the terraces into bedrock.

GLACIATION.

North of the line N160 the King Valley was glaciated by a broad ice sheet which probably contributed material to the terraces. Dry glacial overflow channels at 683/130 are related to the highest terrace. On Mt. Owen a tarn occupies a small cirque whose glacier must have dammed the then Tofft River. The natural outlet for this stream is the wide low valley to the north-east but drainage is still south through the gorge cut by the Tofft lake overflow.

STRATIGRAPHY.

Eldon Group: The King Slate, 695/194, containing distorted casts of crinoids and brachiopods, is of great thickness 3,000 feet+. With scattered outcrop and complex and unknown structure it may represent much more than the Bell Shale of Devonian age. Crotty Sandstone is identifiable at 688/100.

Junee Group: Gordon Limestone is mapped by residual pugs but rarely seen. The most interesting exposure is faulted in schists at 605/193. Owen Conglomerate is variable. At 605/194 ten feet of quartzite underlies limestone. At 644/160 the conglomeratic phase is 1,500 feet thick. At 665/180 the Tubicolar Sandstone overlies 250 feet of chocolate shales and is 200 feet thick. The basal breccias are well developed east of Huxley.

Dundas Group: In this area no sequences are determinable. Slump structures rhythmically repeated, are preserved in silicified fine grained greywacke at the knoll 620/155. Altered columnar lavas (so-called keratophyres) occur in Conglomerate Creek 616/128. Pebble beds at 665/180 are almost wholly of quartz porphyry and are conformable below Owen Conglomerate. Elsewhere Dundas strata are highly metamorphosed and unrecognisable.

METAMORPHISM.

This is similar to that of Lyell and Queen River areas but schistosity is more pronounced and exposures are poorer. The rocks at 607/194 are chloritised, kaolinised, sericitised and silicified, and are very like the Killas and associated rocks of Cornwall.

STRUCTURE.

The main structure is the asymmetric fold of the range but this is complicated by several smaller oblique folds and thrust masses in complementary sets. The more prominent set of thrusts trends in north-westerly striking arcs which join together to form the vertical limb of the main fold along the Tofft River. The remarkable line of upturning at Lyell persists southwards into this area. This structure is a faulted monocline with northerly movement and upthrow on the west side. It was formed during an Upper Cambrian orogeny as an east facing scarp and was a line of intrusion and movement then and in Devonian times. The Breccia Conglomerates occur east of this line probably originating as a fault scarp breccia.

ECONOMIC.

Outlying ore bodies of the Lyell mines clearly replace bedded rocks. More diffuse pyritic bodies occur along most of the conglomerate-schist contact and richer showings occur below Mt. Huxley 630/097.

POINTS OF INTEREST.

Lyell Highway, 696/194: fossiliferous Eldon slates.
Linda Valley, 661/196: Chocolate shales.
Gormanston, 632/196: Varves.
Lyell Highway, 620/193: Pyritic bodies, view of Owen thrusts.
Conglomerate Creek: Stream section of chloritised rocks.
Mt. Owen, 644/170: by track from Gap—view of Owen tarn and country.

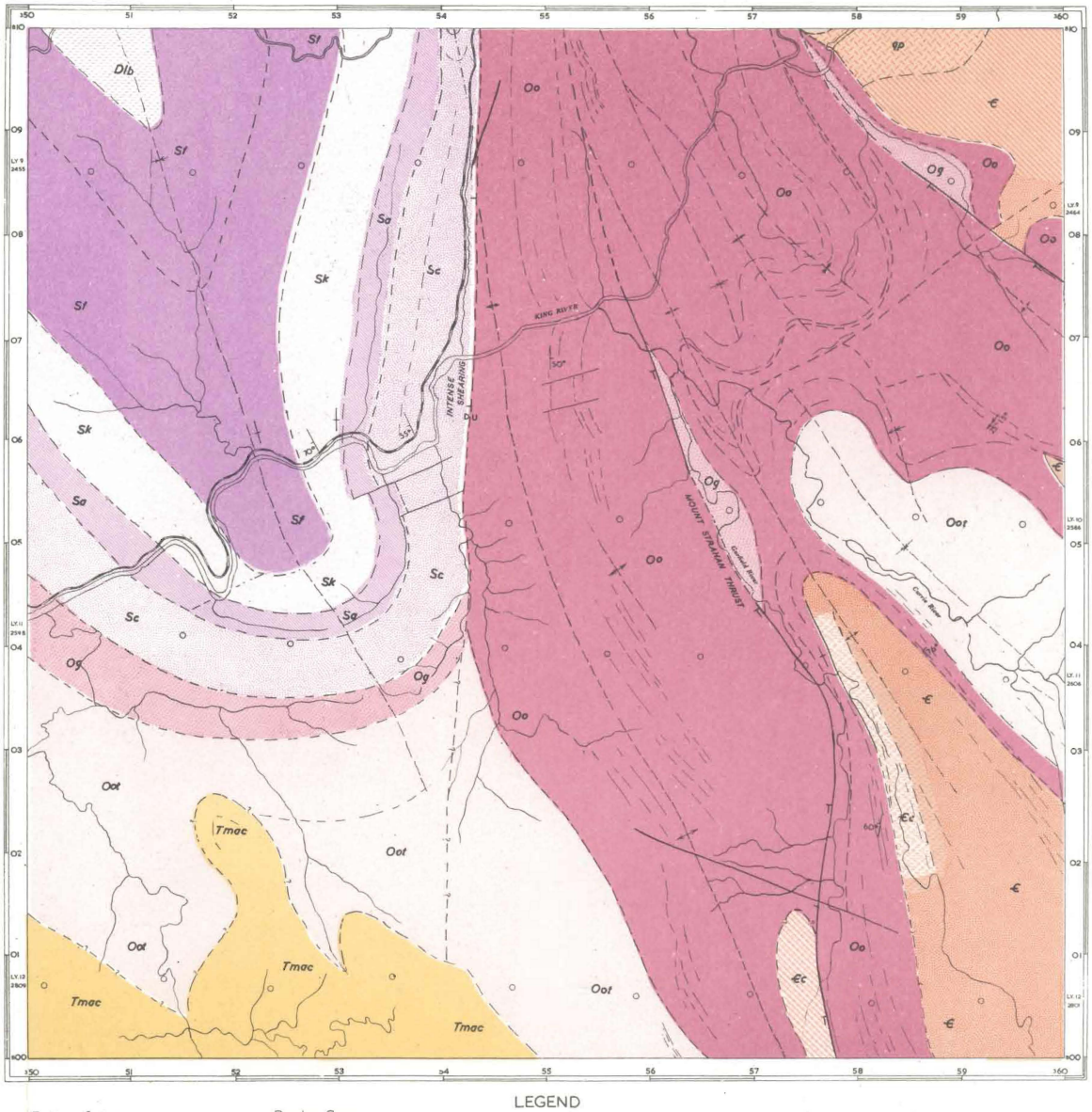
REFERENCE.

Bradley, J., 1954: The Geology of the Queenstown Area: **Pap. Proc. Roy. Soc. Tas. Vol. 88.**

GEOLOGY OF TASMANIA
ONE INCH SERIES-UNIVERSITY OF TASMANIA,GEOLOGY DEPARTMENT

MOUNT STRAHAN

MAP SQUARE 3580



Tertiary System
- Tmac — MACQUARIE BEDS

Eldon Group
- Dlb — BELL SHALE
- Sf — FLORENCE QUARTZITE
- Sk — KEEL QUARTZITE
- Sa — AMBER SLATE
- Sc — CROTTY QUARTZITE
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Junee Group
- Og — GORDON LIMESTONE
- Oo — OWEN CONGLOMERATE
- Oot — TUBICOLAR SANDSTONE MEMBER

Dundas Group
- Ec — CONGLOMERATE AND BRECCIA
- € — UNDIFFERENTIATED

METAMORPHIC ROCKS
- AREA OF QUARTZ PORPHYRITISED ROCK
- AREA OF FELSPATHISED ROCK
- AREA OF CHLORITISED ROCK
- gp — QUARTZ PORPHYRY MASSIVE

MAPPED AND COMPILED BY
J BRADLEY JANUARY 1951

LEGEND
- FAULT
- FAULT — POSITION APPROXIMATE
- BOUNDARY
- BOUNDARY — POSITION APPROXIMATE
- BOUNDARY INFERRED
- ANTICLINAL AXIS
- SYNCLINAL AXIS
- TREND OF OUTCROP
- 5° STRIKE AND DIP
- ROAD
- THRUST FAULT, ⊢ ON UPTHROWN SIDE

— SCALE —
0 1 2 MILES
0 1 2 3 4 5,000 10,000 FEET

Compilation from Aerial Photographs. Trigonometric Station Control by courtesy Hydro-Electric Commission. Origin of co-ordinates 400,000 yds. West and 1,800,000 yds. South of True Origin of Zone 7.

KEY MAP SHOWING MAGNETIC VARIATION
9° 5°E
10°E
10° 5°E

SUMMARY OF THE GEOLOGY OF MOUNT STRAHAN

SHEET 350/810

PHYSIOGRAPHY.

The area is a highly dissected portion of the uplifted Henty Peneplain. Remnants of this erosional surface occur at 1,000 feet along the northern boundary. Mount Strahan is a monadnock ridge which has persisted from the Henty cycle into the present phase of erosion The King River is superimposed and incised in a gorge some 60 feet deep and its tributaries plunge from narrow gullies. The minor drainage is structurally controlled, sometimes superimposed, and follows softer limestone, shales, and the soft chloritic rocks of the Garfield Anticline. At point 543/069 the character of the King River changes abruptly from graded to actively degrading. This change coincides with the N.-S. (Tertiary?) foult line and the change from softer Eldon rocks to Owen Conglomerate. The conglomerate country has bare scarps and shoulders, in contrast to the forested and prominently ridged Eldon quartzites and shales, and to the flat low areas of limestone. In the southwest a low platform of late Tertiary beds falls west-southwest from 600 feet to near sea level and has a characteristic dendritic drainage.

STRATIGRAPHY.

The Macquarie Beds of the southwest are estuarine conglomerates, sands, clays and lignitic peats. They are about 400 feet thick, are tilted west-southwest and pass below sea level at Macquarie Harbour. They are probably Late Pliocene or Pleistocene in age. Their uplift coincides in part at least, with that of the Henty Peneplain, and involves westerly and southerly tilts in this area.

Eldon Group: Devonian strata (Bell Shale) along with a full normal sequence of Silurian quartzites and shales are exposed along the King River and Strahan Rd. Crotty Sandstone along the railway is not quite typical—it is possible that it is largely faulted out along with the limestone and that some of the strata marked Crotty belong to the Amber formation.

Junee Group: Gordon Limestone is poorly exposed at very few points, e.g., 500/044, 578/092 and 572/045. Owen Conglomerate is mainly represented by quartzites but is very variable, from thin 20 feet grits at 577/099 to 700 feet thick quartzites at 578/038. At the latter locality a thin conglomerate overlies ideally exposed and typical Breccia Conglomerate.

METAMORPHOSED ROCKS.

These are probably Dundas Group strata. They are poorly exposed and have no demonstrable structural continuity. Hornfelses and chlorite sericite schists are the usual rock types.

STRUCTURE.

Folds aligned N.W.-S.E. are strike faulted and thrust. They are intersected by N.E.-S.W. trending complementary folds and faults, e.g., 535/054 to 595/080. A gentle anticline produces the interesting opposed plunging folds, 567/064. The N.-S. fault, 540E, dislocates the Devonian structures and downthrows to the west at least 1,000 feet. It is earlier than the Henty Peneplain which it does not affect, and is probably of Tertiary age.

ECONOMIC.

Flannagans Flat was once a rich small alluvial goldfield. This gold was probably derived from the pyritised contact of porphyry. against conglomerate.

POINTS OF INTEREST.

There is scenic interest on the train journey through the King Gorge. The Eldon rocks are conveniently and well exposed on the Strahan Road at many points.

REFERENCE.

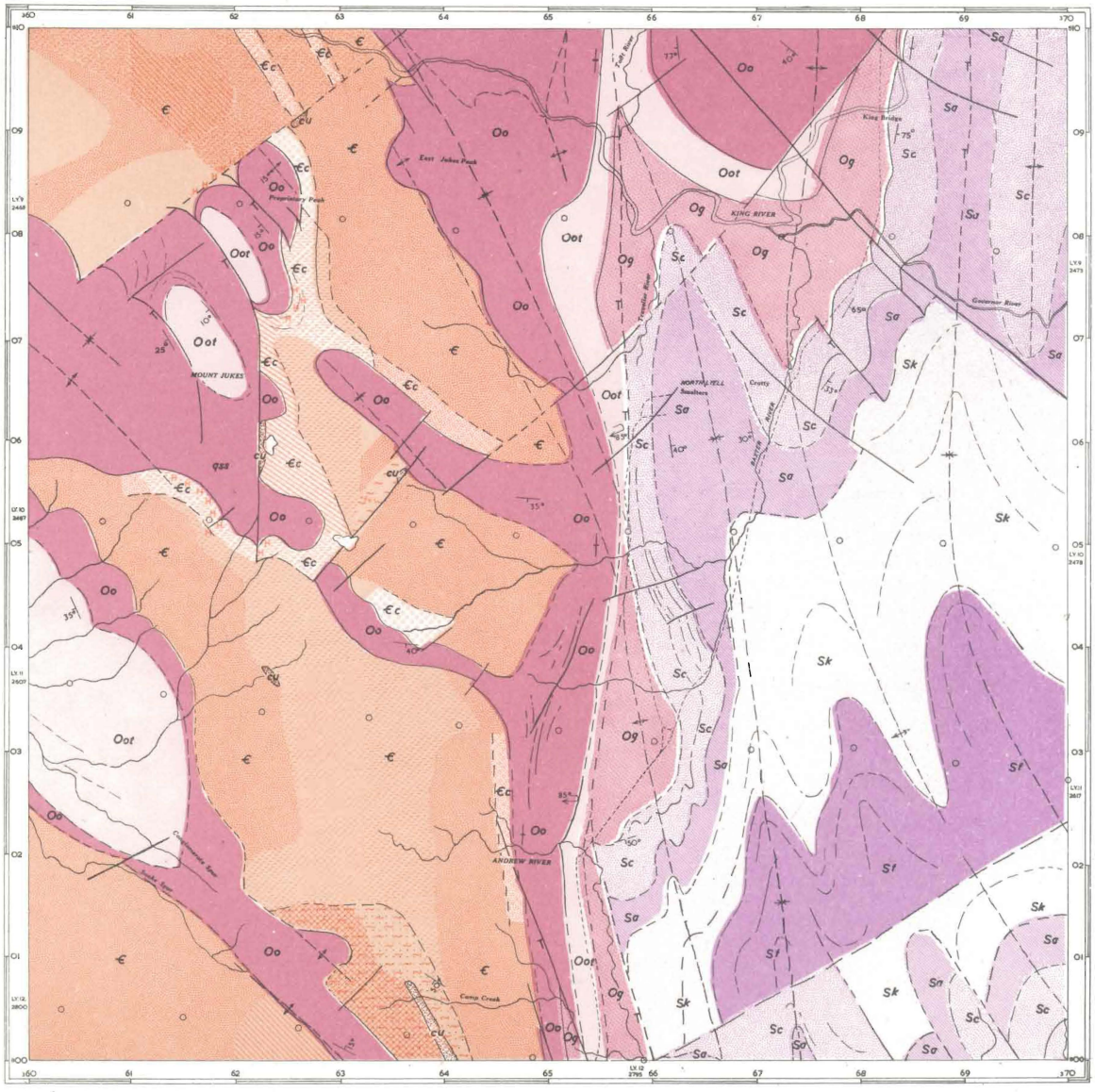
Bradley, J., 1954: The Geology of the Queenstown Area: **Pap. Proc. Roy. Soc. Tas. Vol. 88.**

GEOLOGY OF TASMANIA

ONE INCH SERIES – UNIVERSITY OF TASMANIA, GEOLOGY DEPARTMENT.

MOUNT JUKES

MAP SQUARE 3680



LEGEND

Eldon Group

- St — FLORENCE QUARTZITE
- Sk — KEEL QUARTZITE
- Sa — AMBER SLATE
- Sc — CROTTY QUARTZITE

Junee Group

- Og — GORDON LIMESTONE
- Oo — OWEN CONGLOMERATE
- Oot — TUBICOLAR SANDSTONE MEMBER

Dundas Group

- €c — CONGLOMERATE AND BRECCIA
- € — UNDIFFERENTIATED

METAMORPHIC ROCKS

- AREA OF QUARTZ PORPHYRITISED ROCK
- AREA OF FELSPATHISED ROCK
- AREA OF CHLORITISED ROCK
- AREA OF PYRITISED ROCK
- AREA OF HAEMATISED ROCK
- qss — QUARTZ SERICITE SCHIST
- cu — ORE OF 1·5% CU

- FAULT
- FAULT – POSITION APPROXIMATE
- BOUNDARY
- BOUNDARY – POSITION APPROXIMATE
- TRENDS OF OUTCROPS
- SYNCLINAL AXIS
- ANTICLINAL AXIS
- 50 — STRIKE AND DIP
- TRACK
- VERTICAL DIP
- THRUST FAULT, ⊢ ON UPTHROWN SIDE

SCALE

0 — 2 MILES

0 1 2 3 4 5,000 — 10,000 FEET

MAPPED AND COMPILED BY J BRADLEY JANUARY 1951

Compilation from Aerial Photographs. Trigonometric Station Control by courtesy Hydro-Electric Commission. Origin of co-ordinates 400,000 yds. West and 1,800,000 yds. South of True Origin of Zone 7.

KEY MAP SHOWING MAGNETIC VARIATION

SUMMARY OF THE GEOLOGY OF MOUNT JUKES

SHEET 360/800.

PHYSIOGRAPHY.

Mt. Jukes is a rugged scarped mass of hard old rocks and has several summits concordant, at about 3,200 feet, with other peaks of the West Coast Range and the resurrected, but here deeply dissected, Permian peneplain. In the King Basin, erosion surfaces at 1,100 and 700 feet occur. The first of these, quite even and falling away to the south, is maturely dissected, and shows as strike ridges in Silurian quartzites. The second, substantially the old King Valley flood plain level, is now undergoing a further stage of dissection along the main streams. The detail and mass of the topography is, however, adapted to structure. Mt. Jukes is an asymmetric anticline with gentle westerly dip slopes. The eastern limb is carved by a series of cirques and their effluent streams into sharp spurs and valleys directed southeast. These valleys are carved in the cores of the subsidiary northwesterly anticlines while the ridges are essentially synclinal remnants of hard covering conglomerates. The eastern margin of the block is a steep wall of vertical conglomerates. The Andrew River, cutting back in limestone, has captured the head of the Baxter River, which, now a minor stream, flows by vast and recent terraces. The King River is superimposed, but originally made its way across the range by the low syncline and faults north of Mt. Jukes. Almost continuous glacial cirques under the lee of Jukes were the site of very local glaciers which, though failing to reach below 1,500 feet, cut a magnificent escarpment.

STRATIGRAPHY.

Eldon Group: Crotty Sandstone, very like that at Zeehan, occurs throughout the area. Other Silurian formations are more uniform in this area than at Zeehan and being thrust and folded are difficult to distinguish and represent.

Junee Group: Gordon Limestone exposures occur in small patches in the rejuvenated King and Andrew Rivers. Owen Conglomerate: the type section of Loftus Hills is at 625/074, the total thickness being 2,000 feet. The section on the Andrew is about 600 feet thick, and mainly of sandstones, while at Camp Creek the thickness is less than 250 feet, and at Darwin Spur only 150 feet. Breccia Conglomerates are seen in the Main Jukes cliff 624/074.

METAMORPHOSED ROCKS.

Rocks everywhere below the conglomerates are of metamorphosed greywacke types (porphyroids) and are probably of the Dundas Group. The quartz feldspar porphyries below Upper Lake Jukes 625/060, are clearly bedded and contain bands of small quartz pebbles. The occurrence of quartz pebbles in the porphyroid rocks is unique for this district.

STRUCTURE.

An anticlinal structure and fault scarp, 620E, facing east was in existence before the Breccia Conglomerates were formed. Fault scarp talus and succeeding Owen Conglomerate, coming from the east, filled the fault angle depression and finally overlapped it. Renewed compression in Devonian times from the west and south west caused further folding some of which (the 620E shear and monocline) followed the earlier lines.

ECONOMIC.

The latest fault lines are those on which alteration and mineralisation are most pronounced. They are the N.E.-S.W. and the 620E faults. Numerous haematite bodies occur on the 620E line and veins of copper sulphides occur at Lake Jukes. A low grade deposit occurring under Snake Spur in a sericite schist is clearly replacing a bed of shale.

POINTS OF INTEREST.

Lake Jukes Track: Glaciation and metamorphism.

Mt. Jukes: 625/074: Type section for Owen Conglomerate.

Crotty Station: 675/063: Section or Crotty Sandstone.

East Jukes Peak: View of Huxley Syncline and King River Gorge.

REFERENCE.

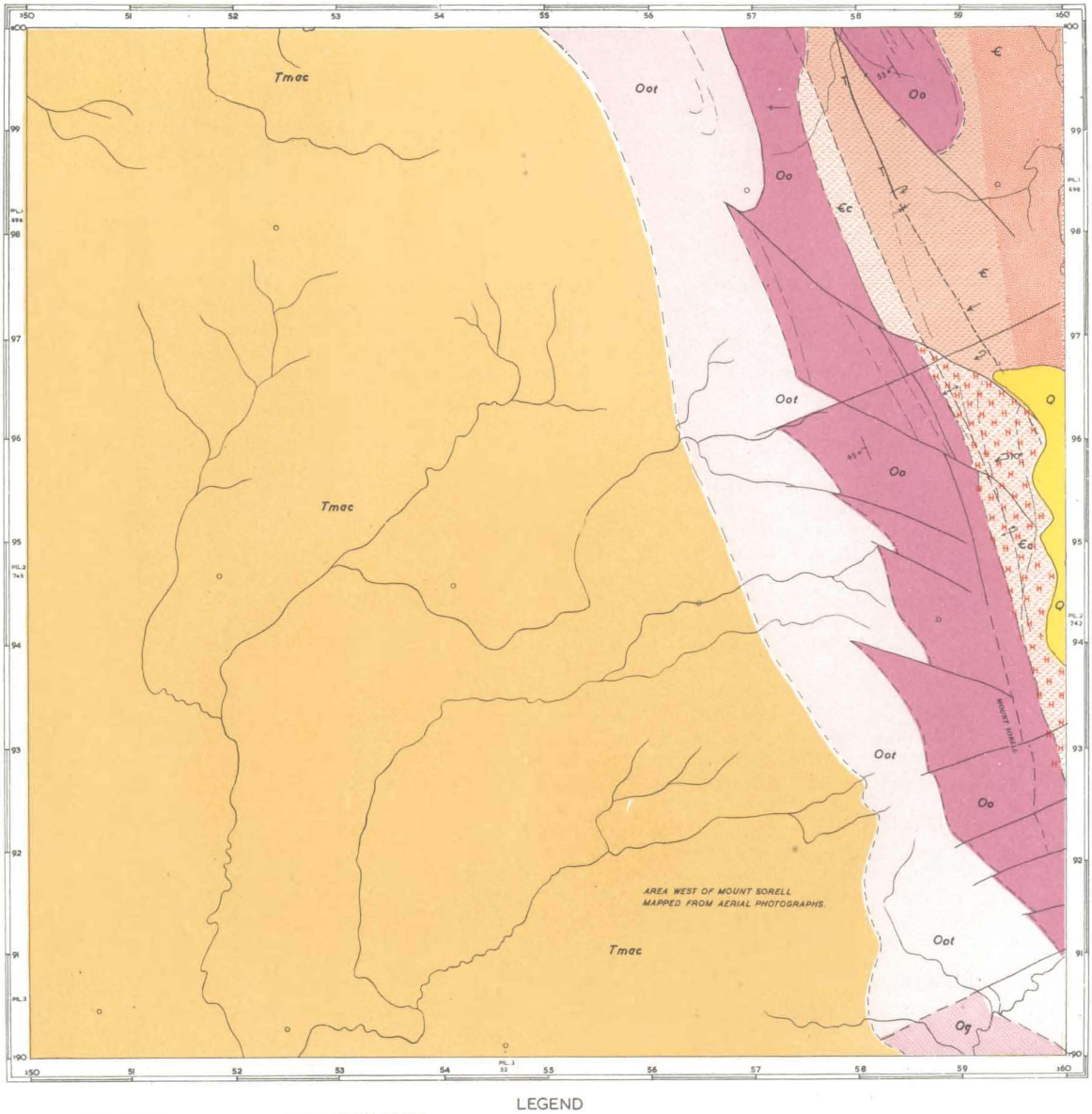
Bradley, J., 1954: The Geology of the Queenstown Area: **Pap. Proc. Roy. Soc. Tas. Vol. 88.**

GEOLOGY OF TASMANIA

ONE INCH SERIES—UNIVERSITY OF TASMANIA, GEOLOGY DEPARTMENT

MOUNT SORELL

MAP SQUARE 3579



Quaternary System

Q ALLUVIUM AND MORAINES

Tertiary System

Tmac MACQUARIE BEDS

Junee Group

Og GORDON LIMESTONE

Oo OWEN CONGLOMERATE

Oot TUBICOLAR SANDSTONE MEMBER

Dundas Group

Ec CONGLOMERATE AND BRECCIA

€ UNDIFFERENTIATED

METAMORPHIC ROCKS

AREA OF FELSPATHISED ROCK

AREA OF CHLORITISED ROCK

H H H H AREA OF HAEMATISED ROCK

KEY MAP SHOWING MAGNETIC VARIATION

LEGEND

FAULT

FAULT — POSITION APPROXIMATE

BOUNDARY

BOUNDARY — POSITION APPROXIMATE

TREND OF OUTCROP

SYNCLINAL AXIS

ANTICLINAL AXIS

5° STRIKE AND DIP

Compilation from Aerial Photographs. Trigonometric Station Control by courtesy Hydro-Electric Commission. Origin of co-ordinates 400,000 yds. West and 1,800,000 yds. South of True Origin of Zone 7.

— SCALE —

0 1 2 MILES

0 1 2 3 4 5,000 10,000 FEET

MAPPED AND COMPILED BY

J BRADLEY JANUARY 1951

SUMMARY OF THE GEOLOGY OF MOUNT SORELL

SHEET 350/790.

PHYSIOGRAPHY.

The topography is of two extreme types. In the east is the residual ridge of Mt. Sorell while the centre and west of the area consists of a platform of emergence. This platform is an elevated and declined surface of estuarine deposits. It falls in a west-southwest direction from 400 feet at the base of Mt. Sorell to 80 feet where it is cliffed back on Macquarie Harbour. Dissection is still very youthful with the result that almost half of the initial surface remains. Surface drainage was at first extended but insequent streams have developed a dendritic pattern. The unconsolidated conglomeratic strata allow perfect underground drainage of the higher undissected areas which are consequently stable and may be of considerable age. Dry valleys at the heads of streams show that a more extensive drainage system once existed. These valleys may have been carved under conditions of greater rainfall. Mt. Sorell is a monadnock ridge of quartzite with westerly dip slopes rising to a ridge over 3,500 feet high. The eastern face of the mountain is a spectacular 1,500 feet precipice. The scarp, due to differential erosion, must have been sharpened by broad cirque-like glaciers on the eastern, lee, side of the mountain.

STRATIGRAPHY.

Tertiary: The Macquarie Beds, on the northern and eastern shores of Macquarie Harbour, consist of some 400 feet of unconsolidated estuarine sediments which in this area dip gently west-southwest. The major portion of the formation is made up of conglomerates and sands. The conglomerates contain pebbles of Owen Conglomerate, occasional porphyroid rocks, and dolerite. They are probably derived from the northeast and could have been deposited by the King. Extensive laminated clays containing detrital wood fragments but no shell fossils occur at several levels. Lignitic peats occurring in lenses up to 30 inches thick and resting on seat earths are common. The age of the formation is only generally deduced as Late Pliocene.

Junee Group: Owen Conglomerate. Tubicolar Sandstone forms the western slopes of Mt Sorell. It is dense pink and white quartzite about 500 feet thick thinning to less than 200 feet in the south. The conglomeratic members of the formation are unusually fine in grade—not more than 2"—3" grade—and sandy beds are common. These rocks are only 300 feet thick and pass out to nothing in the Clark River. The rocks described by Hills as Breccia Conglomerates are not texturally typical of this member. They also are fine, 2"—3" grade, and consist of granite, haematite, magnetite and quartzite pebbles. The Breccias are 450 feet thick and though the contact is not seen they overlie quartz feldspar porphyries at Flannagans Flat. 577/999.

STRUCTURE.

The Macquarie Beds are inclined at about 1°-2°. Round the harbour small folds run parallel to the shore and small faults and shears occur inland for about 100 yards in the clays. These structures are due to slumping of cliffs into the harbour. Looking south from Mt. Strahan an overfold is seen on the north end of Mt. Sorell. This is part of a complete anticline and syncline which die out to the south.

ECONOMIC.

Flannagans Flat was once a rich small goldfield situated on porphyry and limestone pugs.

REFERENCE.

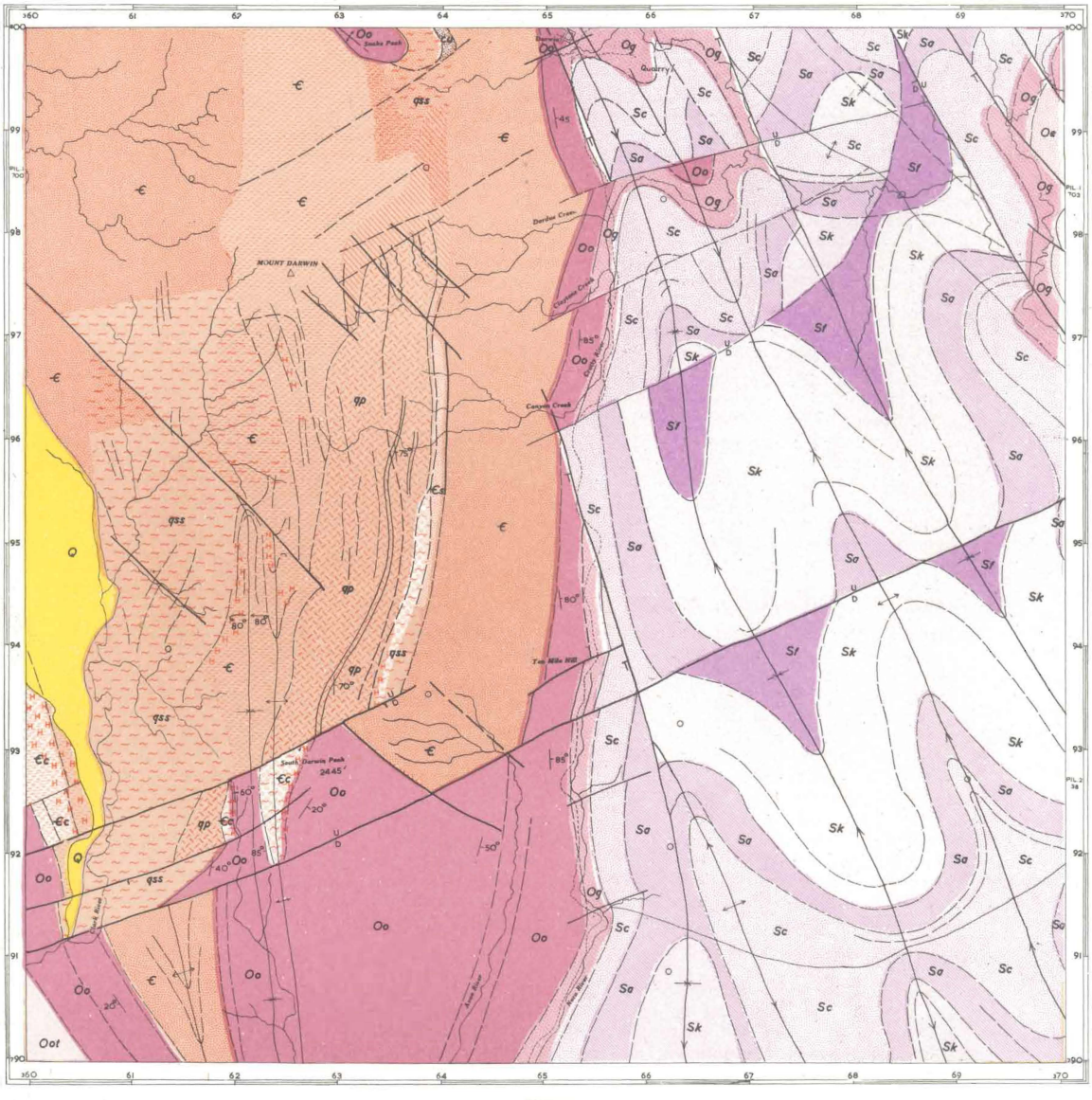
Bradley, J., 1954: The Geology of the Queenstown Area: **Pap. Proc. Roy. Soc. Tas. Vol. 88.**

GEOLOGY OF TASMANIA

ONE INCH SERIES – UNIVERSITY OF TASMANIA, GEOLOGY DEPARTMENT

MOUNT DARWIN

MAP SQUARE 3679



LEGEND

Quaternary System
- Q — ALLUVIUM AND MORAINES

Eldon Group
- Sk — KEEL QUARTZITE
- Sf — FLORENCE QUARTZITE
- Sa — AMBER SLATE
- Sc — CROTTY QUARTZITE

Junee Group
- Og — GORDON LIMESTONE
- Oo — OWEN CONGLOMERATE
- Oe — ENGINEER QUARTZITE
- Oot — TUBICOLAR SANDSTONE MEMBER

Dundas Group
- €c — CONGLOMERATE AND BRECCIA
- €s — SLATES
- € — UNDIFFERENTIATED

Metamorphic Rocks
- qp — GRANITE, MASSIVE (QUARTZ PORPHRY)
- AREA OF QUARTZ PORPHYRITISED ROCK
- AREA OF FELSPATHISED ROCK
- AREA OF CHLORITISED ROCK
- AREA OF HAEMATISED ROCK
- qss — QUARTZ SERICITE SCHIST
- ORE OF 5% COPPER

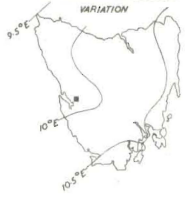
MAPPED AND COMPILED BY
J BRADLEY JANUARY 1951

- FAULT
- FAULT – POSITION APPROXIMATE
- BOUNDARY
- BOUNDARY – POSITION APPROXIMATE
- TREND OF OUTCROP
- ANTICLINAL AXIS
- SYNCLINAL AXIS
- 5° STRIKE AND DIP
- ROAD
- TRACK
- △ HORIZONTAL CONTROL STATION
- THRUST FAULT, ⊢ ON UPTHROWN SIDE

– SCALE –
1 inch = 2 MILES
0 1 2 3 4 5000 10,000 FEET

Compilation from Aerial Photographs. Trigonometric Station control by courtesy Hydro-Electric Commission. Origin of co-ordinates 400,000 yds. West and 1,800,000 yds. South of True Origin of Zone 7.

KEY MAP SHOWING MAGNETIC VARIATION



SUMMARY OF THE GEOLOGY OF THE MOUNT DARWIN SHEET 360/790.

PHYSIOGRAPHY.

Mt. Darwin is a residual block anticlinal in structure. To the east is an erosional surface at about 900 feet maturely dissected, and structurally developed to a marked degree. This is a complex syncline in Eldon rocks and beyond it to the east rises the Precambrian core of Tasmania. The drainage of this syncline is effected by rivers running on the east and west sides in the Gordon Limestone. Most of these streams are rejuvenated and in the Clark, Aron and Nora Rivers, gorges are cut in limestone and shale. To the east of Darwin lies the broad Clark Valley carved in the soft core rocks of a lofty anticline. West again is a lower anticline, Mt. Sorell, with its ice sharpened eastern face 2,000 feet high. The U-shape Clark Valley is, however, not primarily glacial but is adapted to structure. The Clark River, flowing over soft rocks, has its head of erosion only six miles from the sea at a height of 750 feet.

STRATIGRAPHY.

Eldon Group. These rocks are similar to those of the Jukes area but are less faulted and are readily traced. Crotty Sandstone well exposed at 635/960 is the typical friable rock of other localities.

Junee Group. Gordon Limestone: this is a critical area for this formation. North of Ten Mile Hill the limestone is less than 800 feet thick and lies on quartzite. South of this and between the Nora and Aron rivers the Tubicolar Sandstone passes laterally into calcareous shales and impure limestone which are highly fossiliferous and are similar to the Caroline Creek Beds. On the map these are indicated as Tubicolar Sandstone. Passing south these shales become progressively calcareous until, at the confluence of the Nora and Aron, there is 1,200 feet of impure limestone and perhaps 800 feet of limestone overlying them. This rapid facies change coincides with the dying out of the West Coast Range structures and the disappearance of Owen Conglomerate.

METAMORPHIC AND IGNEOUS ROCKS.

These are probably Dundas strata but are strictly unidentifiable. On the east flank of Darwin fine kaolinised and chloritic shales, not at all schisted, show perfect bedding and conglomeratic forms. A sudden but apparently conformable passage through hornfels reaches the porphyritic Darwin granite. At its most typical this is a highly distinctive quartz. chlorite, feldspar, rock with 1 inch phenocrysts of oligoclase, but graphic granite, quartz porphyry and non-porphyritic types are common. These types can be traced as bands along with patently sedimentary beds of sericite schist and hornfels inside the granite for two miles. At 636/951 the massive granite shows palimpsest pebbles 6" to 9" long, rounded and apparently water worn. The faulting and displacement of the granite indicate a stratiform shape and it seems that the body is "concordant" with the sediments it "intrudes" and contact metamorphoses. The chlorite is the only ferromagensian mineral of these rocks and is considered "original," i.e., not after biotite or hornblende. At South Darwin Peak the Owen Conglomerate shows a coarse basal conglomerate, with 18" boulders of Darwin Granite, and slate and haematite pebbles. Two miles away the basal conglomerates of Mt. Sorell have smaller pebbles of the same types. Although the contact is not clear, the evidence is overwhelmingly in favour of unconformity at this juncture.

STRUCTURE.

The major structure is a compound anticline formed of three folds, the Darwin, Clark River, and Sorell Anticlines. These are separated by sharp synclines or thrusts. The nature of the Sorell fold is shown at its culmination on Flannagans Flat as an overfold. The Darwin fold is exposed at South Darwin as a sharp anticline. The minor N.W. structures, folds and faults, are very strongly developed in this area.

ECONOMIC.

Alluvial gold at Mount Darwin forms the only metalliferous deposit to be worked in the area. This was a small field and had a short life. Limestone at 658/997 and quartz sand at 654/960 were worked for the Crotty smelters. Numerous small copper prospects occur.

POINTS OF INTEREST.

Darwin Plateau: views east, of Central Plateau of Tasmania, and west, of Mt. Sorell; Granite and metamorphic rock types.

South Darwin Peak: Unconformity.

Seven mile post: Exposures of Caroline Creek Beds.

REFERENCE.

Bradley, J., 1954: The Geology of the Queenstown Area: **Pap. Proc. Roy. Soc. Tas. Vol. 88.**