BIOSTRATIGRAPHIC AND TAXONOMIC STUDIES OF SOME TASMANIAN CAMBRIAN TRILOBITES

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(Figures and Plates)

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VOLUME 2

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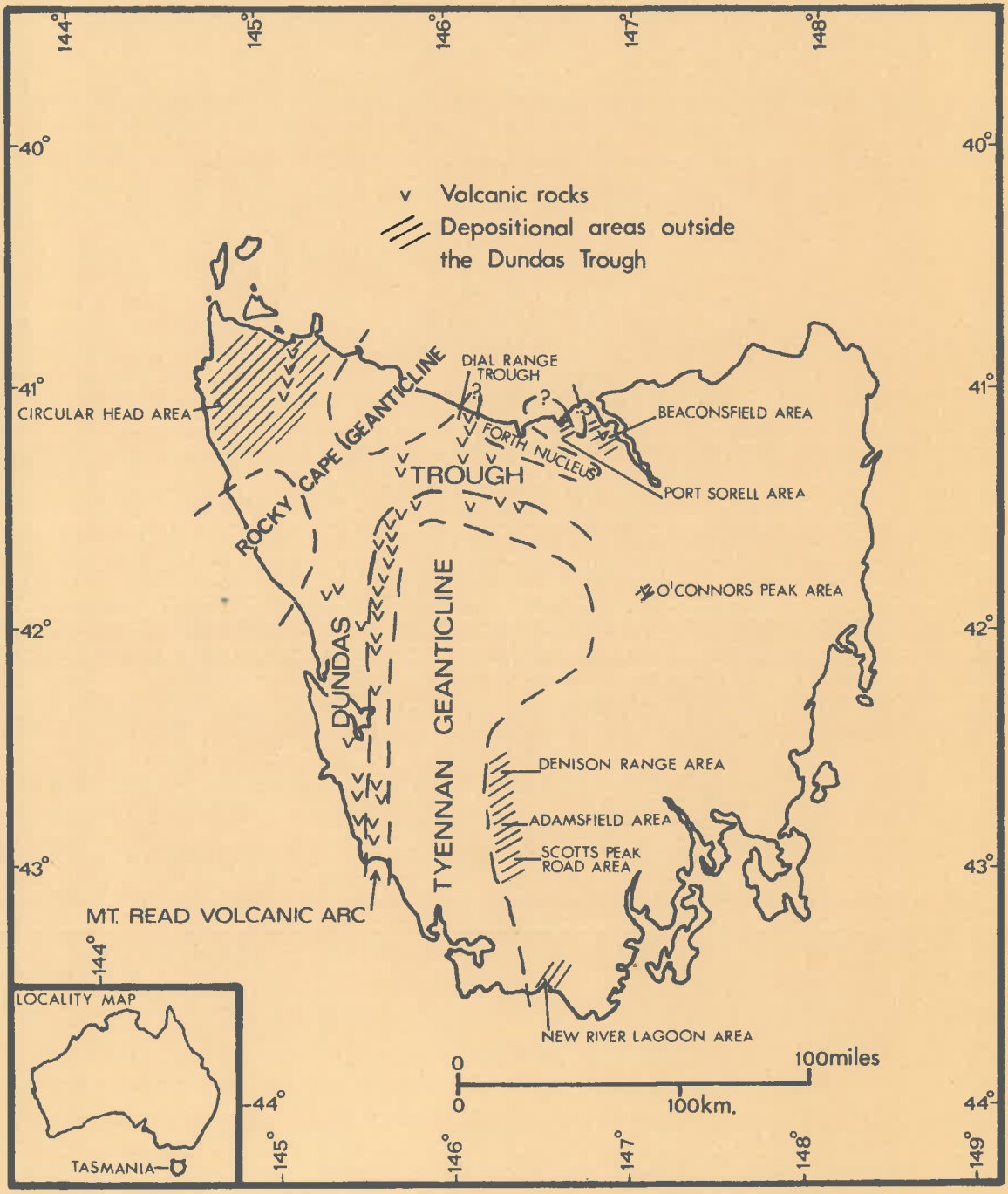

Fig.1. The principal features of the Cambrian palaeogeography of Tasmania

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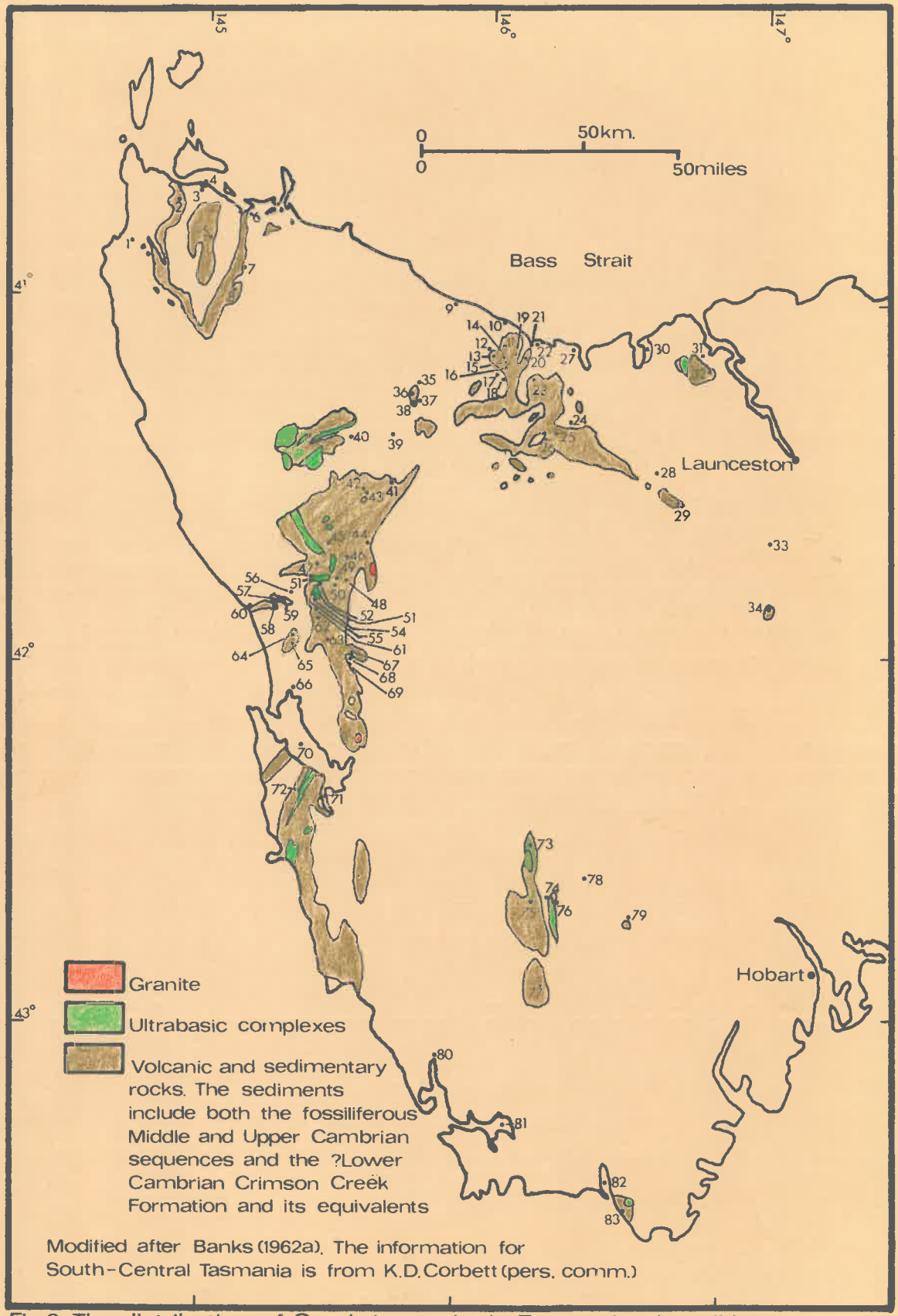


Fig.2. The distribution of Cambrian rocks in Tasmania. Localities mentioned in the text are listed opposite.

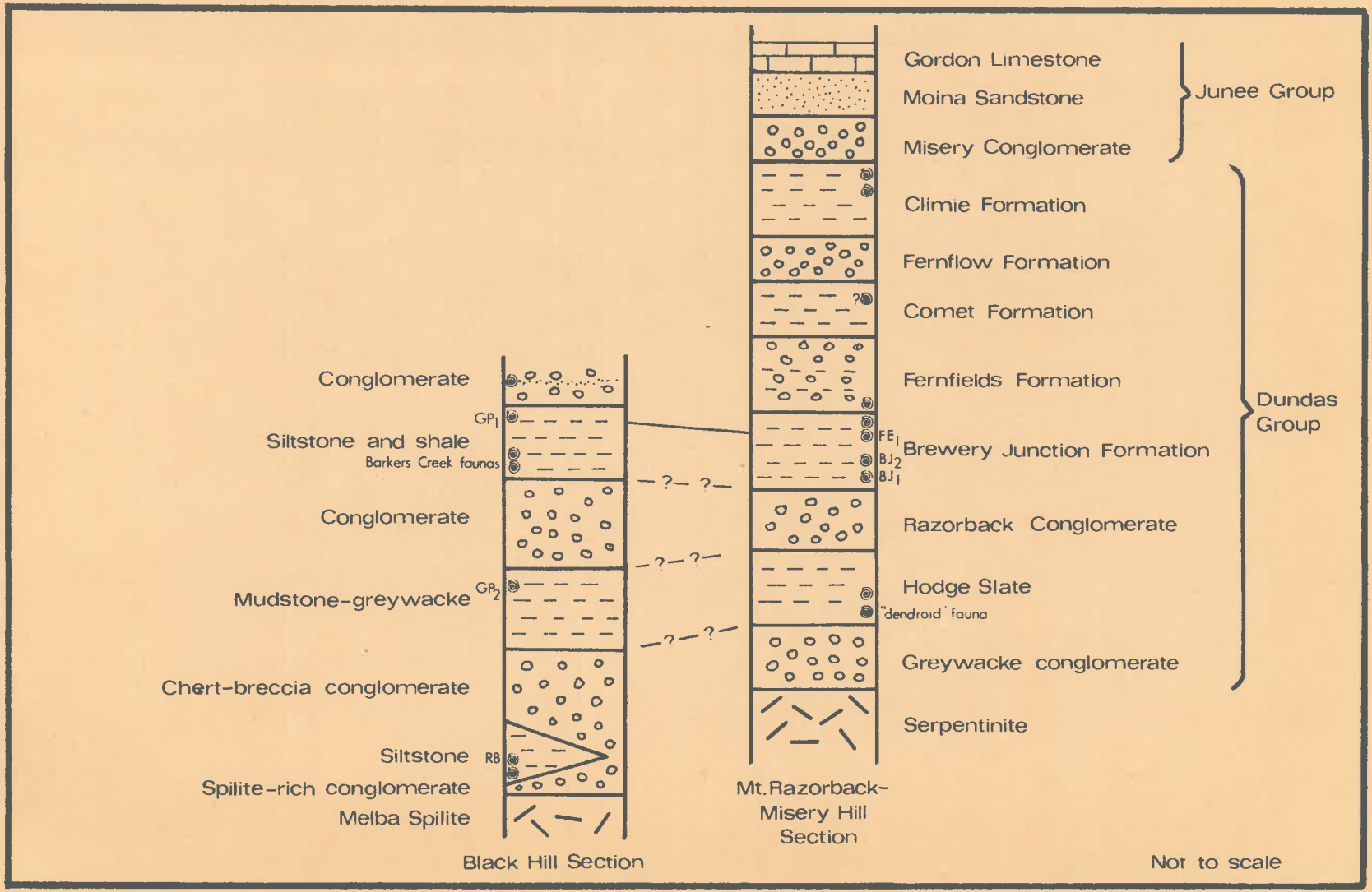


Fig. 4. Correlations between the Mt. Razorback-Misery Hill section (type section of the Dundas Group) and the Black Hill section.

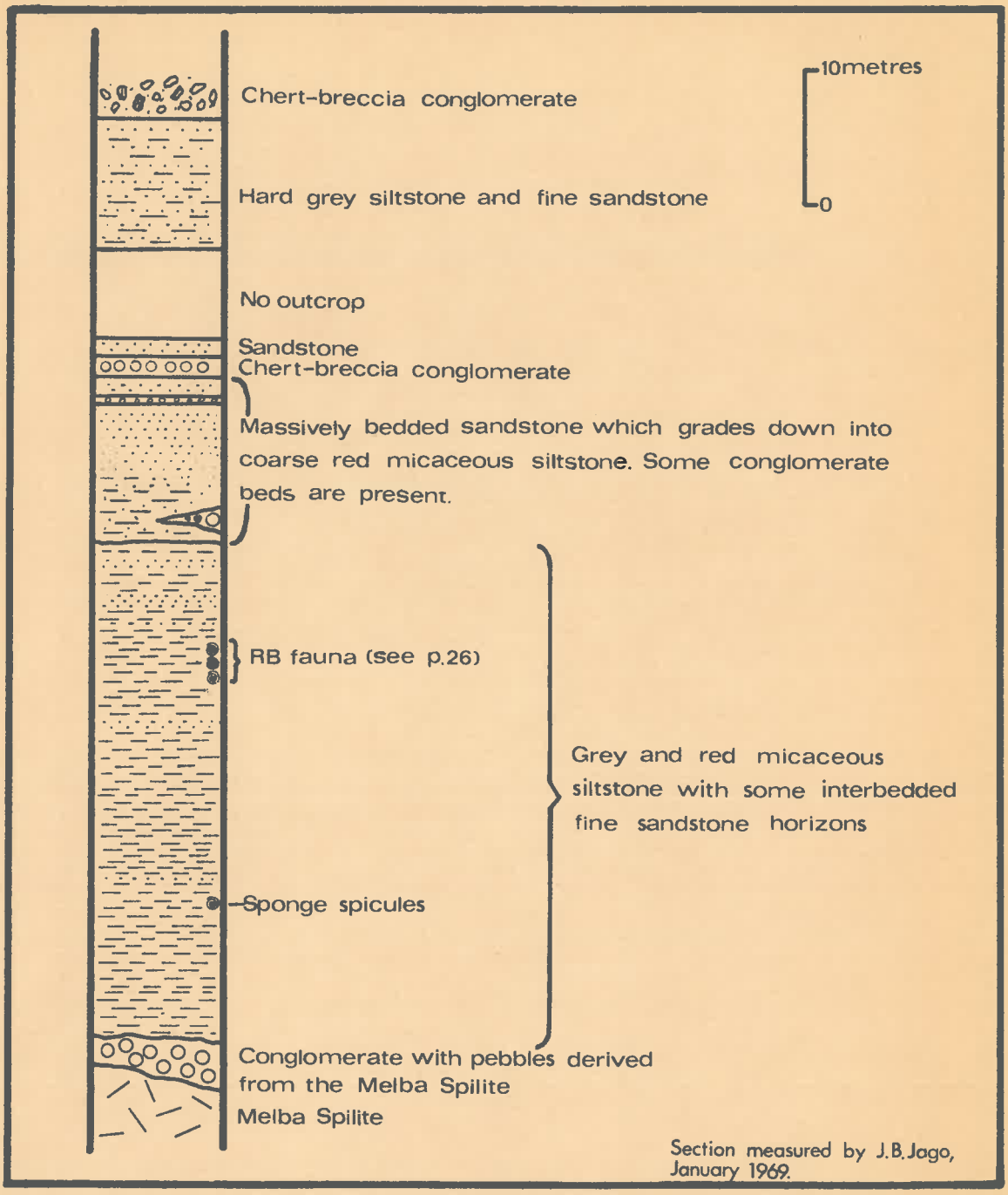


Fig. 5. Section through the basal part of the Black Hill section, Dundas, as exposed near lat. 41°50.7'S, long. 154°24.6'E.

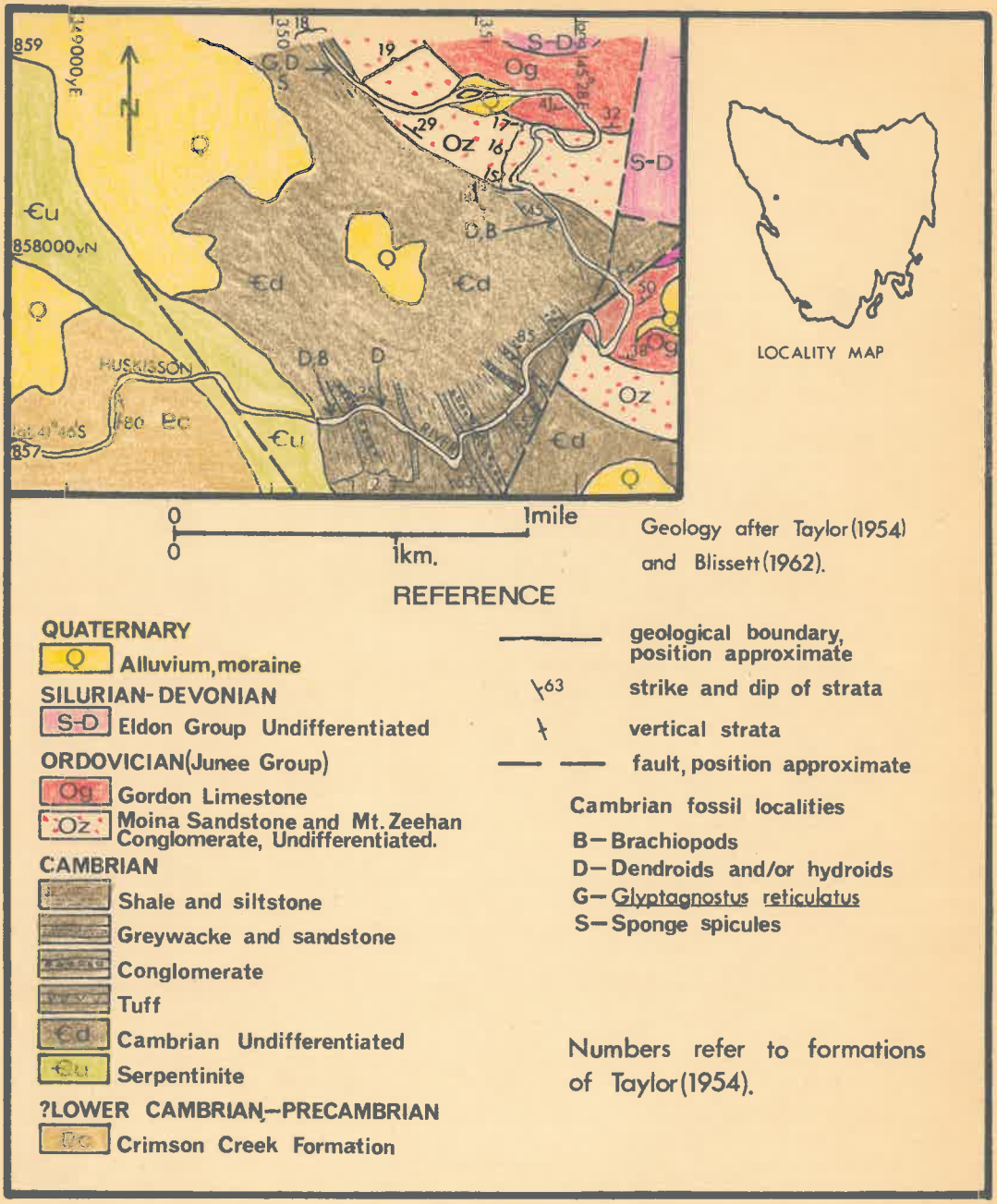


Fig. 6. Geology of the Huskisson River Area

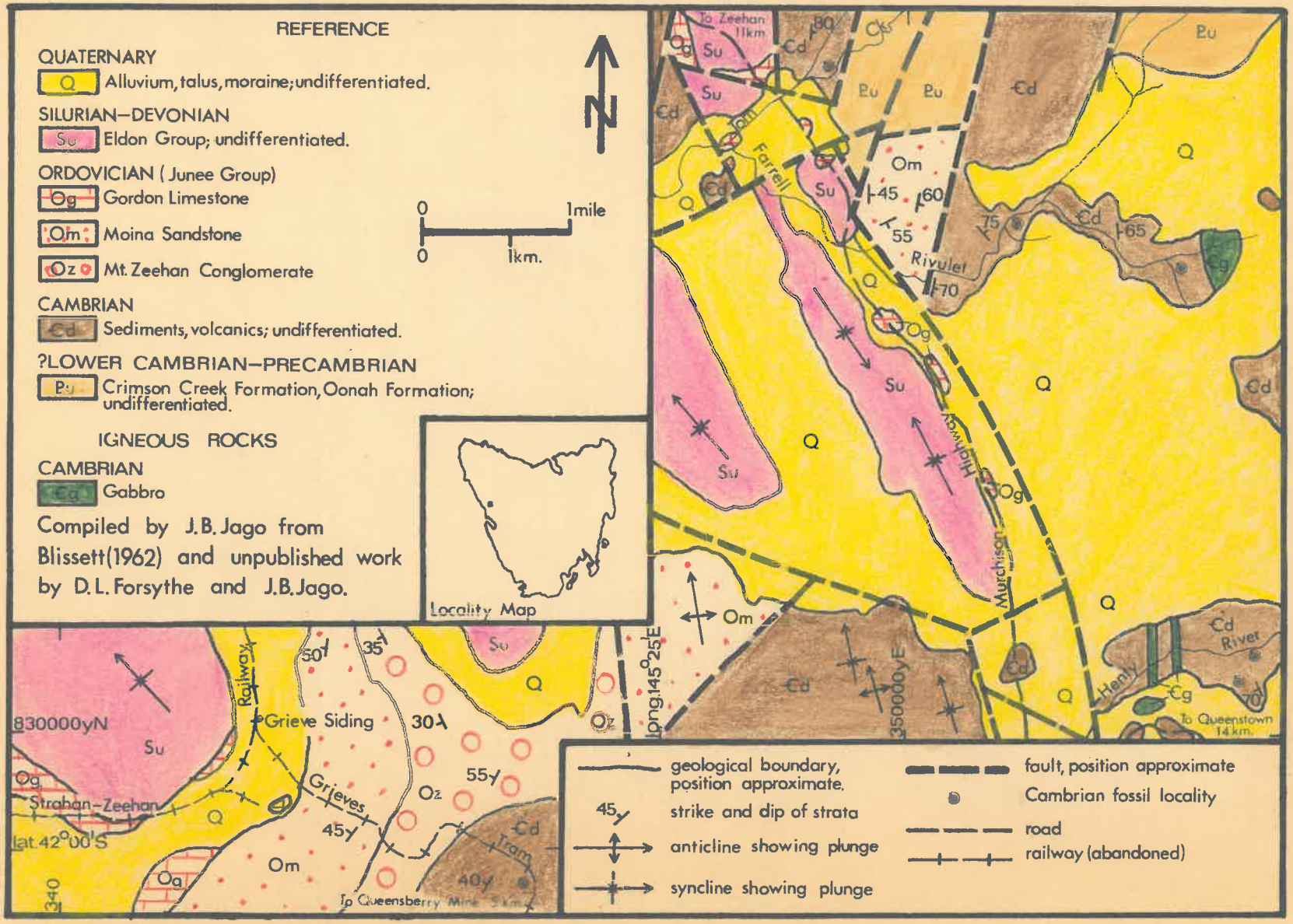


Fig.7. Geology of the Farrell Rivulet–Henty River–Grieves Tram Area.

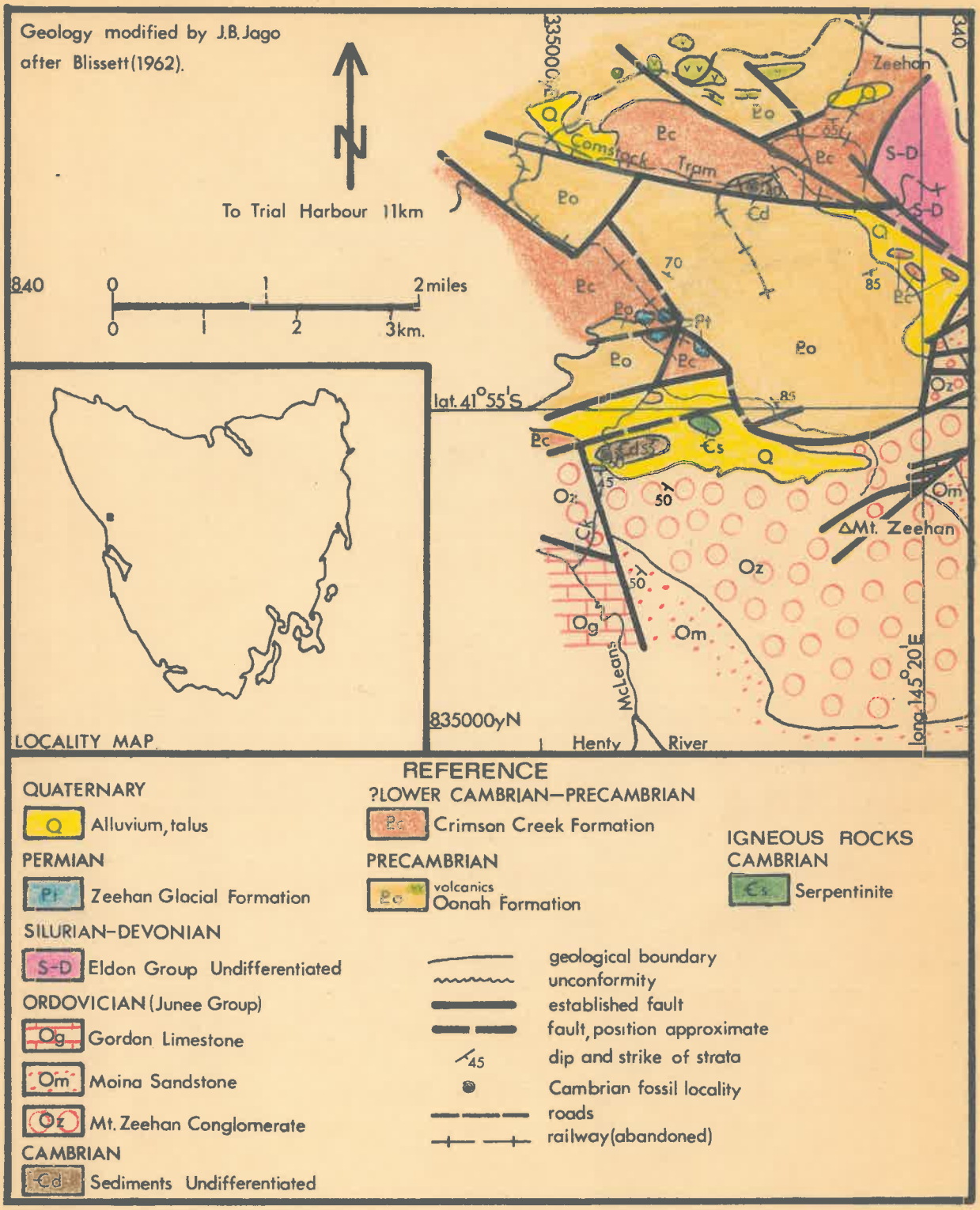


Fig.8. Geology of the Zeehan-McLeans Creek Area.

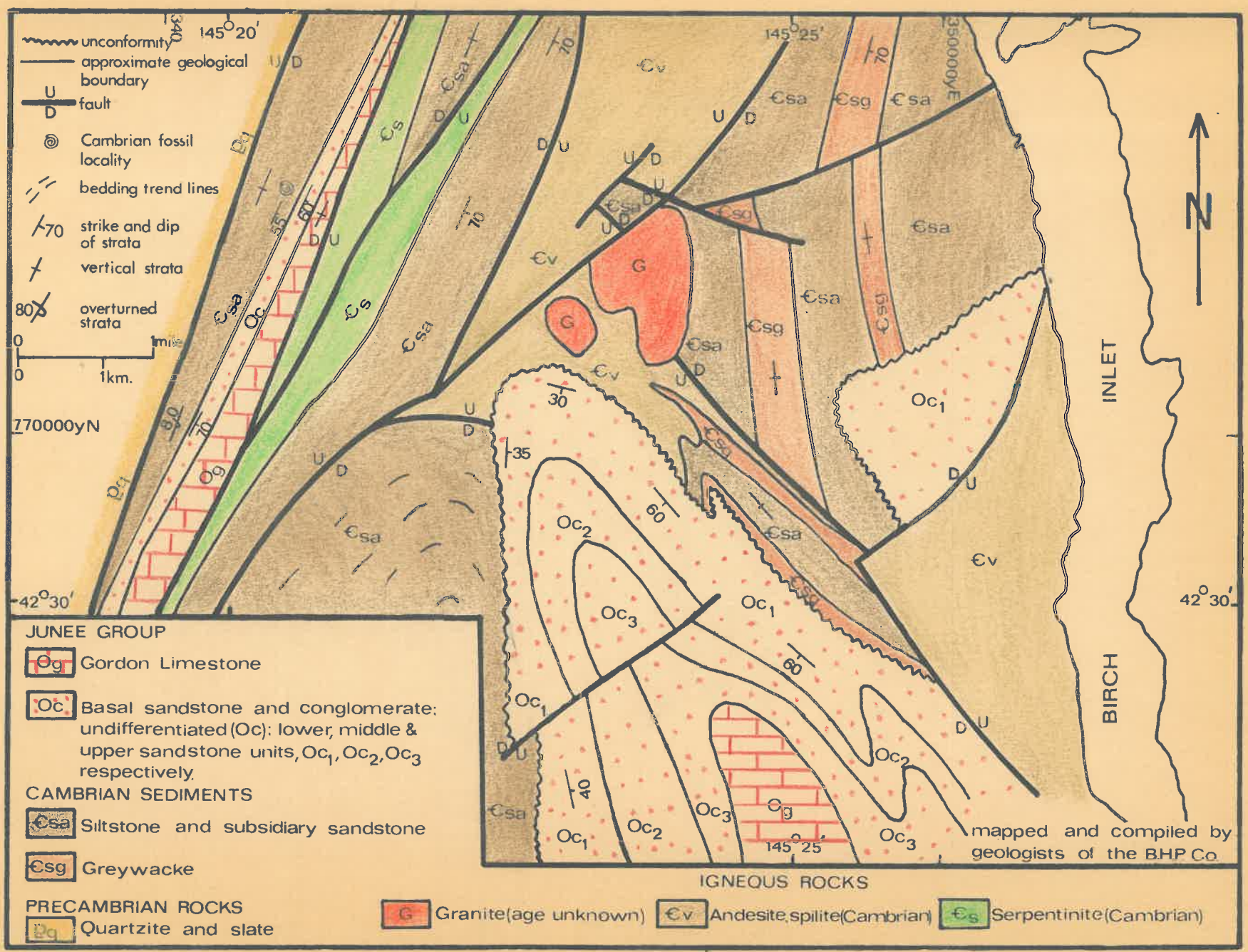


Fig.9. Geology of the Birch Inlet Area

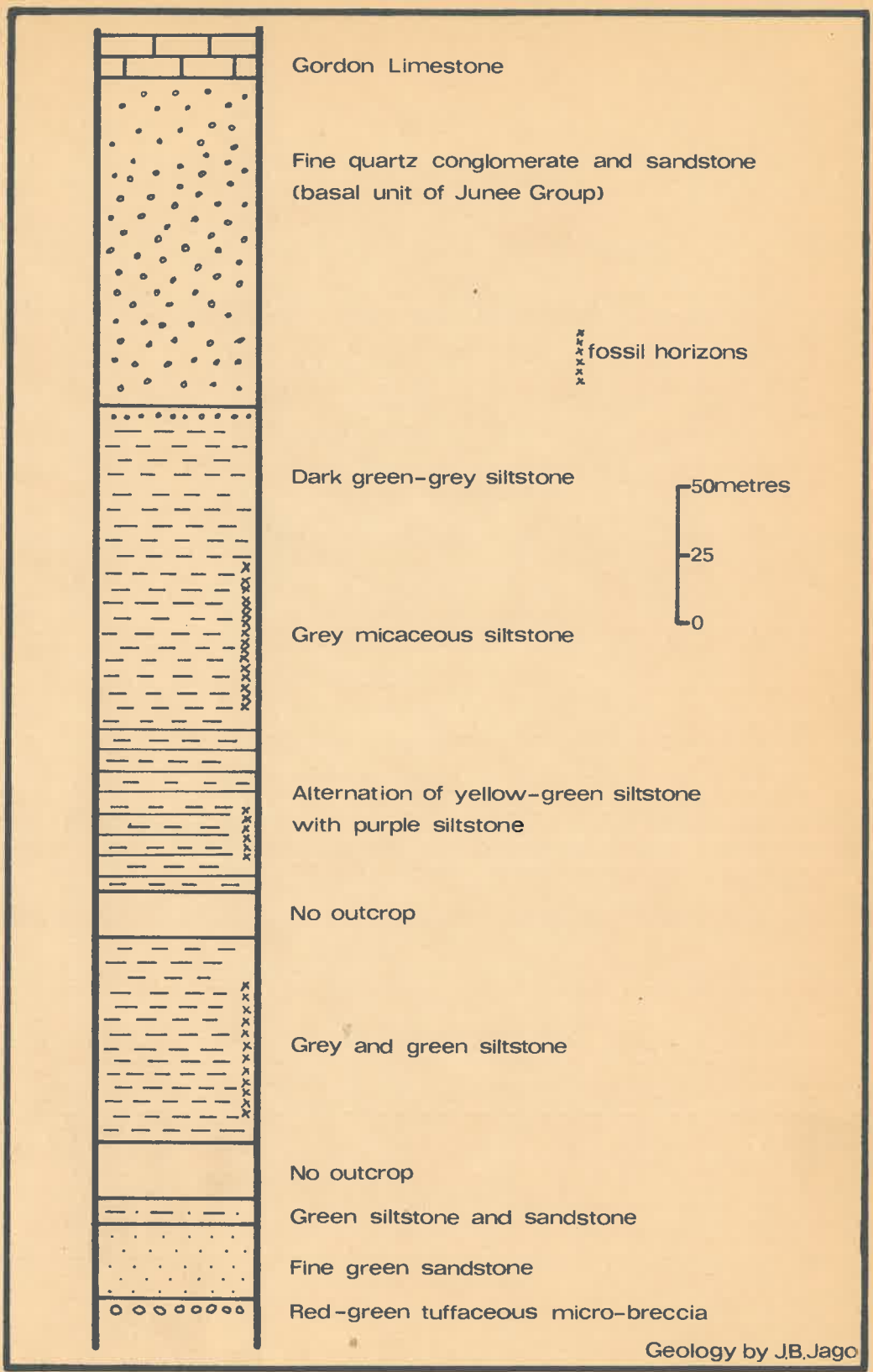


Fig.10. Upper Cambrian–Ordovician section near lat. 42° 27.2′ S. long. 145° 21.1′ E, west of Birch Inlet.

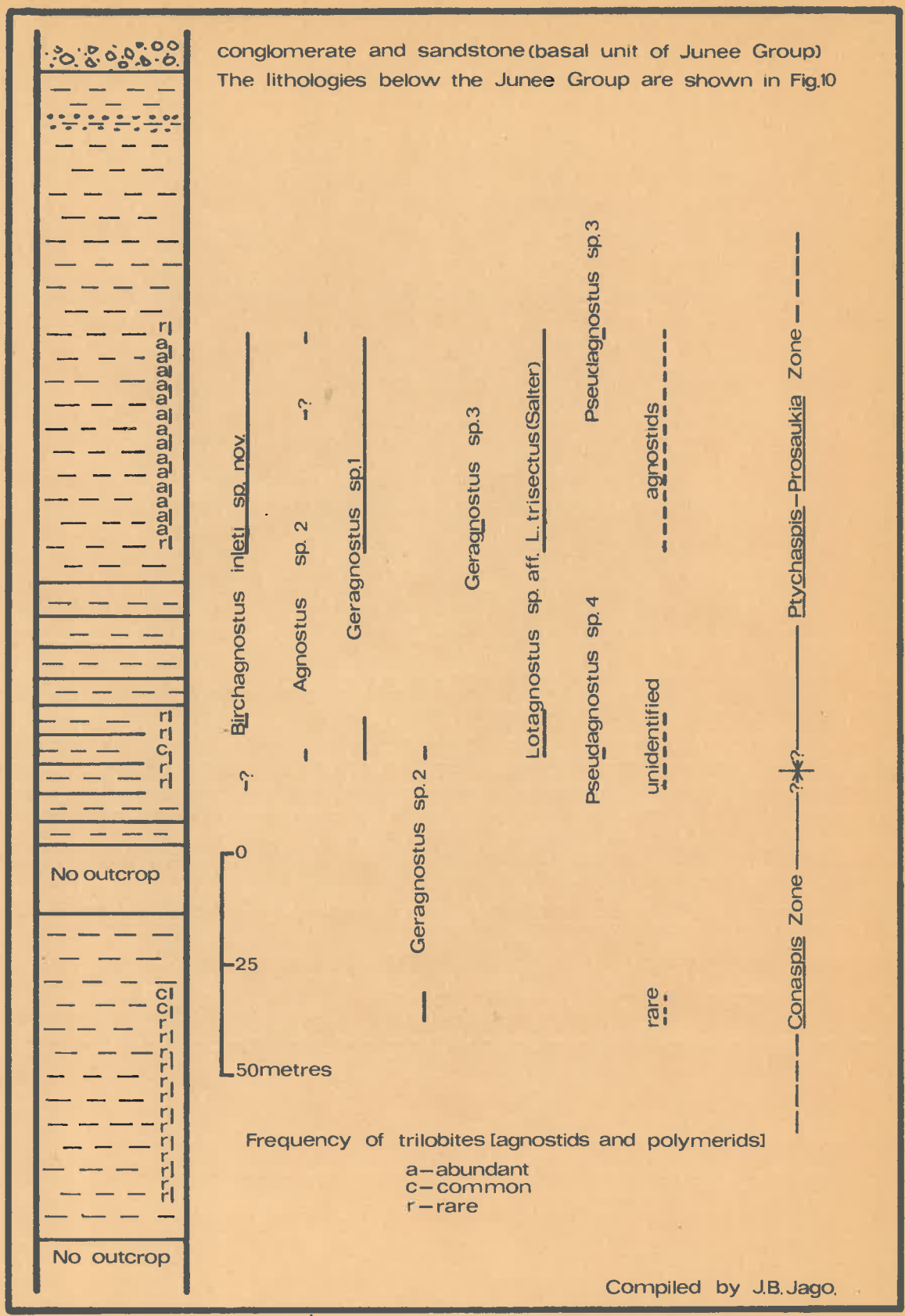


Fig.11. Stratigraphic distribution of agnostid trilobites from the measured section near lat. 42°27.2′S. long. 145°21.1′E. west of Birch Inlet.

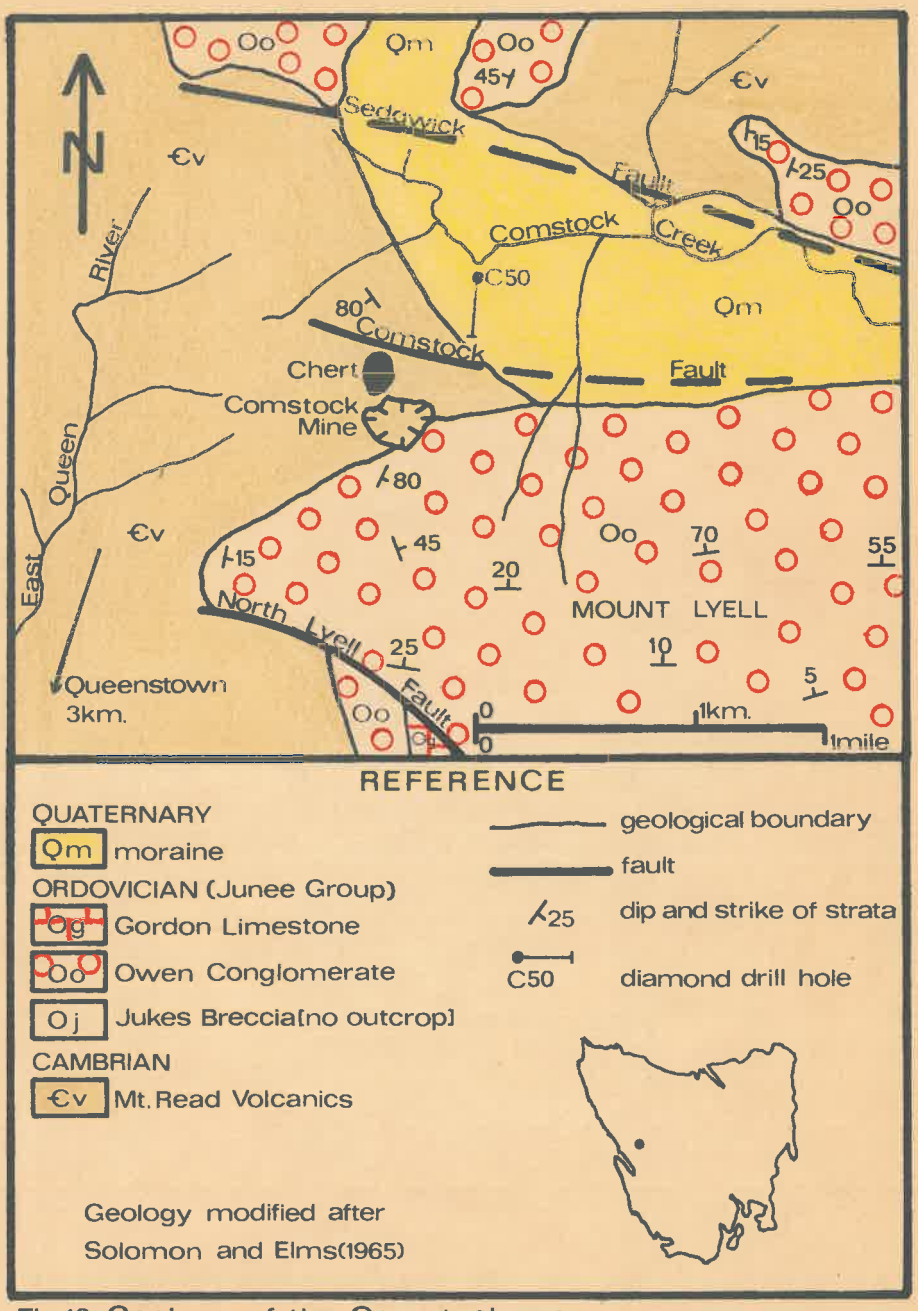


Fig.12. Geology of the Comstock area

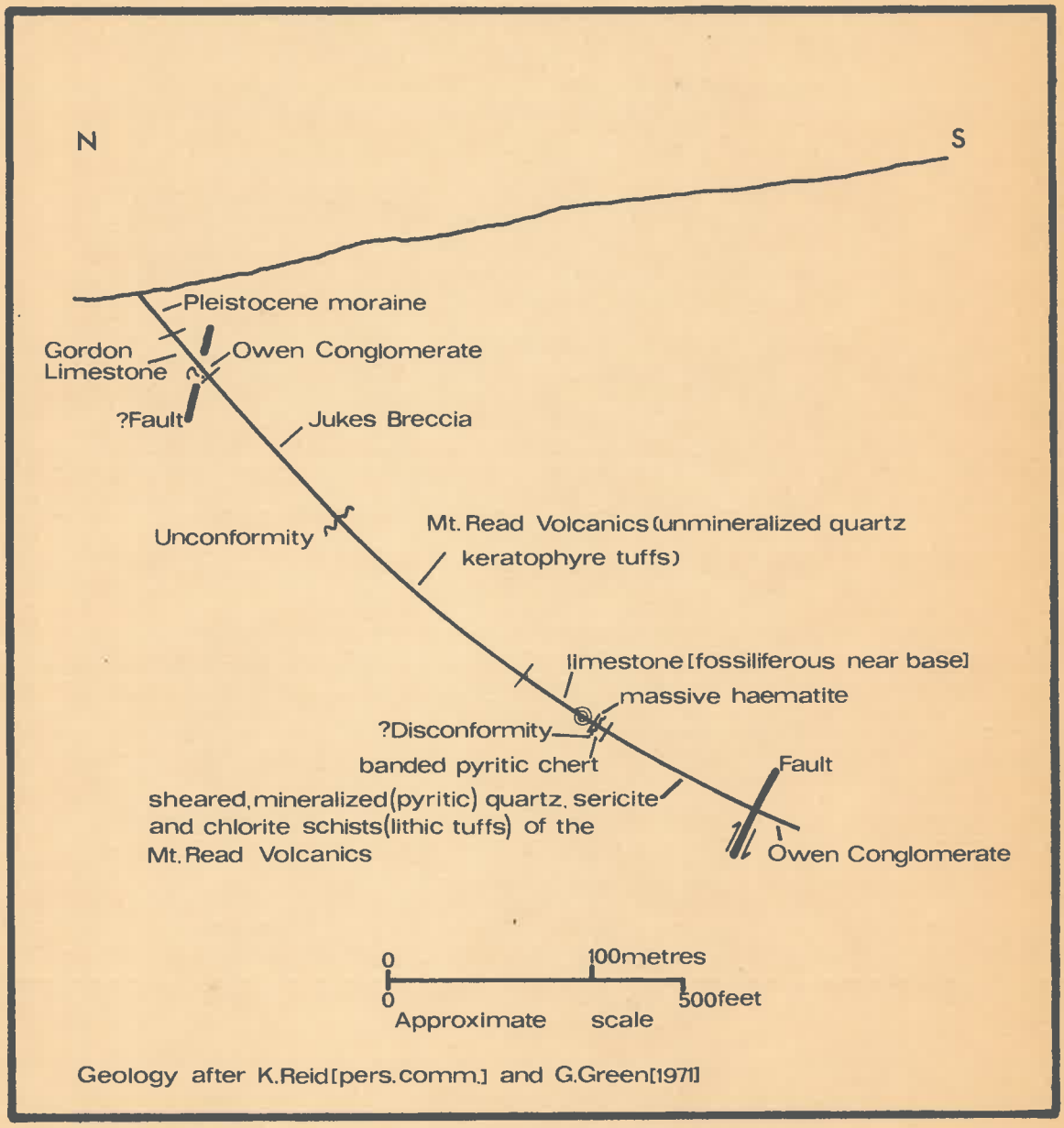
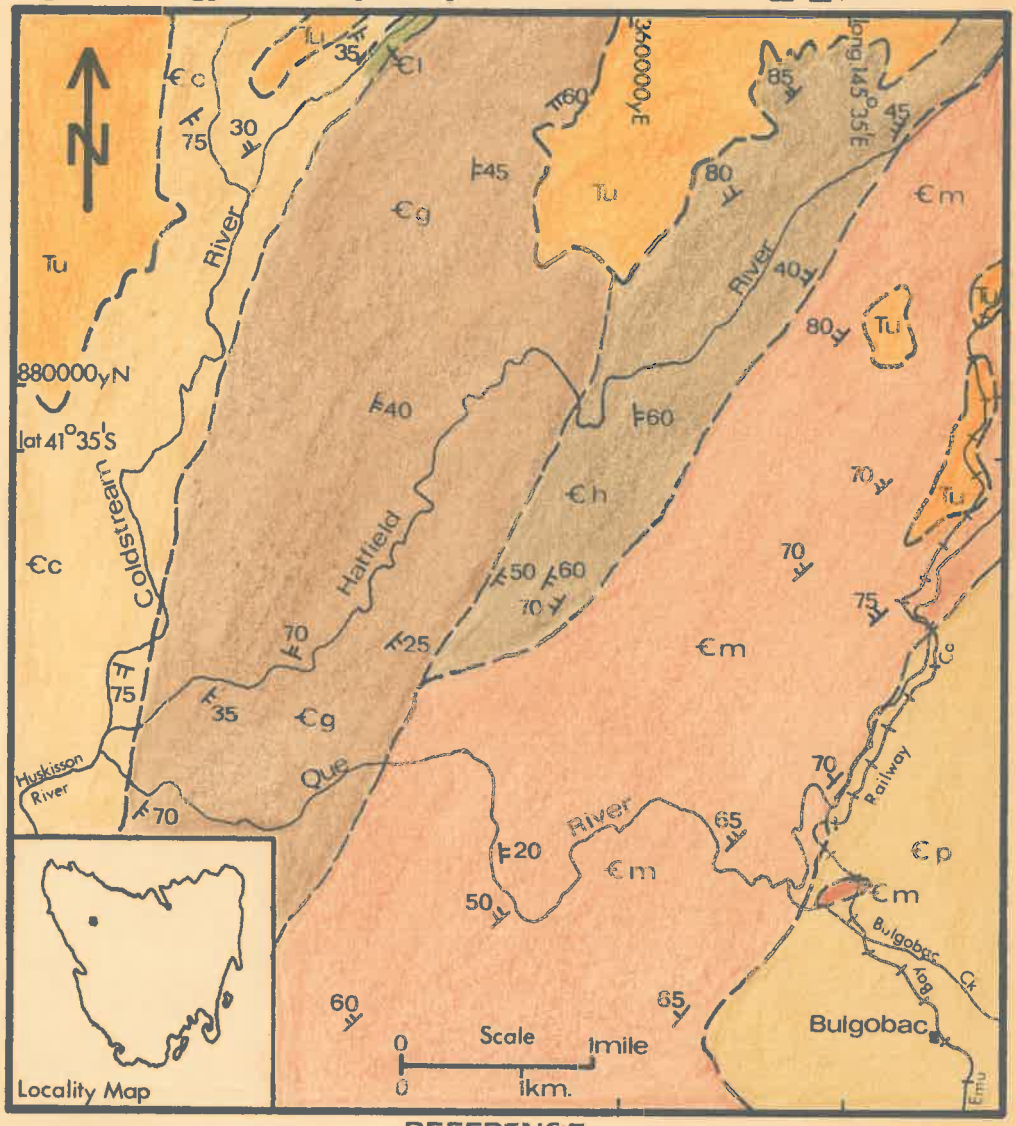


Fig. 13. Section along diamond drill hole C50, Comstock area.

Fig.14. Geology of the Que Syncline (after Barton et al., 1966)



REFERENCE

TERTIARY

- Tu — Basalt, non-marine sediments

CAMBRIAN

- €m — Mudstone, quartzite and greywacke sequence
- €h — Greywacke and mudstone sequence of the Hatfield River area
- €g — Greywacke conglomerate–sandstone and mudstone sequence
- €l — Limestone conglomerate
- €c — Mudstone and greywacke sequence of the Coldstream River area
- €p — Mt. Read Volcanics

- geological boundary, position approximate
- 70 — strike and dip of strata, facing known
- 25 — strike and dip of strata, facing unknown
- railway

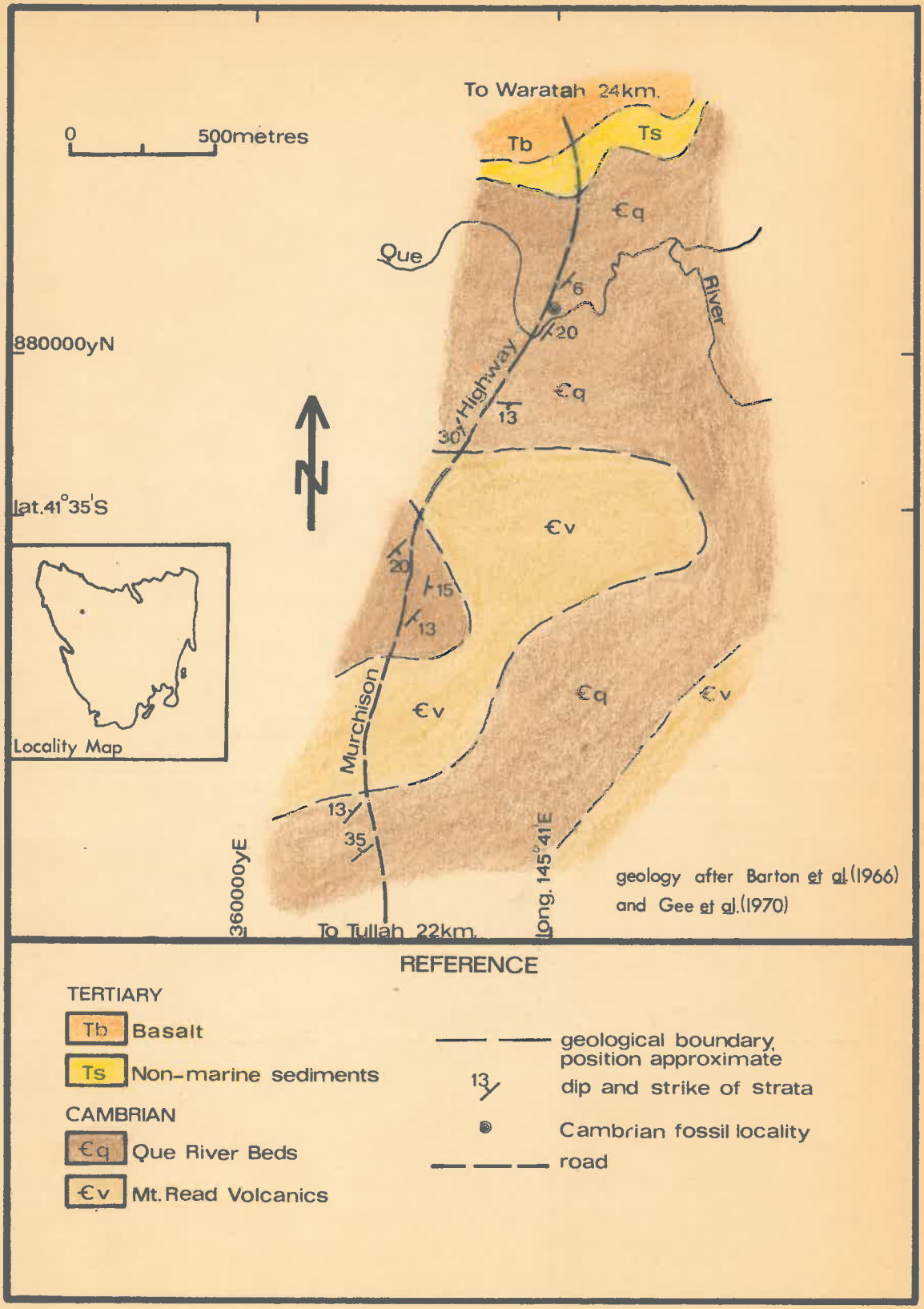


Fig.15. Geology of the area near the Murchison Highway bridge over the Que River

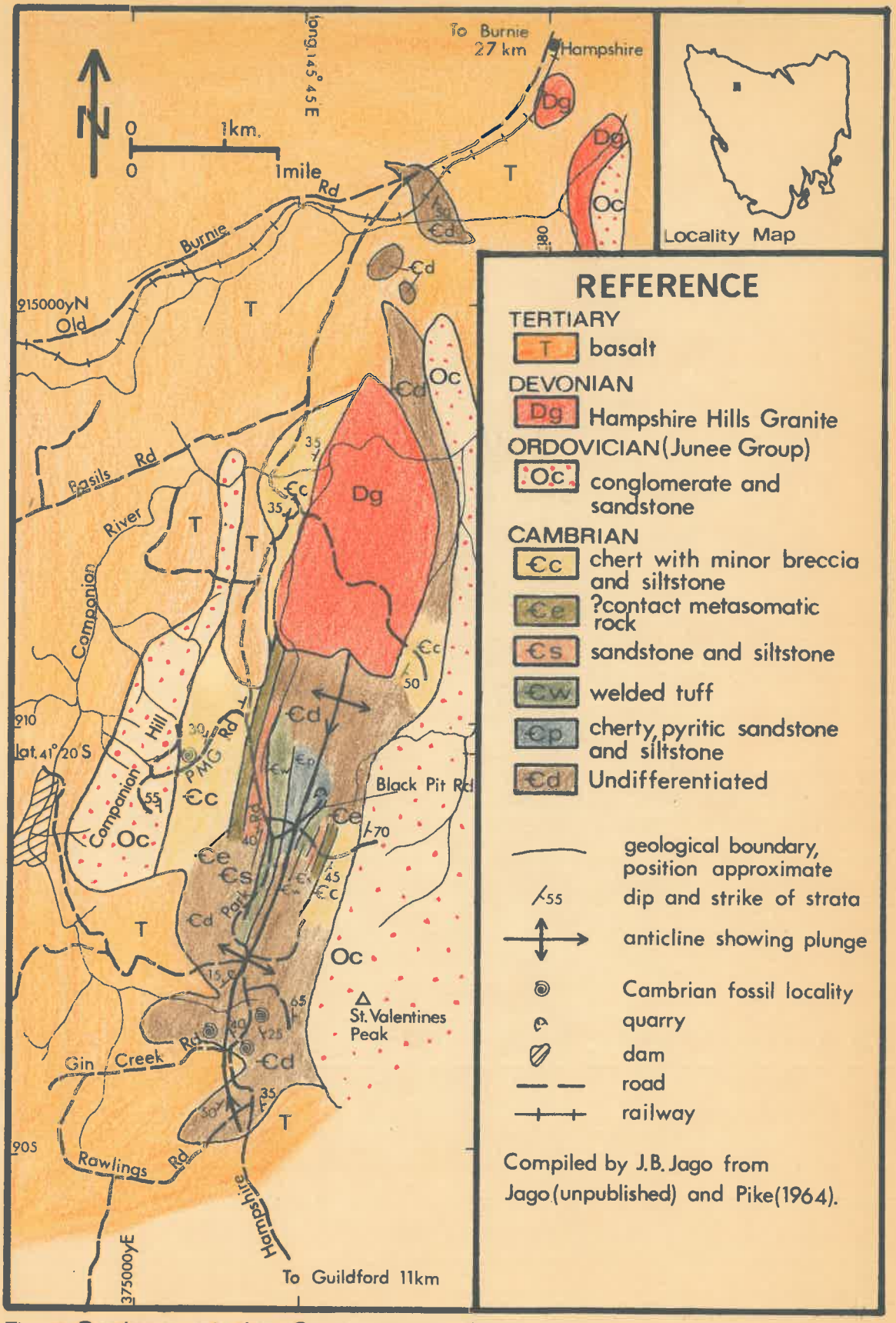


Fig.16. Geology of the St. Valentines Peak area.

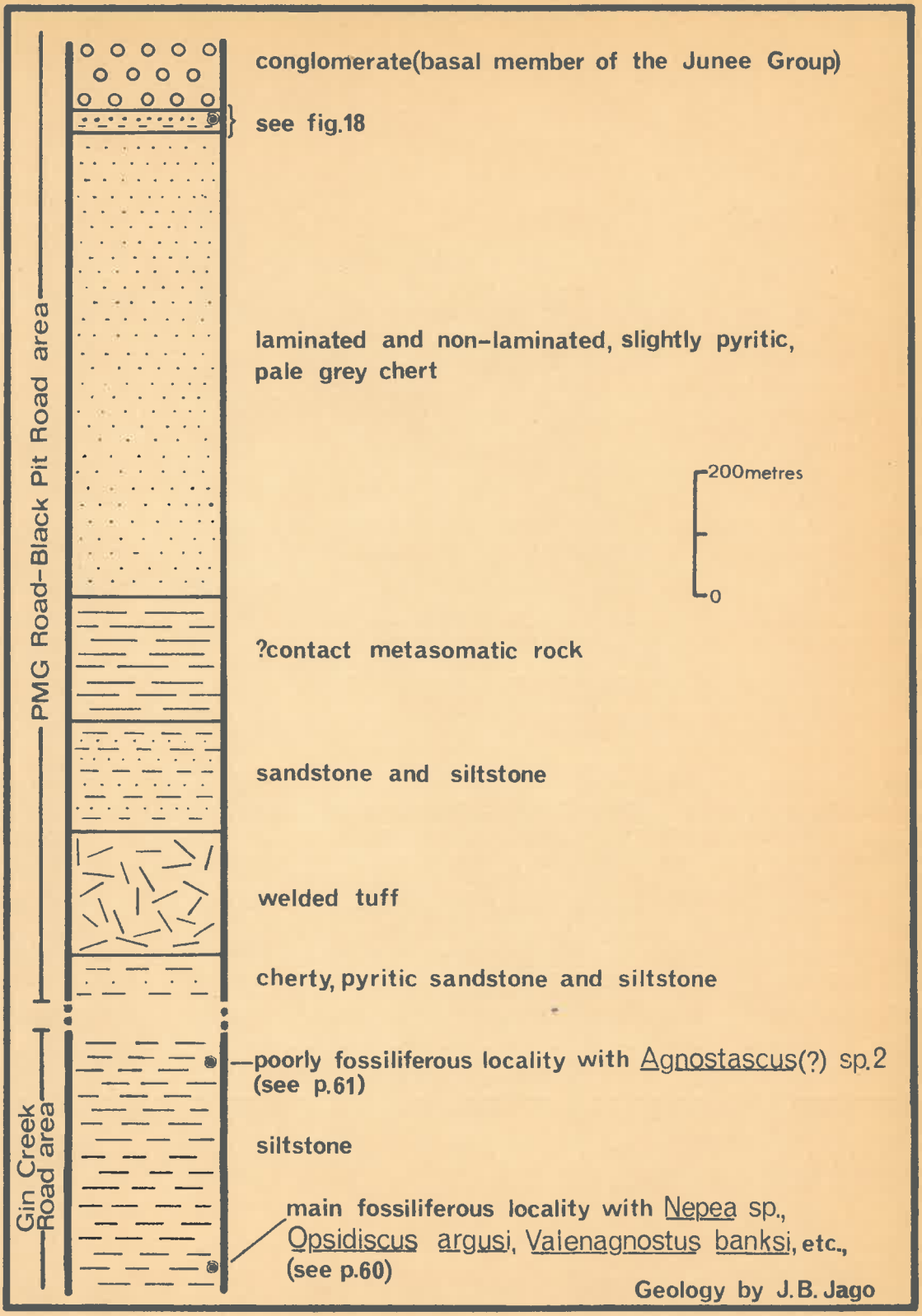


Fig.17. Stratigraphic column of the Cambrian rocks of the St.Valentines Peak area showing the possible stratigraphic relationship between the rocks of the PMG Road–Black Pit Road area and those of the Gin Creek Road area

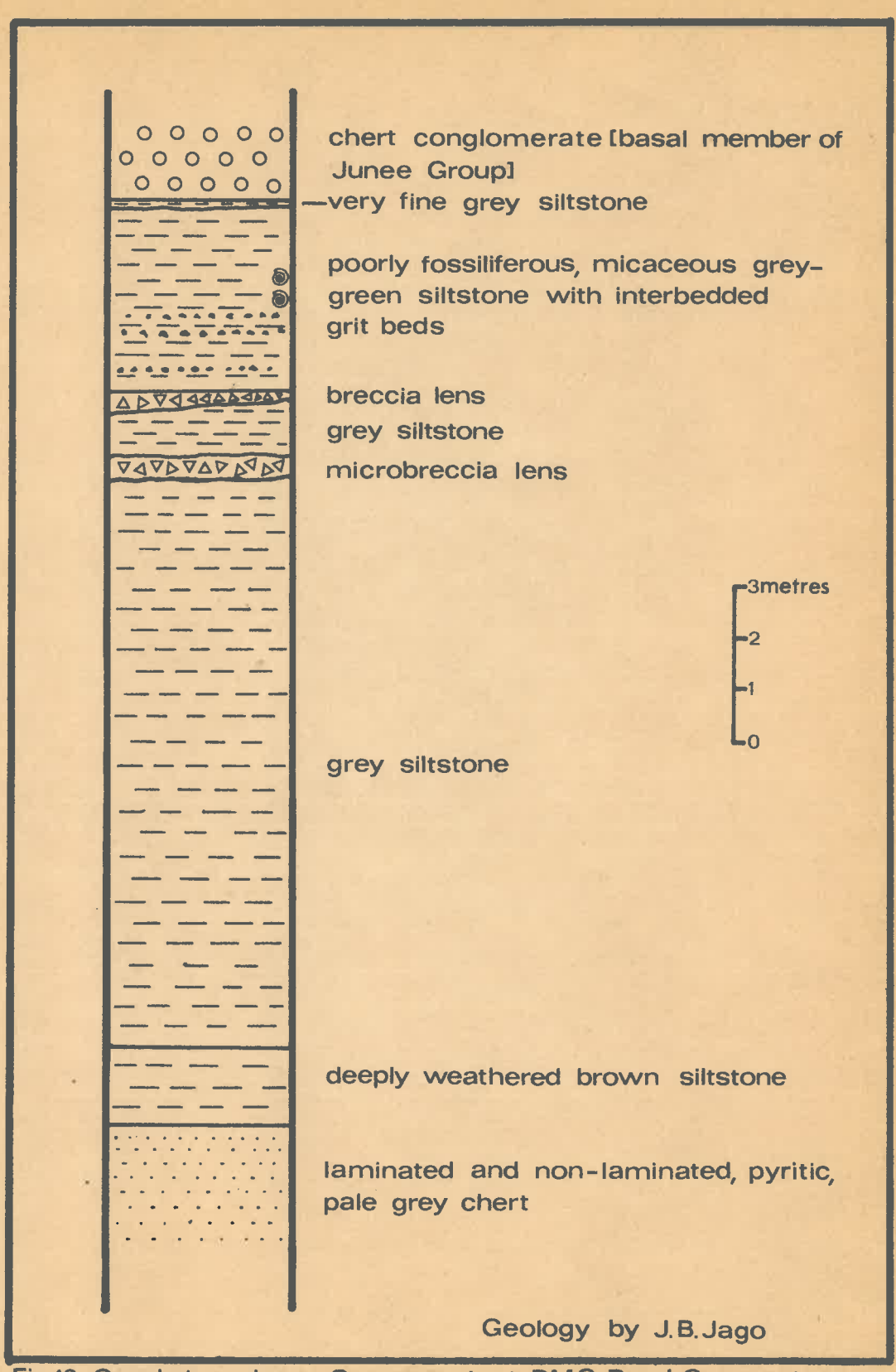


Fig.18. Cambrian–Junee Group contact, PMG Road, Companion Hill (lat.41°20.0'S, long.145°44.0'E)

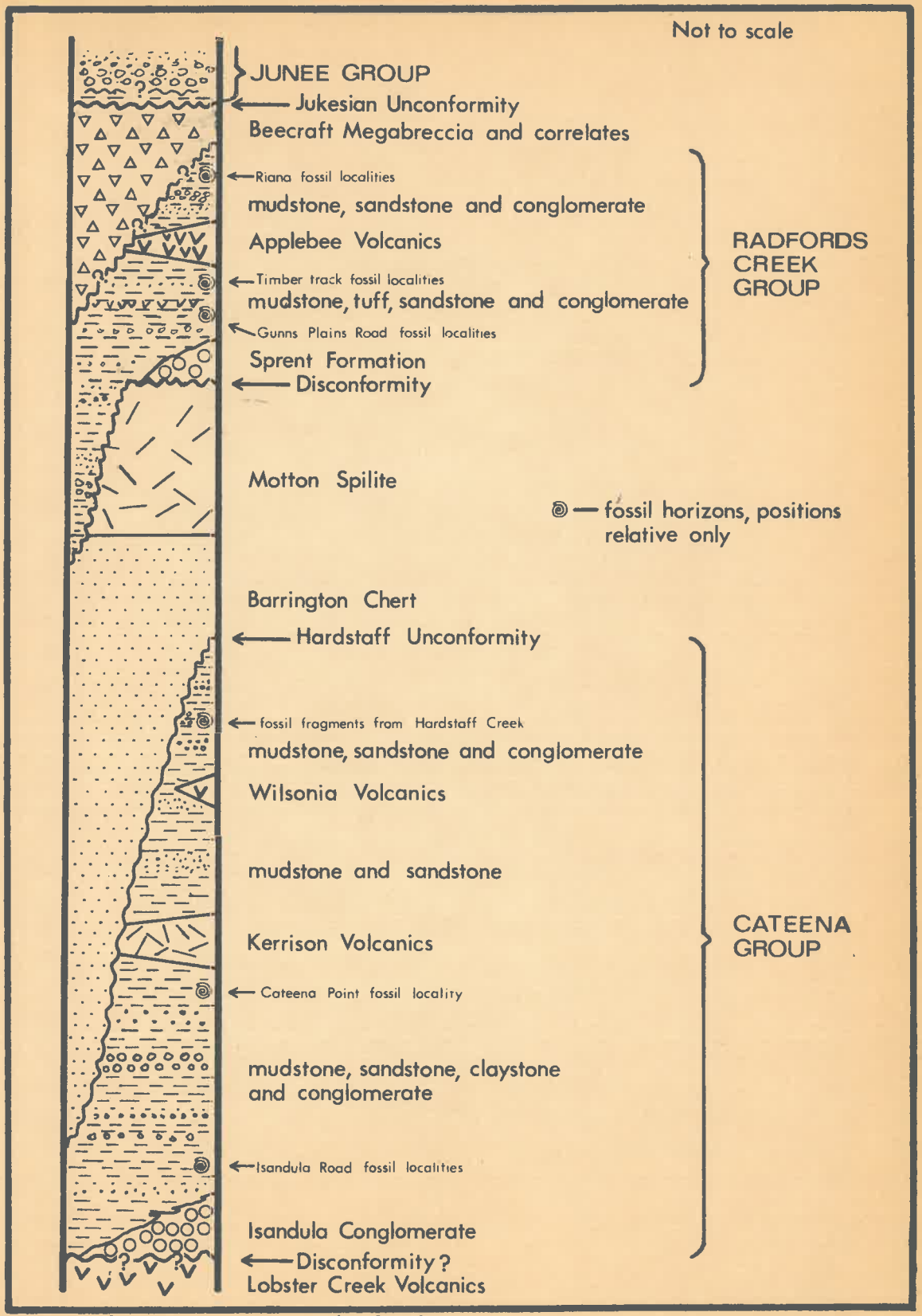


Fig. 20. Columnar section of the Cambrian succession of the Dial Range Trough (modified after Burns, 1964).

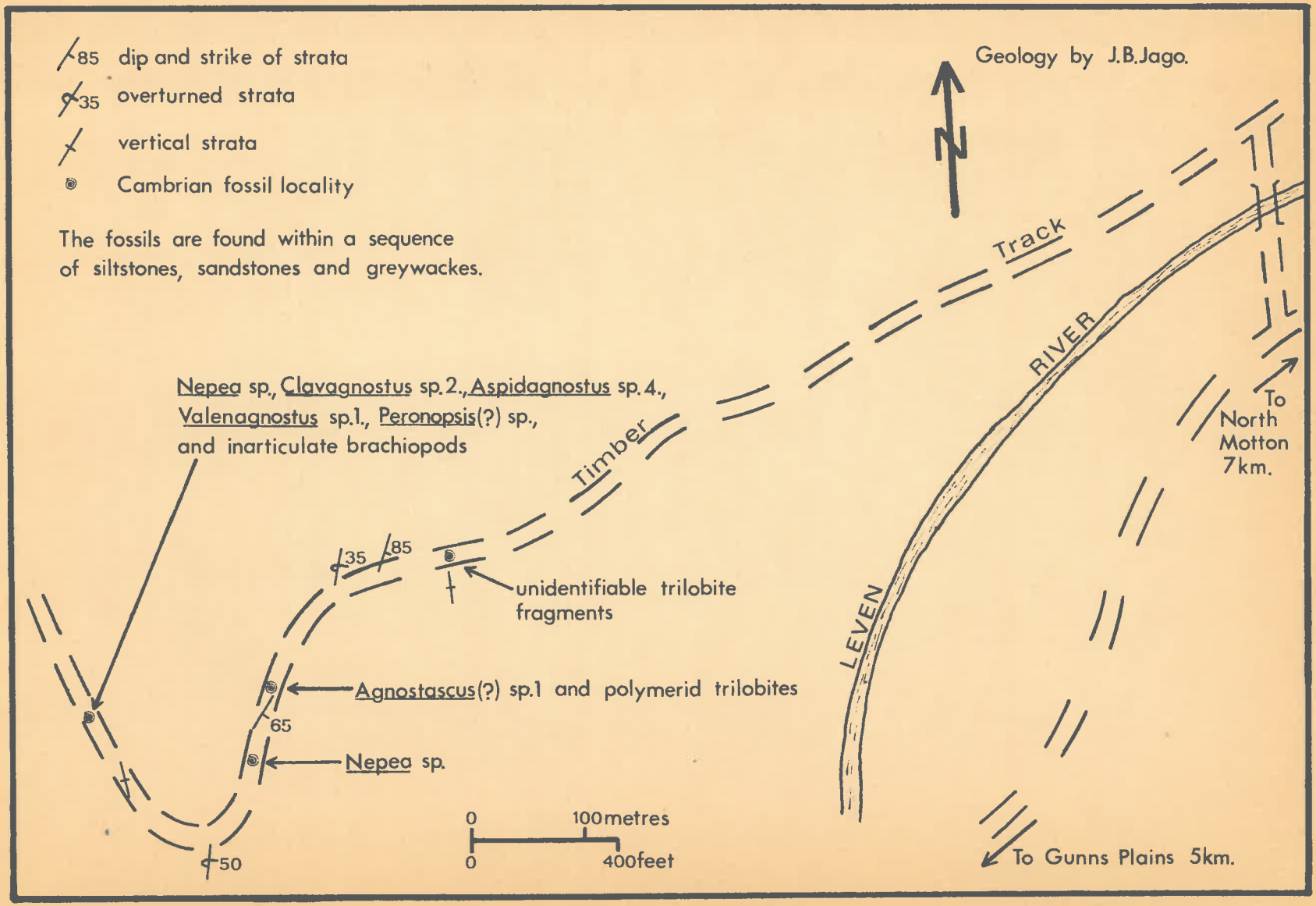


Fig. 21. Geological sketch map of an area along an old timber track on the west side of Sugarloaf Gorge.

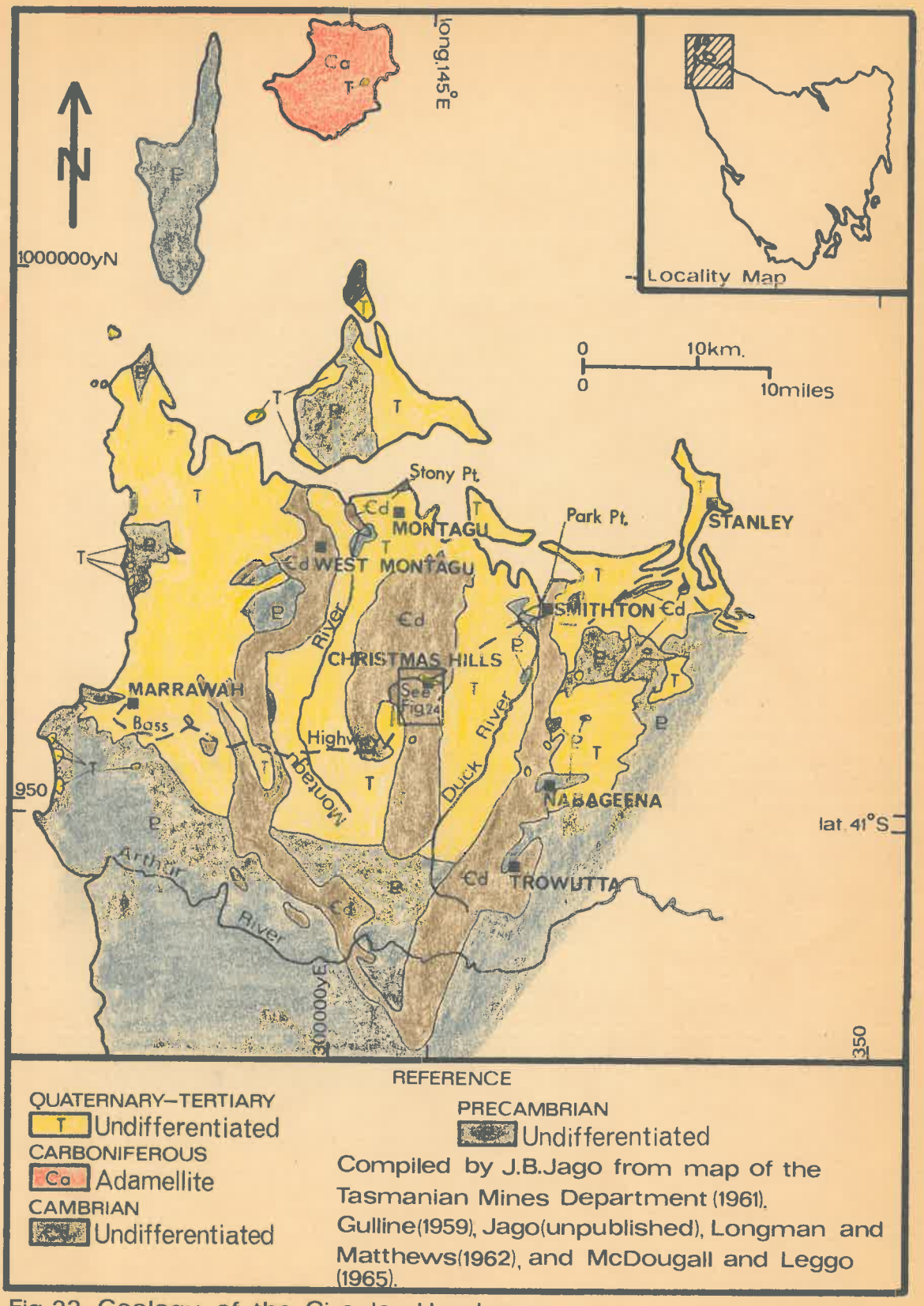


Fig. 22. Geology of the Circular Head area.

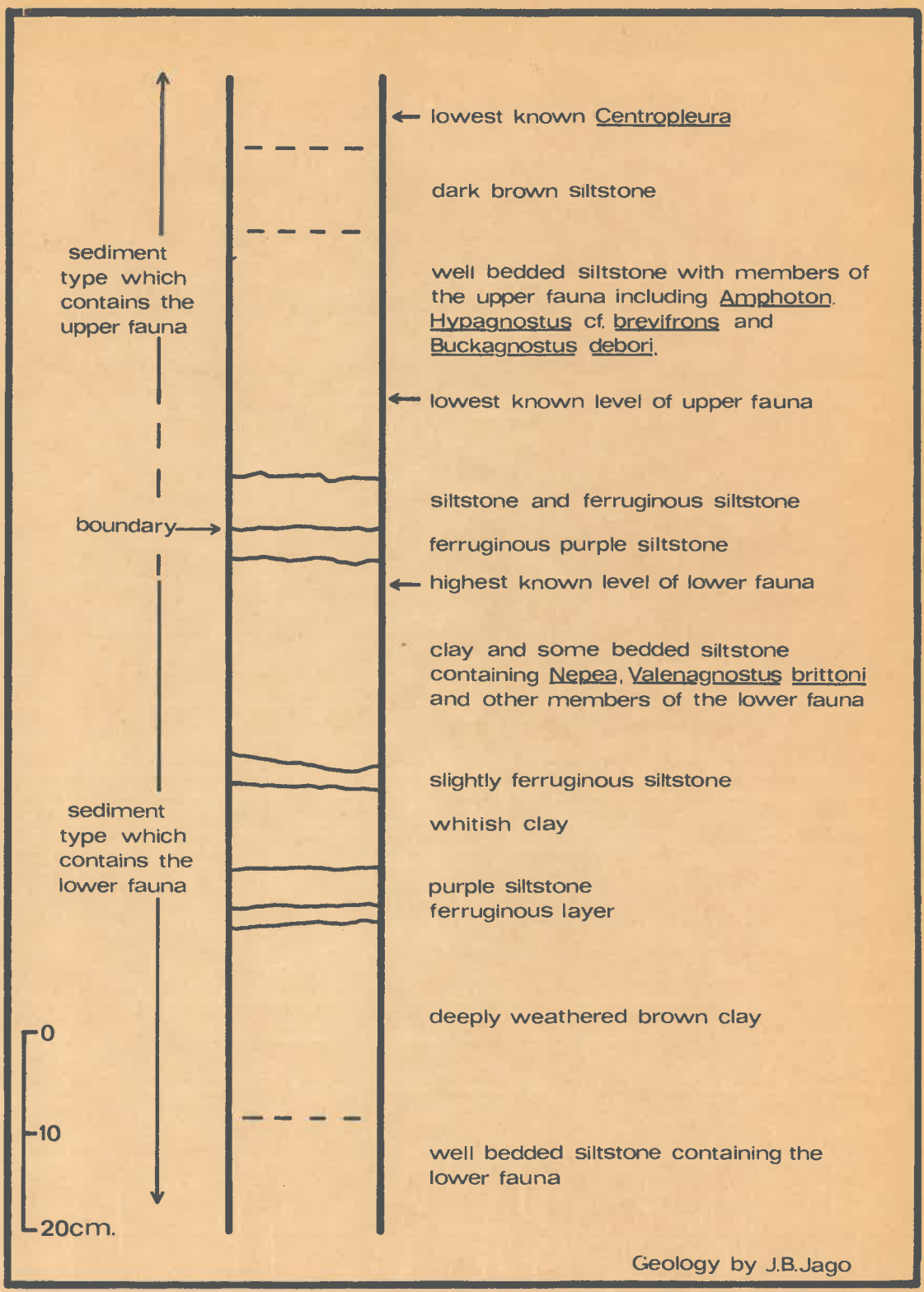


Fig. 23. Section through the faunal change, Christmas Hills [after Jago and Buckley, 1971]

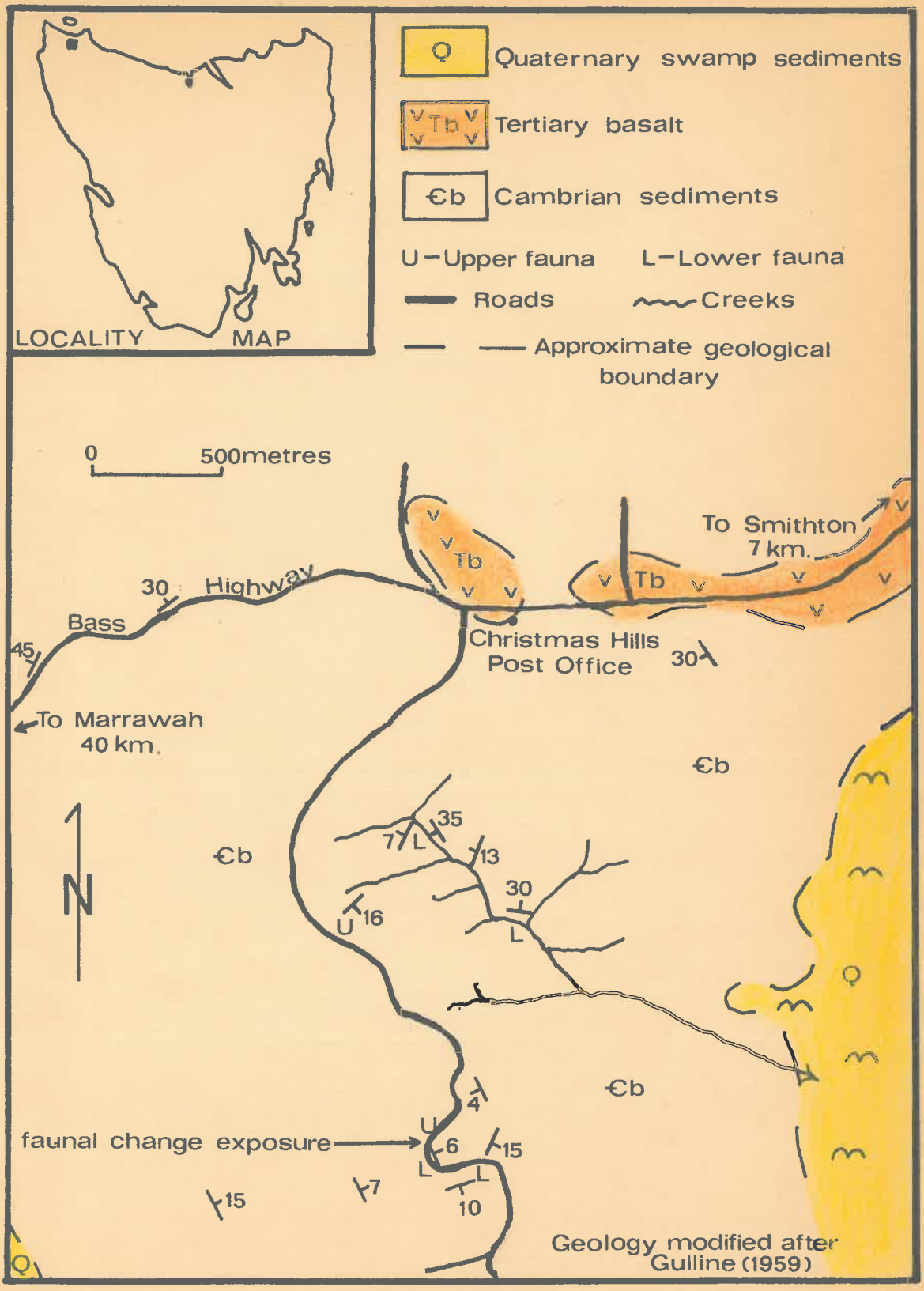
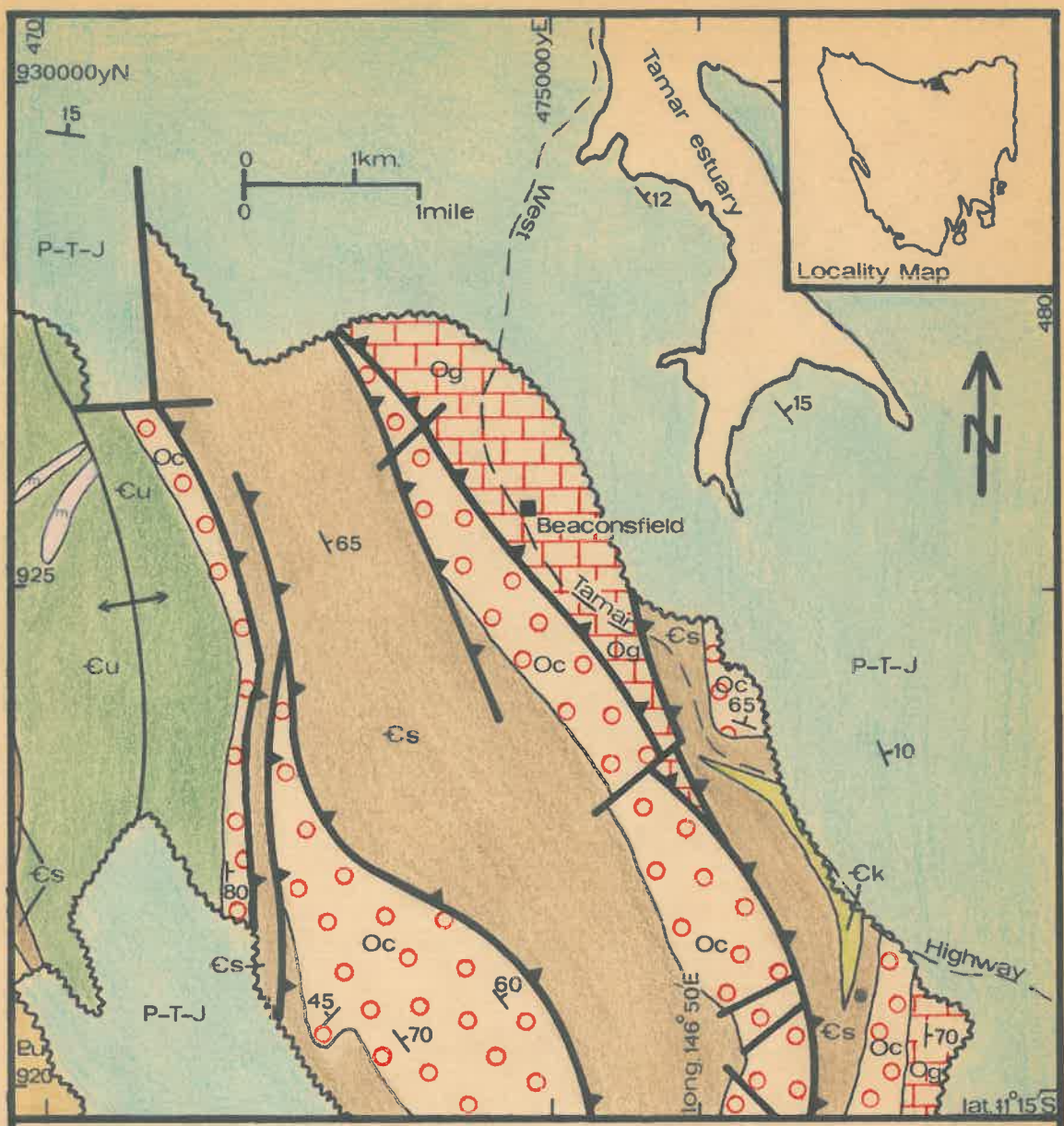


Fig. 24 – Geology of the Christmas Hills Area



REFERENCE

PERMIAN-TRIASSIC-JURASSIC

P-T-J Undifferentiated

ORDOVICIAN (Junee Group)

Og Gordon Limestone

Oc conglomerate and sandstone

CAMBRIAN

Cs siltstone and slate

Cu(m) mafic and ultramafic rocks with septum of metamorphic rocks

Ck quartz keratophyre

PRECAMBRIAN

Pu Undifferentiated

normal fault

thrust fault

unconformity

70 dip and strike of strata

fold trace (minor folding is not shown)

geological boundary

road

Cambrian fossil locality

Fig. 25. Bedrock geology of the Beaconsfield area (modified after an unpublished map of R.D. Gee)

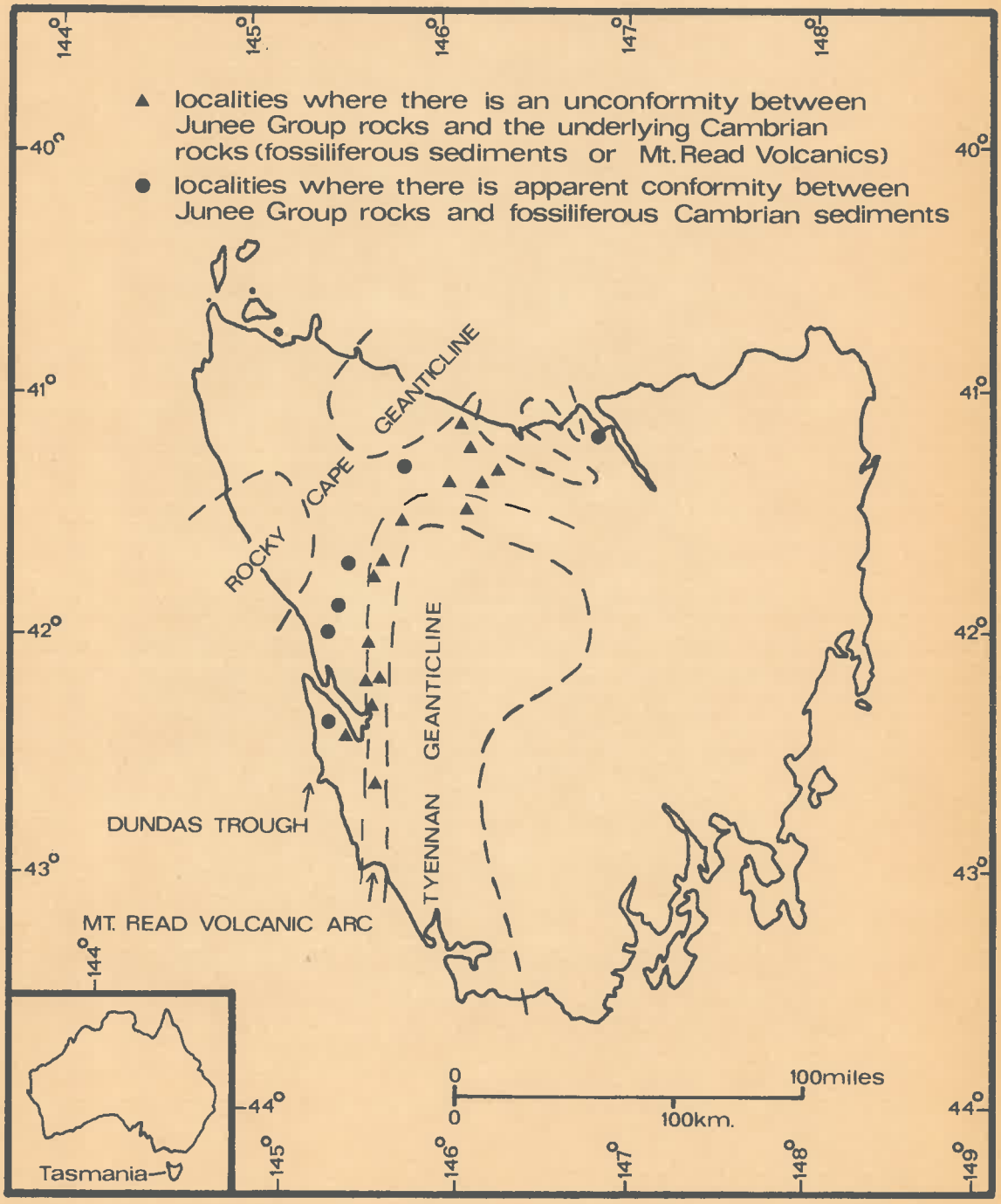


Fig. 26. Unconformable and apparently conformable contacts between the Junee Group sediments and the underlying Cambrian rocks. The apparently conformable contacts are in reality disconformable ones (see p. 90).

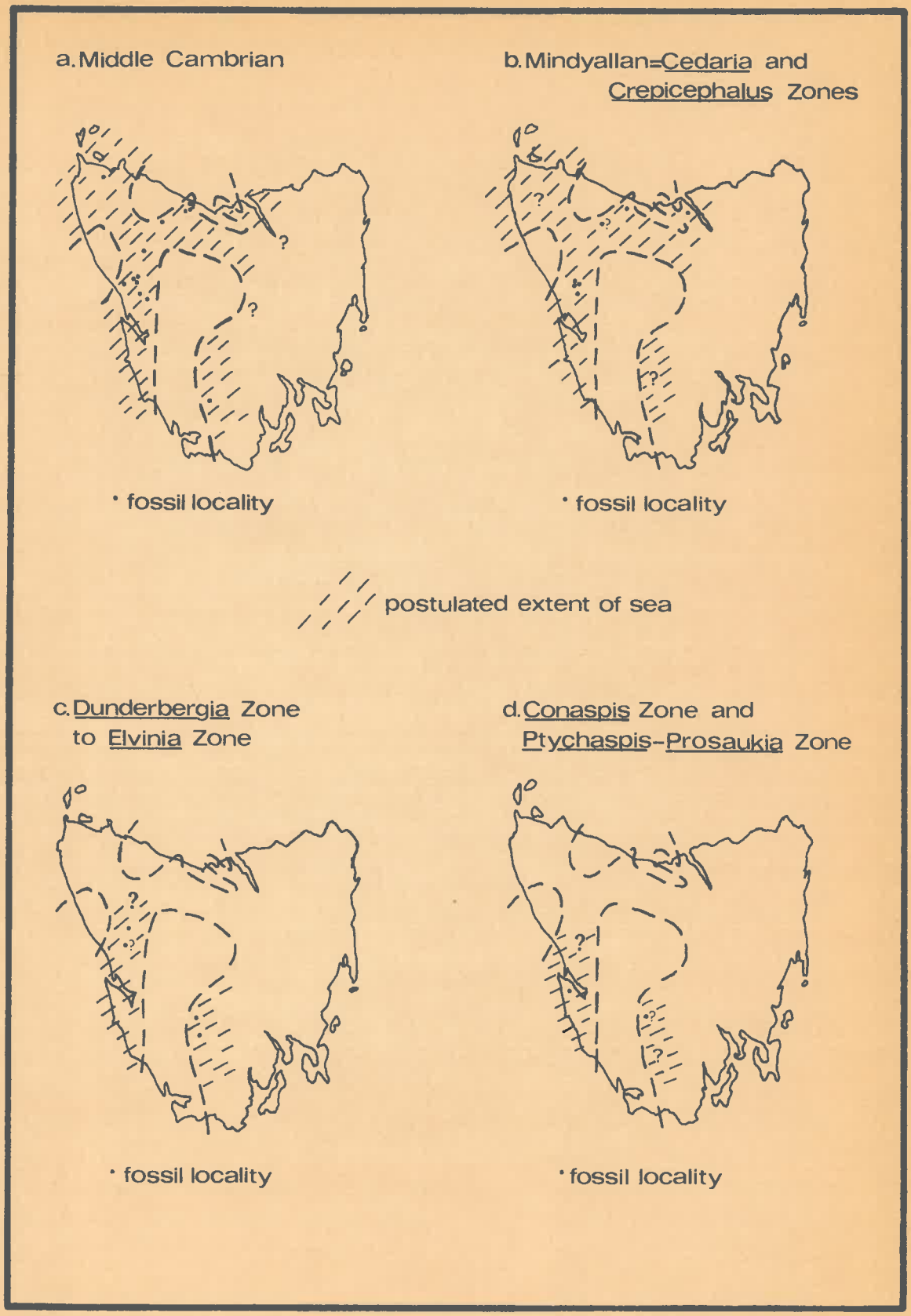
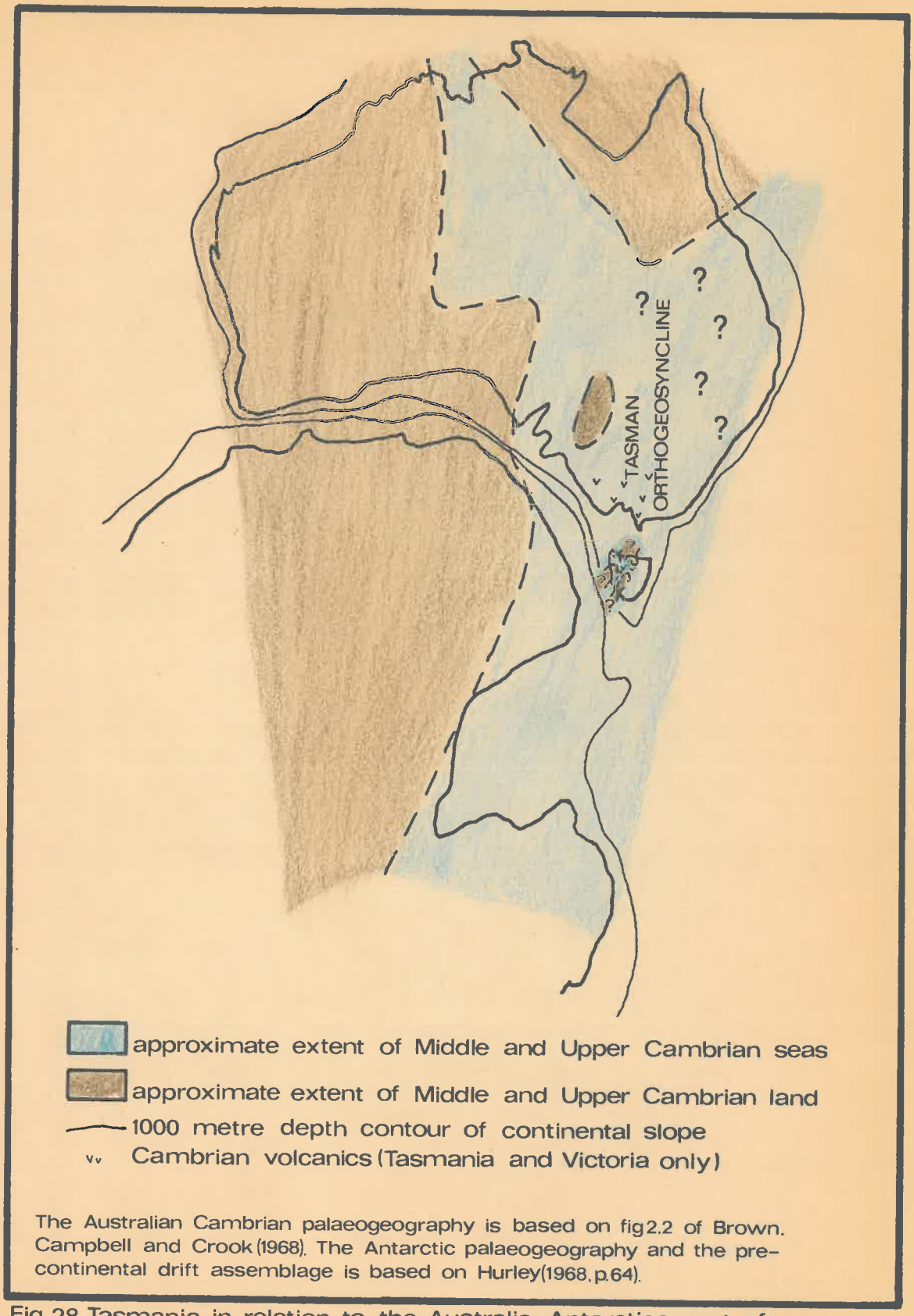


Fig. 27. Middle and Upper Cambrian palaeogeography of Tasmania.



The Australian Cambrian palaeogeography is based on fig 2.2 of Brown, Campbell and Crook (1968). The Antarctic palaeogeography and the pre-continental drift assemblage is based on Hurley (1968, p. 64).

Fig. 28. Tasmania in relation to the Australia–Antarctica part of Gondwanaland during the Cambrian.

Fig. 29. Proposed lateral faunal changes in the late Middle Cambrian and early Upper Cambrian seas of Tasmania.

Assemblage 1 - Agnostid Assemblage

This assemblage is characterized by the presence of Ptychagnostus, Diplagnostus and Hypagnostus. Common associates of the agnostids are dendroids, hydroids, inarticulate brachiopods and sponges. Polymerid trilobites are absent, rare or present as thanatocoenotic fossils.

Assemblage 2 - Ptychagnostid--non-nepeid Assemblage

The agnostids of this assemblage are largely similar to those of Assemblage 1. Polymerid trilobites are common, but no nepeids are known. Dendroids, hydroids, inarticulate brachiopods and sponges are common.

Assemblage 3 - Nepeid-clavagnostid-peronopsid Assemblage

This assemblage is characterized by the presence of Nepea, Clavagnostus and Peronopsis and the absence of Ptychagnostus or its derivative Lejopyge. Dendroids, hydroids, inarticulate brachiopods and sponges are rare.

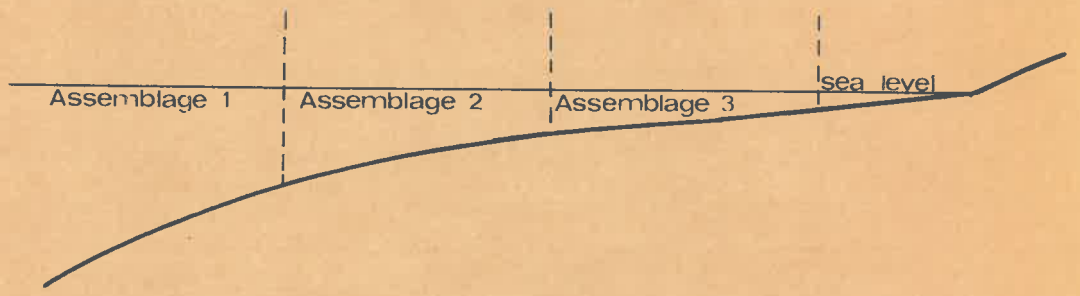


Fig. 29. Proposed lateral faunal changes in the late Middle Cambrian and early Upper Cambrian seas of Tasmania.

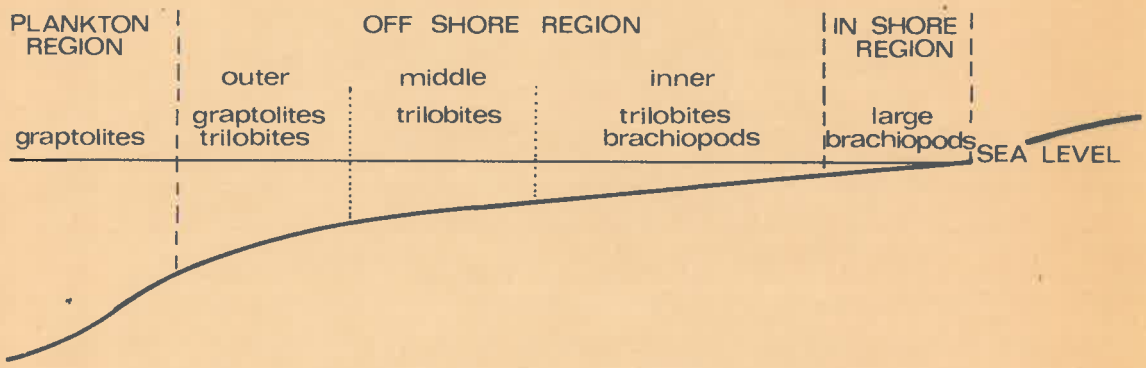
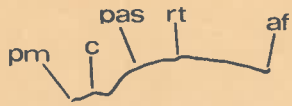
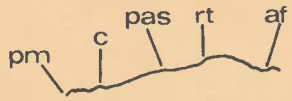


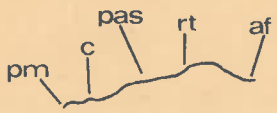
Fig.30. Lateral changes in Ordovician and Silurian fossil assemblages in the marginal area of a geosyncline [after Elles 1939. fig.1].



a. Diplagnostus planicauda (Angelin)



b. Diplagnostus planicauda bilobatus Kobayashi



c. Diplagnostus planicauda vestgothicus (Wallerius)

af – articulating furrow
c – collar
pas – posterior axial segment
pm – posterior margin
rt – termination of axial ridge

Fig. 31. Cross-sections of pygidia of the Swedish species of Diplagnostus. These cross-sections are based on detailed inspections of rubber casts of these species. The available casts are listed in Appendix 2.

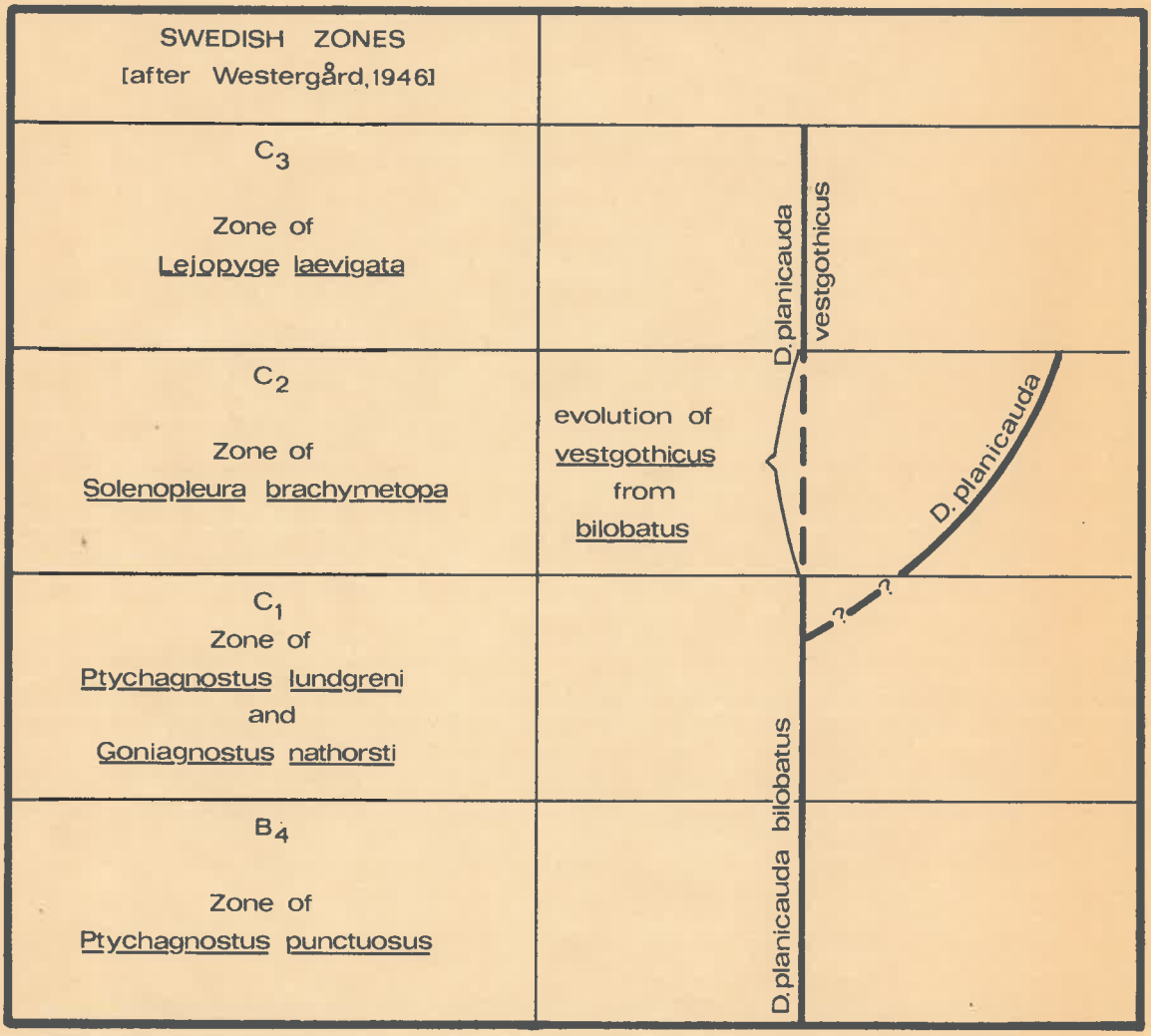


Fig.32. Possible evolution of the Swedish species of Diplagnostus.

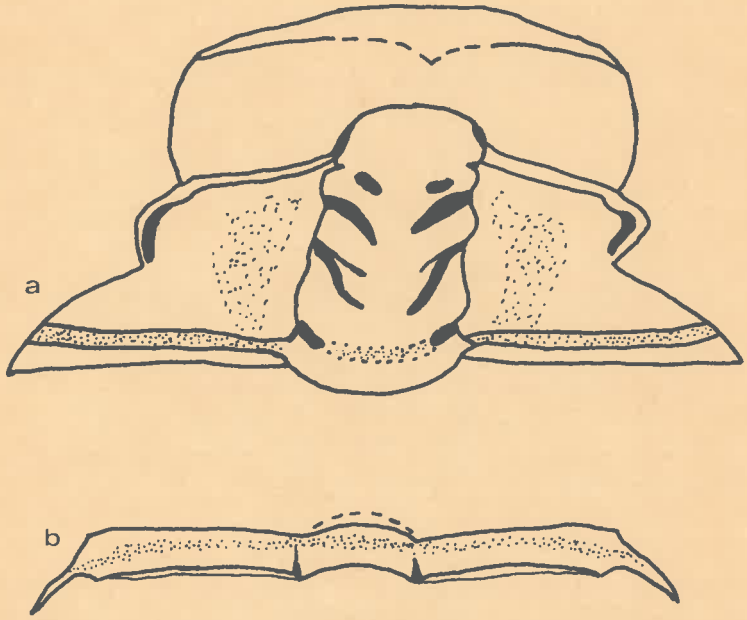


Fig.33. Pianaspis (?) leveni sp. nov.
a. cranidium (based on Plate 30, figs 1,7 and 12)
b. thoracic segment (based on Plate 30, fig.10)
The slight distortion seen in the specimens from Sugarloaf Gorge is retained in the above diagrams

PLATE 1

Peronopsis gullini sp. nov. p. 124

Fig. 1 UT 86599, holotype, nearly complete specimen, E-W distortion, x7.8; locality, Christmas Hills, lower fauna, lat. 40°54.1'S, long. 144°29.8'E (grid 3075E, 9610N).

Fig. 2 UT 86849b, internal mould of small complete specimen, E-W distortion, x13.2; locality, as above.

Fig. 3 UT 86849b, internal mould of small complete specimen, intermediate distortion, x13.1; locality, as above.

Fig. 4 UT 86845c, pygidium, intermediate distortion, x11.3; locality, as above.

Fig. 5 UT 86853d, pygidium, N-S distortion, x11.2; locality, as above.

Fig. 6 UT 86855e, pygidium, intermediate distortion, x12.5; locality, as above.

Fig. 7 UT 86853f, pygidium, E-W distortion, x11.1; locality, as above.

Fig. 8 UT 86861b, pygidium, intermediate distortion, x14.3; locality, as above.

Fig. 9 UT 92468, pygidium, N-S distortion, x12.7; locality, Christmas Hills, upper fauna, lat. 40°54.1'S, long. 144°29.8'E.

Fig. 10 UT 86879k, pygidium, internal mould, N-S distortion, x11.3; locality, as above.

Peronopsis ekip sp. nov. p. 128

Fig. 11 UT 92687, holotype pygidium, x26.2; locality, main fauna near St. Valentines Peak, lat. 41°21.6'S, long. 145°44.3'E (grid 3758E, 9064N).

Fig. 12 UT 92010, cephalon, x17; locality, as above.

Fig. 13 UT 92689, pygidium, x6.4; locality, as above.

Fig. 14 UT 92692, cephalon, x17.8; locality, as above.

Fig. 15 UT 92714, cephalon, x17.9; locality, as above.

Fig. 16 UT 92715, pygidium, x13.1; locality, as above.

Fig. 17 UT 92712, pygidium, x15.2; locality, as above.

PLATES

All photographs of Tasmanian trilobites included in the following plates are of external moulds unless otherwise stated. All figures of non-Tasmanian trilobites are photographs of rubber casts except that of *Schmalenseeia spinulosa* Lazarenko (pl. 28, fig. 15). All photographs except that of *S. spinulosa* were taken by the writer.

It will be noted that there are different specimens with the same catalogue number. This is because each individual rock slab is given a single catalogue number although there may be several specimens on a slab.

PLATE 1

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8

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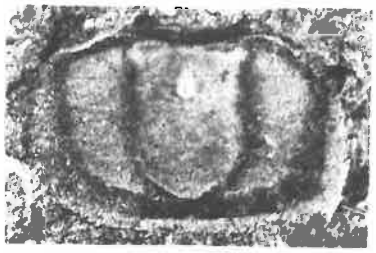

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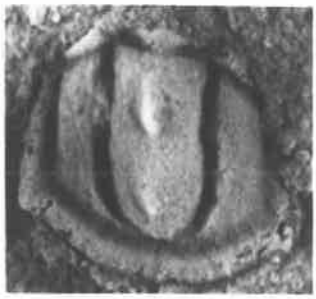

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PLATE 2

Peronopsis sp. 1 p. 131

Fig. 1 UT 92486, part of cephalon and thorax, intermediate distortion, x15.5; locality, Cateena Group siltstone in quarry on Isandula Road, lat. 41°13.8'S, long. 146°08.3'E (grid 4129E, 9231N) (I_3 locality).

Fig. 2 UT 92485, internal mould of above specimen, x12.4; locality, as above.

Fig. 3 UT 92487, internal mould of pygidium, intermediate distortion, x20; locality, as above.

Fig. 4 UT 92488, external mould of pygidium, x15.1; locality, as above.

Peronopsis sp. 2 p. 133

Fig. 5 UT 53451, cephalon, E-W distortion, x8.3; locality, Cateena Group siltstone at Cateena Point, lat. 41°09.9'S, long. 146°08.6'E (grid 4131E, 9304N).

Fig. 6 UT 53443b, cephalon, N-S distortion, x10; locality, as above.

Fig. 7 UT 53446, pygidium, N-S distortion, x10.7; locality, as above.

Fig. 8 UT 53440b, pygidium, E-W distortion, x12.4; locality, as above.

Peronopsis (?) sp. 1 p. 135

Fig. 9 UT 88126, cephalon, intermediate distortion, x20; locality, Black Hill section, Dundas, siltstone at lat. 41°50.8'S, long. 145°24.7'E (grid 3466E, 8474N) (RB locality).

Hypagnostus cf. *brevifrons* (Angelin) p. 137

Fig. 10 UT 92494, cephalon, intermediate distortion, x14.2; locality, Radfords Creek Group, lower sedimentary sequence, Unit 13 exposed on Gunns Plains Road, lat. 41°16.1'S, long. 146°03.7'E (grid 4056E, 9175N).

Fig. 11 UT 92492, cephalon, N-S distortion, x12.8; locality, as above.

Fig. 12 UT 92493, pygidium, E-W distortion, x20; locality, as above.

Fig. 13 UT 92483, cephalon and thorax, N-S distortion, x5.8; locality, Christmas Hills, upper fauna, lat. 40°54.1'S, long. 144°29.8'E (grid 3075E, 9610N).

Fig. 14 UT 92473, complete specimen, N-S distortion, x10, locality, as above.

Fig. 15 UT 92495, pygidium, x10.5, locality, as for Fig. 10.

PLATE 2 continues on preceding page.

PLATE 2 continued.

Hypagnostus sp. aff. *H. parvifrons* (Linnarsson) p. 140

Fig. 16 UT 92496, complete specimen, N-S distortion, x16.3; locality, Que River Beds, lat. 41°34.7'S, long. 145°41.0'E (grid 3710E, 8803N).

PLATE 2

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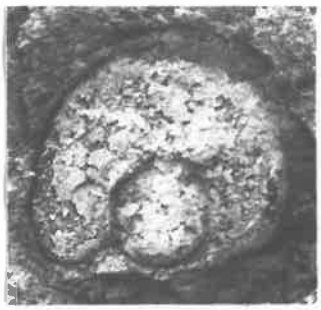

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PLATE 3

Hypagnostus sp. aff. *H. parvifrons* (Linnarsson) p. 140

Fig. 1 UT 92496, internal mould of complete specimen, N-S distortion, x14.7; locality, Que River Beds, lat. 41°34.7'S, long. 145°41.0'E (grid 3710E, 8803N).

Hypagnostus sp. p. 143

Fig. 2 UT 92497, cephalon, intermediate distortion, x16.5; locality Black Hill section, Dundas, siltstone at lat. 41° 50.8'S, long. 145°24.7'E (grid 3466E, 8474N) (RB locality).

Ptychagnostus (?) sp. 1 p. 210

Fig. 3 UT 92489, cephalon, intermediate distortion, x7.3; locality, as above.

Grandagnostus sp. p. 145

Fig. 4 UT 92478, complete specimen, intermediate distortion, x8.7; locality, Christmas Hills, upper fauna, lat. 40°54.1'S, long. 144°29.8'E (grid 3075E, 9610N).

Fig. 5 UT 92477, complete specimen, N-S distortion, x5; locality, as above.

Fig. 6 UT 86879g, enrolled specimen, pygidium exposed, E-W distortion, x5.3; locality, as above. N.B.: The marked overlap of the cephalon with respect to the pygidium.

Fig. 7 UT 92475, complete specimen, N-S distortion, x5.7; locality, as above.

Fig. 8 UT 86629, pygidium and two thoracic segments, N-S distortion, x11.5; locality, as above.

Fig. 9 UT 86632, pygidium, N-S distortion, x3.9; locality, as above.

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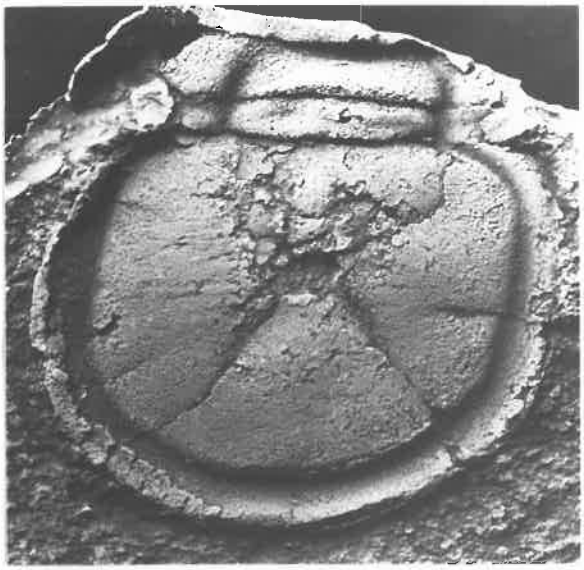

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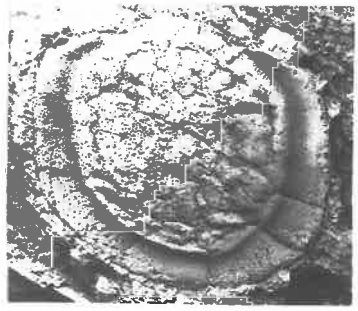

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PLATE 4

Valenagnostus banksi sp. nov. p. 156

Fig. 1 UT 92707, cephalon, E-W distortion, x15.9; locality, main fauna near St. Valentines Peak, lat. 41°21.6'S, long. 145° 44.3'E (grid 3758E, 9064N).

Fig. 2 UT 92693, pygidium and thoracic segments, N-S distortion, x19.2; locality, as above.

Fig. 3 UT 92713, holotype pygidium, E-W distortion, x20; locality, as above.

Fig. 4 UT 92720, cephalon, intermediate distortion, x13; locality, as above.

Fig. 5 UT 92705, cephalon, intermediate distortion, x23.6; locality, as above.

Fig. 6 UT 92708, pygidium, N-S distortion, x12.7; locality, as above.

Fig. 7 UT 92688, pygidium, N-S distortion, x11.5; locality, as above.

Valenagnostus brittoni sp. nov. p. 158

Fig. 8 UT 86579, poorly preserved complete specimen, E-W distortion, x9.5; locality, Christmas Hills, lower fauna, lat. 40°54.1'S, long. 144°29.8'E (grid 3075E, 9610N).

Fig. 9 UT 86869h, cephalon, intermediate distortion, x7.4; locality, as above.

Fig. 10 UT 86877, cephalon, E-W distortion, x8.4; locality, as above.

Fig. 11 UT 86851d, cephalon, intermediate distortion, x11.2; locality, as above.

Fig. 12 UT 86583, cephalon, N-S distortion, x10.7; locality, as above.

Fig. 13 UT 86850c, holotype pygidium, N-S distortion, x10.6; locality, as above.

Fig. 14 UT 92474, pygidium, E-W distortion, x12.5; locality, as above.

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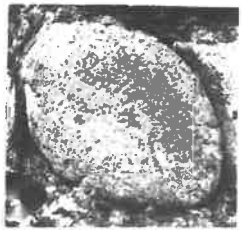

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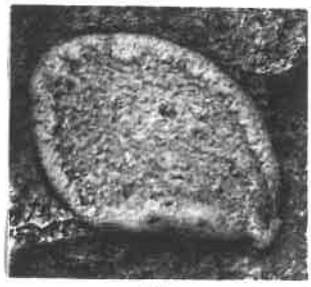

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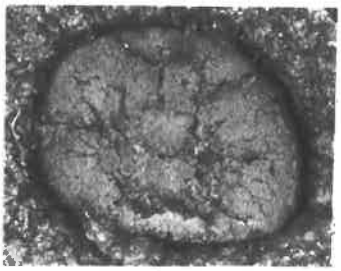

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PLATE 5

Ptychagnostus (*Ptychagnostus*) *stenorrhachis* (Grönwall) p. 172

Fig. 1 UT 92504, cephalon, N-S distortion, x5.5; locality, Que River Beds, lat. 41°34.7'S, long. 145°41.0'E (grid 3710E, 8803N).

Fig. 2 UT 92505, pygidium, E-W distortion, x6; locality, as above.

Fig. 3 UT 92506, partly broken up, partially complete specimen, x6.8; locality, as above.

Fig. 4 UT 92503, internal mould of cephalon, E-W distortion, x8.3, locality, as above.

Ptychagnostus (*Ptychagnostus*) *hodgei* sp. nov. p. 177

Fig. 5 UT 88159, holotype cephalon, E-W distortion, x8.5; locality, Black Hill section, Dundas, siltstone at lat. 41° 50.8'S, long. 145°24.7'E (grid 3466E, 8474N) (RB locality).

Fig. 6 UT 92511, cephalon, intermediate distortion, x9.1; locality, as above.

Fig. 7 UT 92618, cephalon, intermediate distortion, x7.6; locality, as above.

Fig. 8 UT 92618, cephalon, x8.9; locality, as above.

Fig. 9 UT 92514, cephalon, N-S distortion, x7; locality, as above.

Fig. 10 UT 88136, pygidium, E-W distortion, x16; locality, as above.

Fig. 11 UT 92512, cephalon, intermediate distortion, x12.5; locality, as above.

Fig. 12 UT 92513, pygidium, N-S distortion, x13.4; locality, as above.

PLATE 5

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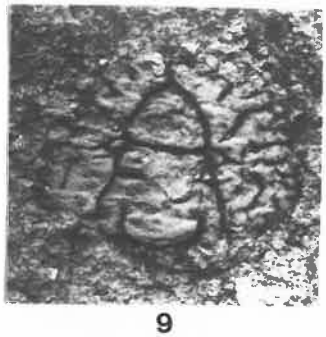

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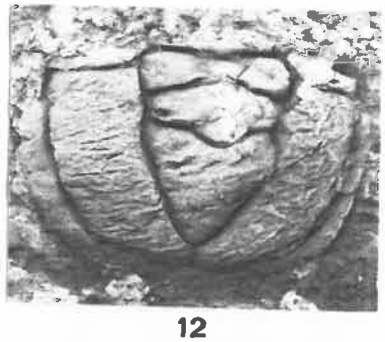

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PLATE 6

Ptychagnostus (Ptychagnostus) cf. aculeatus (Angelin) p. 185

Fig. 1 UT 86877a, pygidium, N-S distortion, x14.7; locality, Christmas Hills, upper fauna, lat. 40°54.1'S, long. 144° 29.8'E (grid 3075E, 9610N).

Ptychagnostus (Ptychagnostus) sp. p. 188

Fig. 2 UT 92516, almost complete specimen, E-W distortion, x11.1; locality, Black Hill section, Dundas, siltstone at lat. 41° 50.8'S, long. 145°24.7'E (grid 3466E, 8474N) (RB locality).

Fig. 3 UT 92515, almost complete internal mould, intermediate distortion, x13.6; locality, as above.

Fig. 4 UT 92516, partial cephalon, x10; locality, as above.

Ptychagnostus ? murchisoni sp. nov. p. 190

Fig. 5 UT 92508, holotype, complete specimen, E-W distortion, x10; locality, Que River Beds, lat. 41°34.7'S, long. 145°41.0'E (grid 3710E, 8803N).

Fig. 6 UT 92509, complete specimen, N-S distortion, x6.5; locality, as above.

Fig. 7 UT 89211, internal mould of pygidium, x8; locality, as above.

Fig. 8 UT 92510, internal mould of cephalon, x10.3; locality, as above.

Fig. 9 UT 89206, pygidium and two thoracic segments, N-S distortion, x15.6; locality, as above.

Fig. 10 UT 92507, complete specimen, E-W distortion, x4.2; locality, as above.

PLATE 6

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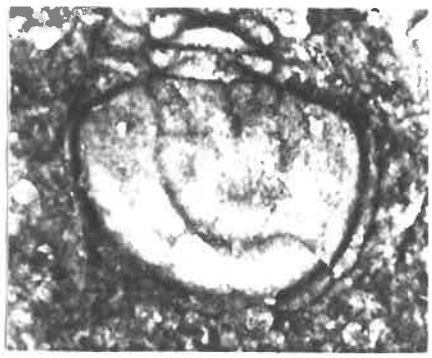

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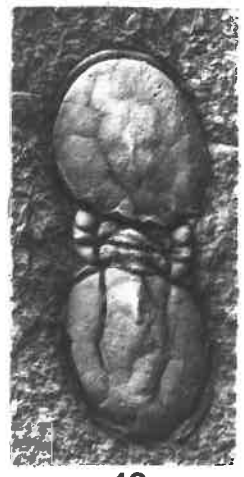

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PLATE 7

Ptychagnostus (*Goniagnostus*) *rubenacha* sp. nov. p. 194

Fig. 1 UT 86880m, cephalon, N-S distortion, x14.2; locality, Black Hill section, Dundas, siltstone at lat. 41°50.8'S, long. 145°24.7'E (grid 3466E, 8474N)(RB locality).

Fig. 2 UT 88154, cephalon, N-S distortion, x8.6; locality, as above.

Fig. 3 UT 88145a, cephalon, intermediate distortion, x16.5; locality, as above.

Fig. 4 UT 92517, holotype pygidium, N-S distortion, x15; locality, as above.

Fig. 5 UT 88133c, pygidium, intermediate distortion, x17; locality, as above.

Fig. 6 UT 88133, internal mould of cephalon, N-S distortion, x12.6; locality, as above.

Ptychagnostus (*Goniagnostus*) *buckleyi* sp. nov. p. 198

Fig. 7 UT 92472, holotype, complete specimen, N-S distortion, x8.5; locality, Christmas Hills upper fauna, lat. 40°54.1'S, long. 144°29.8'E (grid 3075E, 9610N).

Fig. 8 UT 86880i, cephalon, E-W distortion, x17.1; locality, as above.

Fig. 9 UT 86873a, pygidium, N-S distortion, x10.5; locality, as above.

PLATE 7

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PLATE 8

Ptychagnostus (*Goniagnostus*) *buckleyi* sp. nov. p. 198

Fig. 1 UT 86880m, pygidium, E-W distortion, x6.6; locality, Christmas Hills, upper fauna at lat. 40°54.1'S, long. 144°29.8'E (grid 3075E, 9610N).

Fig. 2 UT 86872f, pygidium, N-S distortion, x9; locality, as above. A small pygidium of *Diplagnostus* sp. 3 is also present.

Fig. 3 UT 86880e, pygidium, N-S distortion, x12.5; locality, as above.

Ptychagnostus (*Goniagnostus*) sp. p. 206

Fig. 4 UT 92521, cephalon, x10.4; locality, Unit 13 of lower sedimentary sequence of Radfords Creek Group as exposed along main road to Gunns Plains at lat. 41°16.1'S, long. 146°03.7'E (grid 4056E, 9175N).

Fig. 5 UT 92526, internal mould of cephalon, x8; locality, as above.

Fig. 6 UT 92523, internal mould of cephalon, x12.2; locality, as above.

Fig. 7 UT 92524, internal mould of cephalon, x7; locality, as above.

Fig. 8 UT 92519, pygidium, thorax and cephalic posterior, x14.5; locality, as above.

Fig. 9 UT 92525, internal mould of poor complete specimen, x9.5; locality, as above.

Fig. 10 UT 92520, internal mould of partially complete specimen with broken pygidium, x5; locality, as above.

Pseudophalacroma ? sp. p. 164

Fig. 11 UT 92500, complete specimen, E-W distortion, x8.7; locality, as above.

Fig. 13 UT 92502, internal mould of cephalon, x8.3; locality, as above.

Fig. 14 UT 92501, internal mould of complete specimen, E-W distortion, x7; locality, as above.

Valenagnostus sp. 1 p. 161

Fig. 12 UT 92498, internal mould of partial pygidium, N-S distortion, x8.5; locality, lowest fossil horizon along timber track on west side of Sugarloaf Gorge, lower sedimentary sequence of Radfords Creek Group, lat. 41°15.4'S, long. 146°04.2'E (grid 4065E, 9192N).

PLATE 8

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PLATE 9

Valenagnostus (?) sp. p. 162

Figs. 1, 4 UT 92499, cephalon and pygidium, N-S distortion, x17.5 (Fig. 1), x12.5 (Fig. 4); locality, Que River Beds, lat. 41°34.7'S, long. 145°41.0'E (grid 3710E, 8803N).

Phalagnostus prantli Snajdr

Fig. 2 Prague 11, holotype, complete specimen, x7. Originally figured by Snajdr (1958, pl. 6, fig. 1).

Phalagnostus nudus (Beyrich)

Fig. 3 Prague 10, enrolled specimen showing pygidium, x6.7. Originally figured by Snajdr (1958, pl. 5, fig. 9). Note the arrangement of muscle scars and the furrow across the anterolateral corner of the pygidium.

?*Lejopyge laevigata* (Dalman) p. 220

Fig. 5 UT 92528, pygidium, E-W distortion, x9; locality, Unit 13 of lower sedimentary sequence of Radfords Creek Group as exposed along main road to Gunns Plains at lat. 41°16.1'S, long. 146°03.7'E (grid 4056E, 9175N).

Fig. 6 UT 92527, internal mould of complete specimen, E-W distortion, x8.2; locality, as above.

Lejopyge laevigata armata (Linnarsson) p. 222

Fig. 7 UT 92530, cephalon, x8.5; locality, as above.

Fig. 8 UT 92529, cephalon and two thoracic segments, x6.7; locality, as above.

Fig. 9 UT 92533, posterior thoracic segment, x10.4; locality, as above.

Fig. 10 UT 92532, pygidium, x8.8; locality, as above.

Fig. 11 UT 92534, pygidium, (with an ?echinoderm plate), x8.2; locality, as above.

Fig. 12 UT 92531, pygidium, x12.9; locality, as above.

PLATE 9

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PLATE 10

Lejopyge (?) sp. p. 223

Fig. 1 UT 92544, partial pygidium, x11; locality, siltstone, eastern end of Summit Cutting of Comstock tram at lat. 41°53.8'S, long. 145°18.7'E (grid 3374E, 8412N).

Fig. 2 Riks 418, *Lejopyge laevigata* (Dalman), specimen figured by Westergård, 1946, pl. 16, fig. 9; x7.3.

Fig. 3 Riks 458, *Lejopyge laevigata* (Dalman), cephalon figured by Westergård, 1946, pl. 13, fig. 24; x8.4.

Fig. 4 Riks 36, *Lejopyge laevigata* (Dalman), cephalon figured by Westergård, 1946, pl. 13, fig. 22; x11.2. The black spot on the posterior of the glabella is a hole in the rubber cast.

Fig. 5 Riks 455, spinose cephalon associated with pygidia figured by Westergård 1946, pl. 13, figs. 30, 31 as *Lejopyge laevigata armata* (Linnarsson); x13.

Fig. 6 Riks 402, holotype cephalon of *Lejopyge laevigata perrugata* Westergård, figured by Westergård, 1946, pl. 14, fig. 2; x9.

Fig. 7 Riks 399, cephalon of *Lejopyge laevigata rugifera* Westergård, figured by Westergård, 1946, pl. 14, fig. 3; x8.4.

Fig. 8 Riks 399, cephalon associated with above specimen, x7.4.

Figs. 9, 10 Riks 457, pygidium figured by Westergård, 1946, pl. 13, fig. 25 as *Lejopyge laevigata* (Dalman), x8. Note (a) the minute spines and (b) the anterior axial node (especially fig. 9).

Fig. 11 Riks 460, pygidium of *Lejopyge laevigata* (Dalman), figured by Westergård 1946, pl. 13, fig. 26; x8.

Fig. 12 Riks 458, small pygidium of *Lejopyge laevigata* (Dalman), not figured by Westergård, 1946; x10. Note the minute spines.

Fig. 13 Riks 458, pygidium of *Lejopyge laevigata* (Dalman) figured by Westergård, 1946, pl. 13, fig. 24; x10. This specimen is associated with that in Fig. 12.

Fig. 14 Riks 456, small pygidium of *Lejopyge laevigata* (Dalman) not figured by Westergård, 1946; x12.4. This pygidium is associated with that figured here as pl. 11, figs. 1, 2.

PLATE 10

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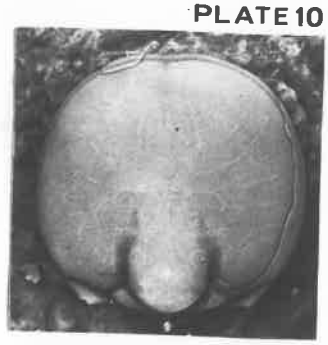

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PLATE 11

Figs. 1, 2 — Riks 456, pygidium of *Lejopyge laevigata* (Dalman), figured by Westergård, 1946, pl. 12, fig. 20; fix. 1, x9.7; fig. 2, x9.4.

Figs. 3, 6 — Riks 37, pygidium of *Lejopyge laevigata* (Dalman), figured by Westergård, 1946, pl. 13, fig. 23; both x8. Note the trace of an anterior axial node.

Figs. 4, 5 — Riks 455, pygidium figured by Westergård, 1946, pl. 13, fig. 31 as *Lejopyge laevigata armata* (Linnarsson); both x7.5. Note the quite small spines.

Figs. 7, 8 — Riks 455, pygidium figured by Westergård, 1946, pl. 13, fig. 30 as *Lejopyge laevigata armata* (Linnarsson); both x7.6. Note (a) the minute spines, and (b) the presence of an anterior axial node.

Figs. 9, 10 — Riks 402, two pygidia associated with the holotype cephalon of *Lejopyge laevigata perrugata* Westergård, (see pl. 10, fig. 6 herein); fig. 9, x11; fig. 10, x10.8. These pygidia are not figured by Westergård (1946).

Figs. 11 12 — Riks 399, pygidium associated with the cephalon of *Lejopyge laevigata rugifera* Westergård (see pl. 10, fig. 7 herein); both x7.7. This pygidium is not figured by Westergård (1946).

Agnostus sp. 1 p. 224

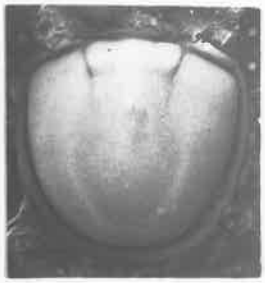
Fig. 13 — UT 92537, pygidium, E-W distortion x10.8; locality, northern of the two Climie Formation localities near lat. 41°54.2'S, long. 145°24.2'E (grid 3459E, 8406N).

Fig. 14 — UT 92540, partial pygidium, x10; locality, southern of the two localities near lat. 41°54.2'S, long. 145°24.2'E, (grid 3460E, 8405N).

Fig. 15 — UT 92538, cephalon, N-S distortion, x5.4; locality, as for fig. 13.

Fig. 16 — UT 92541, cephalon, E-W distortion, x10; locality, as for fig. 14.

PLATE 11



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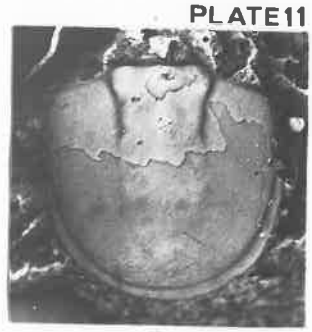

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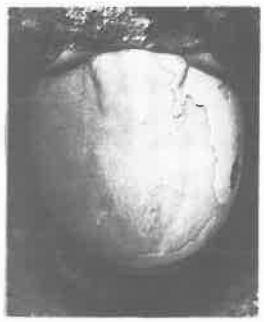

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PLATE 12

Agnostus sp. 1 — p. 224

Fig. 1 UT 92535, partially complete specimen, N-S distortion, x15.6; locality, northern of the two Climie Formation localities near lat. 41°54.2'S, long. 145°24.2'E (grid 3459E, 8406N).

Fig. 2 UT 92542, partial cephalon, E-W distortion, x9; locality, southern of the two Climie Formation localities near lat. 41°54.2'S, long. 145°24.2'E (grid 3460E, 8405N).

Fig. 3 UT 92543, partial pygidium, E-W distortion, x10; locality, as above.

Fig. 4 UT 92536, complete specimen, E-W distortion, x5.8; locality, as for fig. 1 above.

Fig. 5 UT 92536, internal mould of specimen figured in fig. 4, x5.5.

Fig. 6 UT 92539, poorly preserved partially complete specimen, N-S distortion, x5; locality, as for fig. 1 above.

Agnostus sp. 2 — p. 227

Fig. 7 UT 92545, internal mould of pygidium, x6.9; locality, siltstone west of Birch Inlet near lat. 42°27.2'S, long. 145°21.1'E (grid 3417E, 7735N).

Fig. 8 UT 92546, partial pygidium, x8.3; locality, as above.

Agnostus (?) sp. — p. 227

Fig. 9 UT 92547, cephalon, intermediate distortion, x8.5; locality, siltstone in Barkers Creek near lat. 41°51.4'S, long. 145°26.1'E (grid 3487E, 8462N).

Fig. 10 UT 92549, pygidium, intermediate distortion, x17; locality, as above.

Fig. 11 UT 92550, cephalon, intermediate distortion, x12.9; locality, as above.

PLATE 12 continues on preceding page.

PLATE 12 continued.

Fig. 12 UT 92552, pygidium, intermediate distortion, x12.1; locality, siltstone in Barkers Creek near lat. 41°51.3'S, long. 145°26.1'E (grid 3487E, 8463N).

Fig. 13 UT 92551, cephalon, intermediate distortion, x10; locality, as for fig. 9.

Fig. 14 UT 92548, pygidium, N-S distortion, x17; locality, as above.

Idolagnostus sp. p. 229

Fig. 15 UT 92554, small cephalon, x22.5; locality, Brewery Junction Formation, lat. 41°52.8'S, long. 145°25.0'E (grid 3471E, 8434N) (FE_1 fauna).

Fig. 16 UT 92553, cephalon, E-W distortion, x21; locality, as above.

Fig. 17 UT 92555, pygidium, N-S distortion, x19.4; locality, as above.

PLATE 12

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PLATE 13

Geragnostus sp. 1 — p. 232

Fig. 1 UT 92556, cephalon, x16; locality, siltstone west of Birch Inlet, near lat. 42°27.2'S, long. 145°21.1'E (grid 3417E, 7735N).

Fig. 2 UT 92557, cephalon, x11.5; locality, as above.

Fig. 3 UT 92558, pygidium, x10.4; locality, as above.

Fig. 4 UT 92559, pygidium, x11.6; locality, as above.

Fig. 5 UT 92559, pygidium, x12.5; locality, as above.

Fig. 6 UT 92560, pygidium, x10; locality, as above.

Geragnostus sp. 2 — p. 232

Fig. 7 UT 92561, pygidium, x10.7; locality, as above.

Fig. 8 UT 92562, pygidium, x10.5; locality, as above.

Geragnostus sp. 3 — p. 232

Fig. 9 UT 92563, pygidium, x10; locality, as above.

Acmarhachis sp. — p. 234

Fig. 10 UT 92564, pygidium, N-S distortion, x19; locality, siltstone in Barkers Creek near lat. 41°51.4'S, long. 145°26.1'E (grid 3487E, 8462N).

cf. *Cyclagnostus* sp. — p. 237

Figs. 11, 12 UT 92565, pygidium, intermediate distortion; fig. 11, internal mould, x12; fig. 12, external mould, x10.5; locality, siltstone in Barkers Creek near lat. 41°51.3'S, long. 145°26.1'E (grid 3487E, 8463N).

PLATE 13 continues on preceding page.

PLATE 13 continued.

Lotagnostus sp. aff. *L. trisectus* (Salter) p. 238

Figs. 13, 16 — UT 92567, cephalon; fig. 13, internal mould, x4.7; fig. 16, external mould, x5; locality, siltstone, west of Birch Inlet near lat. 42°27.2'S, long. 145°21.1'E (grid 3417E, 7735N).

Figs. 14, 19 — UT 92566, complete specimen; fig. 14, external mould associated with a pygidium of *Agnostus*, x8.4; fig. 19, internal mould, x6; locality, as above.

Fig. 15 — UT 92568, pygidium, x6; locality, as above.

Fig. 17 — UT 92569, pygidium, x9; locality, as above.

Fig. 18 — UT 92570, cephalon, x6.5; locality, as above.

PLATE 13

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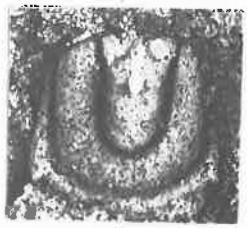

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PLATE 14

?*Lotagnostus* sp. p. 242

Fig. 1 UT 92571, internal mould of poorly preserved cephalon, N-S distortion, x4.7; locality, northern of the two Climie Formation localities near lat. 41°54.2'S, long. 145°24.2'E (grid 3459E, 8406N).

Birchagnostus inleti sp. nov. p. 168

Fig. 2 UT 92572, holotype, x5; locality, siltstone west of Birch Inlet, near lat. 42°27.2'S, long. 145°21.1'E (grid 3417E, 7735N). Note the outline of the pygidial axis.

Fig. 3 TMD 5131a, complete specimen, x8.5; locality, as above.

Fig. 4 UT 92578, complete specimen, x7.9; locality, as above.

Fig. 5 UT 92579, complete specimen, x9.2; locality, as above.

Fig. 6 UT 92573, large cephalon, x6; locality, as above.

Fig. 7 UT 92580, internal mould of cephalon showing glabellar rear, basal lobes and faint outline of glabella, x7.9; locality, as above.

Fig. 8 TMD 5111, cephalon, x9.7; locality, as above.

Fig. 9 UT 92581, slightly crushed cephalon which shows the outline of the glabella, x6.3; locality, as above.

Fig. 10 TMD 5118, pygidium, x7.7; locality, as above.

Fig. 11 UT 92576, pygidium with axis outlined by crushing, x6.9; locality, as above.

Fig. 12 UT 92582, pygidium, with axis faintly outlined, x4.5; locality, as above.

Fig. 13 UT 92583, pygidium, x6.3; locality, as above.

PLATE 14 continues on preceding page.

PLATE 14 continued.

Clavagnostus sulcatus Westergård

Fig. 14 Riks 288, cephalon figured in Westergård, 1946, pl. 4, fig. 23, x16.7.

Fig. 15 Riks 289, holotype cephalon, figured by Westergård, 1946, pl. 4, fig. 25, x10.7.

Clavagnostus repandus (Westergård)

Fig. 16 Riks 33, cephalon figured by Westergård, 1946, pl. 4, fig. 21, x13.8.

Fig. 17 Riks 34, pygidium figured by Westergård, 1946, pl. 4, fig. 22, x14.

Clavagnostus chipiquensis (Rusconi)

Fig. 18 US 595, cephalon, specimen figured by Poulsen (1960, pl. 1, fig. 13) as the pygidium of Peronopsis ultima Poulsen, x10. Note the traces of the cephalic spines.

Fig. 19 US 588, pygidium, figured by Poulsen, 1960, pl. 1, fig. 14, x10.5.

PLATE14


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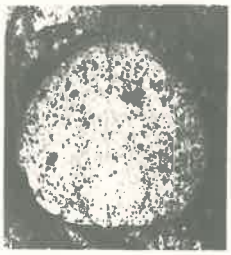
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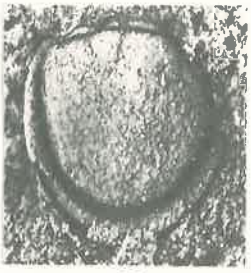
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PLATE 15

Clavagnostus milli sp. nov. p. 246

Fig. 1 UT 86860b, holotype cephalon, x15.3; locality, lower fauna at Christmas Hills, lat. 40°54.1'S, long. 144°29.8'E (grid 3075E, 9610N).

Fig. 2 UT 86853b, cephalon, x13.1; locality, as above.

Fig. 3 UT 86869e, cephalon, x13.8; locality, as above.

Fig. 4 UT 92469, pygidium, x10; locality, as above.

Fig. 5 UT 86607, pygidium, x10.9; locality, as above.

Fig. 6 UT 92479, pygidium, x10.8; locality, as above.

Clavagnostus burnsi sp. nov. p. 249

Figs. 7, 13 UT 92600, fig. 7, cephalon, E-W distortion, x14; fig. 13, cephalon, N-S distortion, x13.2; locality, upper sedimentary sequence of Radfords Creek Group near Riana, lat. 41°12.7'S, long. 146°00.0'E (grid 4000E, 9250N).

Figs. 8, 11 UT 92585, fig. 8, pygidium, E-W distortion, x17.5; fig. 11, pygidium, N-S distortion, x20.8; locality, upper sedimentary sequence, Radfords Creek Group, main fossil band in quarry near Riana at lat. 41°13.0'S, long. 146°00.2'E (grid 4004E, 9240N).

Figs. 9, 10, 12 UT 92584, fig. 9, holotype cephalon, intermediate distortion, x28; fig. 10, pygidium, N-S distortion, x20; fig. 12, cephalon, x30; locality, as above.

Fig. 14 UT 52593, cephalon showing fading of preglabellar median furrow, x18.5; locality, siltstone below main fossil band near quarry noted above.

Fig. 15 UT 52594, pygidium, N-S distortion, x17; locality, as above.

Fig. 16 UT 52597, pygidium, x15.8; locality, siltstone above main fossil band near quarry noted above.

PLATE 15 continues on preceding page.

PLATE 15 continued.

Clavagnostus rawlingi sp. nov. p. 253

Fig. 17 UT 92719, cephalon, N-S distortion, x18.7; locality, main fauna near St. Valentines Peak, lat. 41°21.6'S, long. 145°44.3'E (grid 3758E, 9064N).

Fig. 18 UT 92727, holotype pygidium, E-W distortion, x17; locality, as above.

Clavagnostus sp. 1 p. 257

Fig. 19 UT 86872i, pygidium, x22; locality, Christmas Hills, upper fauna, lat. 40°54.1'S, long. 144°29.8'E (grid 3075E, 9610N).

Clavagnostus sp. 2 p. 259

Fig. 20 UT 92601, pygidium, x21.4; locality, lower sedimentary sequence of Radfords Creek Group, old timber track, west side of Sugarloaf Gorge, lat. 41°15.4'S, long. 146°04.2'E (grid 4065E, 9192N).

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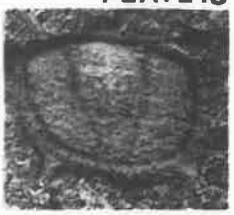
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PLATE 16

Clavagnostus sp. 3 p. 260

Fig. 1 UT 92602, pygidium, intermediate distortion, x8.7; locality, Brewery Junction Formation, lat. 41°53.0'S, long. 145°25.6'E (grid 3480E, 8429N) (BJ_2 locality).

Fig. 2 UT 92603, pygidium, intermediate distortion, x11.1; locality, as above.

Clavagnostus sp. 4 p. 261

Fig. 3 UT 92604, cephalon, x6; locality, siltstone, eastern end of Summit Cutting of Comstock tram, lat. 41°53.8'S, long. 145°18.7'E (grid 3374E, 8412N).

Pseudoclavagnostus sisponorep sp. nov. p. 262

Fig. 4 UT 92699, cephalon and thorax, x20; locality, main fauna near St. Valentines Peak, lat. 41°21.6'S, long. 145°44.3'E (grid 3758E, 9064N).

Fig. 5 UT 92698, holotype, almost complete specimen, x18.3; locality, as above.

Fig. 6 UT 92718, cephalon and part of pygidium, x19; locality, as above.

Fig. 11 UT 92686, pygidium, x24; locality, as above.

Pseudoclavagnostus (?) nevel sp. nov. p. 264

Fig. 7 UT 92605, holotype cephalon, N-S distortion, x24; locality, lower sedimentary sequence of Radfords Creek Group, Unit 13, Sugarloaf Gorge, Main Road to Gunns Plains, lat. 41°16.1'S, long. 146°03.7'E (grid 4056E, 9175N).

Fig. 8 UT 92607, cephalon and thorax from same original animal, intermediate distortion, x20; locality, as above.

Fig. 9 UT 92606, cephalon, intermediate distortion, x18.6; locality, as above.

Fig. 10 UT 92610, pygidium, intermediate distortion, x23; locality, as above.

PLATE 16 continues on preceding page.

PLATE 16 continued.

Pseudoclavagnostus (?) inara sp. nov. p. 267

Fig. 12 UT 92596, holotype pygidium, E-W distortion, x20; locality, Radfords Creek Group, upper sedimentary sequence, siltstone, below main fossil band near quarry at Riana, lat. 41°13.0'S, long. 146°00.2'E (grid 4404E, 9240N).

Fig. 13 UT 92595, partial pygidium, x20; locality, as above.

Figs. 14 15 UT 92594, fig. 14, cephalon, x21.4; fig. 15, cephalon, x27; locality, as above.

Aspidagnostus riani sp. nov. p. 271

Figs. 16 17 UT 92598, fig. 16, holotype cephalon, N-S distortion, x24; fig. 17, cephalon, intermediate distortion, x22; locality, siltstone, above main fossil band, near quarry at Riana, lat. 41°13.0'S, long. 146°00.2'E (grid 4004E, 9240N).

Fig. 18 UT 92594, internal mould of cephalon, showing occipital collar, N-S distortion, x11.8; locality, siltstone, below main fossil band near quarry at Riana, lat. 41°13.0'S, long. 146°00.2'E (grid 4004E, 9240N).

Fig. 19 UT 92586, pygidium, N-S distortion, x21; locality, Radfords Creek Group, upper sedimentary succession, quarry near Riana, lat. 41°13.0'S, long. 146°00.2'E (grid 4004E, 9240N).

Fig. 20 UT 92587, pygidium, N-S distortion, x18.6; locality, as above.

Fig. 21 UT 92588, pygidium, N-S distortion, x16.9; locality, as above.

Fig. 22 UT 92589, pygidium, N-S distortion, x23.4; locality, as above.

PLATE 16


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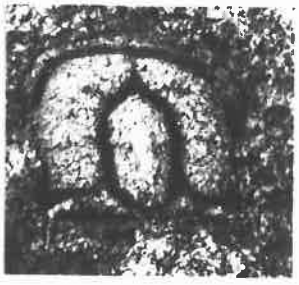
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PLATE 17

Aspidagnostus cf. *riani* p. 275

Fig. 1 UT 92732, cephalon, N-S distortion, x21; locality, main fauna near St. Valentines Peak, lat. 41°21.6'S, long. 145°44.3'E (grid 3758E, 9064N).

Fig. 2 UT 92731, cephalon, E-W distortion, x2; locality, as above.

Fig. 3 UT 92701, partial cephalon, x29; locality, as above.

Fig. 4 UT 92704, pygidium, E-W distortion, x16; locality, as above.

Fig. 5 UT 92004, pygidium, E-W distortion, x23; locality, as above.

Fig. 6 UT 92729, pygidium, N-S distortion, x23; locality, as above.

Aspidagnostus sp. 1 p. 278

Fig. 7 UT 92611, cephalon, N-S distortion, x15.4; locality, Brewery Junction Formation, lat. 41°52.8'S, long. 145°25.0'E (grid 3471E, 8434N) (FE_1 fauna).

Fig. 8 UT 92612, cephalon, E-W distortion, x15.7; locality, as above.

Fig. 9 UT 92613, pygidium, E-W distortion, x20; locality, as above.

Fig. 10 UT 92614, pygidium, N-S distortion, x20; locality, as above.

Aspidagnostus sp. 2 p. 278

Fig. 11 UT 54981, pygidium, N-S distortion, x12; locality, Brewery Junction Formation, lat. 41°53.0'S, long. 145°25.6'E (grid 3480E, 8429N) (BJ_2 fauna).

Fig. 12 UT 54958, cephalon, E-W distortion, x9.4; locality, as above.

Aspidagnostus sp. 3 p. 279

Fig. 13 UT 92615, cephalon, intermediate distortion, x8.7; locality, siltstone in Barkers Creek near lat. 41°51.3'S, long. 145°26.1'E (grid 3487E, 8463N).

PLATE 17 continues on preceding page.

PLATE 17 continued.

Aspidagnostus sp. 4 p. 280

Fig. 14 UT 92498, cephalon, N-S distortion, x16; locality, Radfords Creek Group, lower sedimentary sequence, lowest fauna, old timber track on west side of Sugarloaf Gorge, lat. 41° 15.4'S, long. 146°04.2'E (grid 4065E, 9192N).

Diplagnostus planicauda bilobatus Kobayashi

Fig. 15 Riks 350, cephalon, figured by Westergård, 1946, pl. 8, fig. 14; x7.6.

Fig. 16 Riks 349, neotype cephalon, figured by Westergård, 1946, pl. 8, fig. 16; x8.8.

Fig. 17 Riks 350, pygidium, figured by Westergård, 1946, pl. 8, fig. 17; x10.

Fig. 18 Riks 348, pygidium, figured by Westergård, 1946, pl. 8, fig. 19; x8.6.

Fig. 19 Riks 350, cephalon, figured by Westergård, 1946, pl. 8, fig. 15 as Diplagnostus planicauda bilobatus; x8. Note the lack of median sulcus.

Diplagnostus planicauda (Angelin)

Fig. 20 Riks 290, pygidium figured by Westergård, 1946, pl. 8, fig. 23; x7.8.

Fig. 21 Riks 289, cephalon, figured by Westergård, 1946, pl. 8, fig. 22; x9.6.

Diplagnostus planicauda vestgothicus (Wallerius)

Fig. 22 Riks 354, cephalon, figured by Westergård, 1946, pl. 8, fig. 26; x8.4.

Fig. 23 Riks 353, pygidium, figured by Westergård, 1946, pl. 8, fig. 27; x8.7.

PLATE 17


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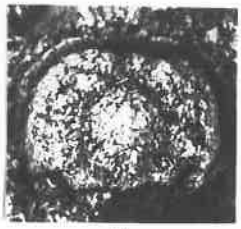
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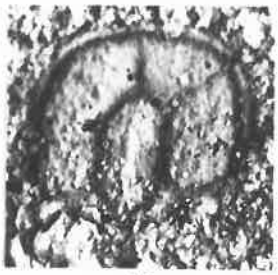
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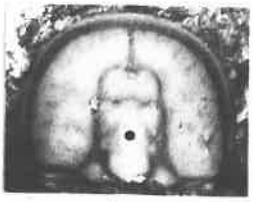
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PLATE 18

Diplagnostus humilis (Whitehouse)

Fig. 1 UQ 42742, holotype cephalon, figured by Whitehouse, 1936, pl. 8, fig. 18; x13.7.

Fig. 2 UQ 3193, pygidium, figured by Whitehouse, 1936, pl. 8, fig. 19; x14.7.

Fig. 3 UQ 3192, cephalon, figured by Whitehouse, 1936, pl. 8, fig. 17; x9.

Diplagnostus jarillensis Rusconi

Fig. 4 Cop. 8, cephalon figured by Poulsen, 1960, pl. 1, fig. 9; x15.

Diplagnostus geei sp. nov. p. 290

Fig. 5 UT 89198a, holotype, E-W distortion, x8; Que River Beds, lat. 41°34.7'S, long. 145°41.0'E (grid 3710E, 8803N).

Fig. 6 UT 92617, partially complete specimen, E-W distortion, x4.2; locality, as above.

Fig. 7 UT 89207, pygidium, N-S distortion, x8.5; locality, as above.

Fig. 8 UT 92616, pygidium, internal mould, intermediate distortion, x9.3; locality, as above.

Diplagnostus sp. 1 p. 293

Figs. 9, 10 UT 92618, fig. 9, complete specimen, N-S distortion, x13.8; fig. 10, internal mould of same specimen, x13.7; locality, Black Hill Section, Dundas, siltstone at lat. 41°50.8'S, long. 145°24.7'E (grid 3466E, 8474N) (RB locality).

Fig. 11 UT 92619, pygidium, internal mould, N-S distortion, x14; locality, as above.

Fig. 12 UT 92620, pygidium, internal mould; intermediate distortion, x14; locality, as above.

Fig. 13 UT 88148, cephalon, E-W distortion, x15.6; locality, as above.

PLATE 18 continues on preceding page.

PLATE 18 continued.

Diplagnostus sp. 2 p. 296

Fig. 14 UT 92621, cephalon, x15.8; Radfords Creek Group, lower sedimentary sequence, Unit 13, main road to Gunns Plains, Sugarloaf Gorge, lat. 41°16.1'S, long. 146°03.7'E (grid 4056E, 9175N).

Diplagnostus sp. 4 p. 301

Fig. 15 UT 92622, cephalon, intermediate distortion, x17; siltstone, eastern end of Summit Cutting of Comstock tram, lat. 41°53.8'S, long. 145°18.7'E (grid 3374E, 8412N).

Diplagnostus sp. 3 p. 298

Figs. 16, 18 UT 86872c, fig. 16, cephalon, N-S distortion, x18; fig. 18, internal mould of same specimen, x20; upper fauna, Christmas Hills, lat. 40°54.1'S, long. 144°29.8'E (grid 3075E, 9610N).

Fig. 17 UT 86872n, flattened cephalon, N-S distortion, x18; locality, as above.

Fig. 19 UT 92482, pygidium, N-S distortion, x19; locality, as above.

Fig. 20 UT 86873a, pygidium, internal mould, intermediate distortion, x18; locality, as above.

PLATE 18


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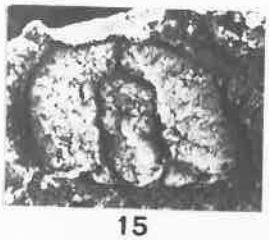
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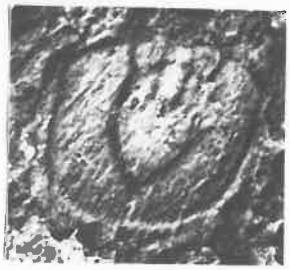
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PLATE 19

Lotagnostus atenuatus (Rusconi)

Fig. 1 Rusconi 18208, holotype cephalon described by Rusconi (1955) as *Goniagnostus atenuatus*; x5.

Fig. 2 Rusconi 18208, pygidium associated with cephalon illustrated in fig. 1; x5.

Oedorhachis (?) sp. p. 306

Fig. 3 UT 92623, pygidium, E-W distortion, x10; siltstone in Barkers Creek near lat. 41°51.3'S, long. 145°26.1'E (grid 3487E, 8463N).

Oedorhachis (?) *distortus* sp. nov. p. 303

Fig. 4 UT 54944, holotype cephalon, internal mould, N-S distortion, x5.4; locality, Brewery Junction Formation, lat. 41°53.0'S, long. 145°25.6'E (grid 3480E, 8429N) (BJ_2 locality).

Fig. 5 UT 92602, cephalon, E-W distortion, x5.8; locality, as above.

Fig. 6 UT 54981, cephalon, N-S distortion, x11.3; locality, as above.

Fig. 7 UT 92624, pygidium, E-W distortion, x4.3; locality, as above.

Fig. 8 UT 54940, cephalon, N-S distortion, x4.5; locality, as above.

Oidalagnostus trispinifer Westergård

Figs. 9, 10 Riks 357, holotype pygidium figured by Westergård, 1946, pl. 9, fig. 6; Fig. 9, x5.1; Fig. 10, right side of pygidium showing anterolateral ruga and associated pits, x8.8.

Fig. 11 Riks 358, pygidium, figured by Westergård, 1946, pl. 9, fig. 7, x8.8.

PLATE 19 continues on preceding page.

PLATE 19 continued.

Oidalagnostus sp. p. 309

Fig. 12 UT 54981, pygidium, N-S distortion, x11; Brewery Junction Formation, lat. 41°53.0'S, long. 145° 25.6'E (grid 348OE, 8429N)(BJ_2 locality).

Fig. 13 UT 54976, pygidium, N-S distortion, x11.5; locality, as above.

Buckagnostus debori sp. nov. p. 311

Figs. 14, 15 UT 868773; fig. 14, small cephalon, E-W distortion, x13; fig. 15, cephalon, intermediate distortion, x13; Christmas Hills, lower fauna, lat. 40°54.1'S, long. 144°29.8'E (grid 3075E, 9610N).

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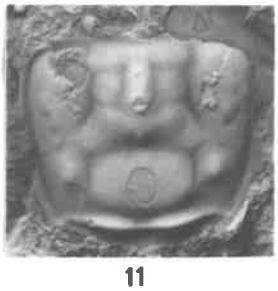

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PLATE 20

Buckaqnostus debori sp. nov. p. 311

Fig. 1 UT 86861c, cephalon, intermediate distortion, x9.5.

Fig. 2 UT 86856n, cephalon, intermediate distortion, x7.3.

Fig. 3 UT 86846, cephalon, N-S distortion, x11.2.

Fig. 4 UT 86869d, cephalon, intermediate distortion, x12.

Fig. 5 UT 86869d, cephalon, E-W distortion, x10.

Fig. 6 UT 86869e, holotype pygidium, N-S distortion, x7.4.

Fig. 7 UT 86583, pygidium, N-S distortion, x7.6.

Fig. 8 UT 86848, pygidium, N-S distortion, x11.

Fig. 9 UT 86869d, pygidium, N-S distortion, x7.4.

Fig. 10 UT 86869d, pygidium, intermediate distortion, x7.6.

Fig. 11 UT 86877f, pygidium, intermediate distortion, x12.2.

Fig. 12 UT 86877e, pygidium, intermediate distortion, x12.4.

Fig. 13 UT 92480, pygidium, intermediate distortion, x5.7; note the furrows, outlining the intranotular axis, which have been accentuated by the distortion effects.

Fig. 14 UT 92481, pygidium, N-S distortion, x9.6.

Fig. 15 UT 86869g, pygidium, N-S distortion, x10.

All specimens are from the lower fauna, Christmas Hills, lat. 40° 54.1'S, long. 144°29.8'E (grid 3075E, 9610N).

PLATE 20

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PLATE 21

Buckaqnostus debori sp. nov. p. 311

Fig. 1 UT 86861c, pygidium, E-W distortion, x8.7.

Fig. 2 UT 86877e, pygidium, E-W distortion, x7.8.

Fig. 3 UT 92467, pygidium and thorax, E-W distortion, x7.8.

Figs. 4, 5 UT 86877d, immature pygidium, N-S distortion; fig. 4, x18.6; fig. 5, x7.9.

Fig. 6 UT 86879e, pygidium, intermediate distortion, x8.9.

All specimens come from Christmas Hills, lat. 40°54.1'S, long. 144°29.8'E (grid 3075E, 9610N). The specimens shown in Figs. 1-5 come from the lower fauna; the specimen shown in Fig. 6 comes from the upper fauna.

Buckaqnostus compani sp. nov. p. 316

Figs. 7 8 UT 92711, complete specimen with cephalon skewed with respect to the pygidium; fig. 7, complete specimen, x6.3; fig. 8, cephalon, x8.8; locality, main fauna near St. Valentines Peak, lat. 41°21.6'S, long. 145° 44.3'E (grid 3758E, 9064N).

Fig. 9 UT 92709, cephalon, N-S distortion, x7.5; locality, as above.

Fig. 10 UT 92722, cephalon, x9.3; locality, as above.

Fig. 11 UT 92725, pygidium, intermediate distortion, x16.5; locality, as above.

Fig. 12 UT 92004, pygidium, N-S distortion, x20; locality, as above.

Fig. 13 UT 92705, pygidium, x13.6; locality, as above.

Fig. 14 UT 92724, holotype pygidium, x14; locality, as above.

PLATE 21

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PLATE 22

Buckagnostus compani sp. nov. p. 316

Fig. 1 UT 92700, pygidium, internal mould, x9.4; locality, main fauna near St. Valentines Peak, lat. 41°21.6'S, long. 145°44.3'E (grid 3758E, 9064N).

Buckagnostus sp. p. 320

Fig. 2 UT 92625, partially complete specimen, x5.4; locality, Radfords Creek Group, lower sedimentary sequence, Unit 15 exposed on Gunns Plains Road, lat. 41°16.1'S, long. 146°03.7'E (grid 4056E, 9175N).

Ammagnostus (?) sp. p. 321

Fig. 3 UT 92626, cephalon, internal mould, E-W distortion, x9.3; locality, Brewery Junction Formation, lat. 41°52.8'S, long. 145°25.0'E (grid 3471E, 8434N) (FE_1 fauna).

Fig. 4 UT 92627, pygidium, E-W distortion, x12; locality, as above.

Fig. 5 UT 92628, pygidium, intermediate distortion, x11; locality, as above.

cf. *Kormagnostus* sp. p. 323

Fig. 6 UT 92629, complete internal mould, N-S distortion, x13.3; locality, Que River Beds, lat. 41°34.7'S, long. 145°41.0'E (grid 3710E, 8803N).

Fig. 7 UT 92630, complete internal mould, E-W distortion, x12; locality, as above.

Denagnostus keithi sp. nov. p. 328

Fig. 8 UT 88463, holotype cephalon, x7.7; locality, upper part of Singing Creek Siltstone, Denison Range area.

Fig. 9 UT 88424, internal mould of cephalon, E-W distortion, x6; locality, as above.

PLATE 22 continues on preceding page.

PLATE 22 continued.

Fig. 10 UT 88511, pygidium, E-W distortion, x6; locality, as above.

Fig. 11 UT 88495, internal mould of pygidium figured in fig. 10.

Figs. 12, 13 UT 89443, pygidium, x7.4; Fig. 12, external mould; Fig. 13, internal mould; locality, as above.

Agnostascus (?) sp. 1 p. 331

Fig. 14 UT 24542, pygidium, x7.3; locality, lower sedimentary sequence of Radfords Creek Group, old timber track, west side of Sugarloaf Gorge, lat. 41°15.4'S, long. 146°04.3'E (grid 4065E, 9192N).

Figs. 15, 16 UT 92631, poor cephalon; fig. 15, external mould, x5.8; fig. 16, internal mould, x6.2; locality, as above.


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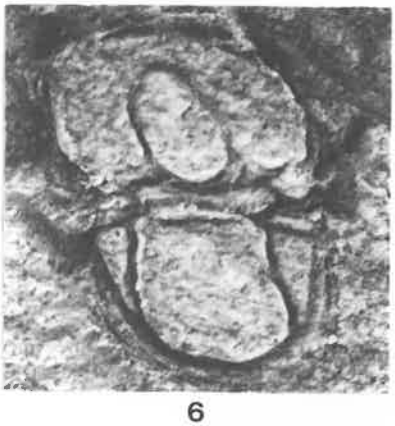
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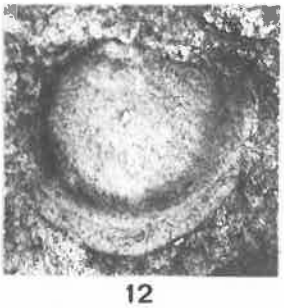
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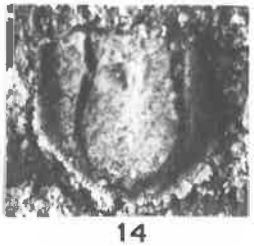
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PLATE 23

Agnostascus (?) sp. 2 — p. 333

Fig. 1 — UT 92721, pygidium, internal mould, x6.7; locality, main fauna near St. Valentines Peak, lat. 41°21.6'S, long. 145°44.3'E (grid 3758E, 9064N).

Fig. 2 — UT 92682, pygidium, internal mould, x5; locality, road cutting near St. Valentines Peak, lat. 41°21.4'S, long. 145°44.6'E (grid 3764E, 9066N).

Agnostascus (?) sp. 3 — p. 334

Fig. 3 — UT 92599, pygidium, intermediate distortion, x7; locality, siltstone, above main fossil band, near quarry at Riana, lat. 41°13.0'S, long. 146°00.2'E (grid 4004E, 9240N).

Agnostascus (?) sp. 4 — p. 335

Figs. 4, 5 — UT 92632, pygidium; fig. 4, external mould, x11.2; fig. 5, internal mould, x12.4; locality, Brewery Junction Formation, lat. 41°52.9'S, long. 145°25.6'E (grid 3480E, 8431N) (BJ_1 locality).

Fig. 6 — UT 92633, pygidium, x12.2; locality, as above.

Agnostascus (?) sp. 5 — p. 336

Fig. 7 — UT 92634, cephalon, x8; locality, as above.

Fig. 8 — UT 92632, cephalon, internal mould, intermediate distortion, x9.6; locality, as above.

Fig. 9 — UT 92635, pygidium, intermediate distortion, x8; locality, as above.

Pseudagnostus corbetti sp. nov. — p. 338

Fig. 10 — UT 88376, cephalon, x11; locality, upper part of Singing Creek Siltstone, Denison Range area.

Fig. 11 — UT 88370, cephalon, x9; locality, as above.

PLATE 23 continues on preceding page.

PLATE 23 continued.

Fig. 12 UT 88352, cephalon, x8.2; locality, as above.

Fig. 13 UT 88499, cephalon, x10.6; locality, as above.

Fig. 14 UT 88353, holotype pygidium, x10; locality, as above.

Fig. 15 UT 88494, pygidium, x8.5; locality, as above.

Fig. 16 UT 88366, pygidium, x10; locality, as above.

Fig. 17 UT 89442, pygidium, x11.4; locality, as above.

Fig. 18 UT 88381, pygidium, x9.2; locality, as above.

Fig. 19 UT 88382, pygidium, x10; locality, as above.

<u>Pseudagnostus</u> cf. <u>corbetti</u> p. 342

Fig. 20 UT 88478, pygidium, x9.2; locality, as above.

PLATE 23


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PLATE 24

Pseudagnostus sp. aff. *P. ampullatus* Öpik p. 342

Fig. 1 UT 92585, cephalon, E-W distortion, x16.5; locality, upper sedimentary sequence, Radfords Creek Group, main fossil band in quarry near Riana at lat. 41° 13.0'S, long. 146° 00.2'E (grid 4004E, 9240N).

Fig. 2 UT 92590, cephalon, intermediate distortion, x18; locality, as above.

Figs. 3, 4 UT 92591, fig. 3, cephalon, N-S distortion, x20; fig. 4, partial pygidium, x14; locality, as above.

Fig. 5 UT 92592, pygidium, internal mould, N-S distortion, x13.5; locality, as above.

Pseudagnostus sp. 1 p. 347

Fig. 6 UT 92636, cephalon, intermediate distortion, x9; locality, southern of the two Climie Formation localities near lat. 41° 54.2'S, long. 145° 24.2'E (grid 3459E, 8406N).

Fig. 7 UT 92637, pygidium, N-S distortion, x11.5; locality, as above.

Fig. 8 UT 92638, cephalon, intermediate distortion, x10; locality, as above.

Fig. 9 UT 92639, pygidium, N-S distortion, x9; locality, as above.

Pseudagnostus sp. 2 p. 349

Fig. 10 UT 92640, cephalon, intermediate distortion, x12; locality, Brewery Junction Formation, lat. 41° 52.8'S, long. 145° 25.0'E (grid 3471E, 8434N) (FE_1 fauna).

Fig. 11 UT 92641, cephalon, intermediate distortion, x15; locality, as above.

Fig. 12 UT 92627, cephalon, intermediate distortion, x20; locality, as above. The apparently oblique view shown here is caused by the buckling down of the left cheek.

PLATE 24 continues on preceding page.

PLATE 24

Fig. 13 UT 92643, cephalon, E-W distortion, x15; locality, as above.

Figs. 14, 15 UT 92644, pygidium, N-S distortion; fig. 14, top view, x12; fig. 15, side view, x20; locality, as above.

Fig. 16 UT 92613, pygidium, N-S distortion; x8.2; locality, as above.

Fig. 17 UT 92645, pygidium, N-S distortion; x9.2; locality, as above.

Fig. 18 UT 92647, pygidium, intermediate distortion; x9; locality, as above.

Pseudagnostus sp. 3 p. 351

Fig. 19 UT 92570, pygidium, x8.8; locality, siltstone, west of Birch Inlet near lat. 42°27.2'S, long. 145°21.1'E (grid 3417E, 7735N).

Pseudagnostus sp. 4 p. 351

Fig. 20 UT 92648, cephalon, x8.7; locality, as above.

Pseudagnostus sp. 5 p. 351

Fig. 21 UT 54957, pygidium, x7.6; locality, Brewery Junction Formation, lat. 41°53.0'S, long. 145°25.6'E (grid 3480E, 8429N) (BJ_2 locality).


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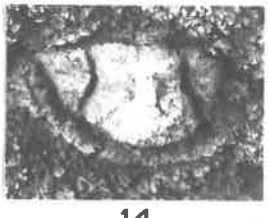
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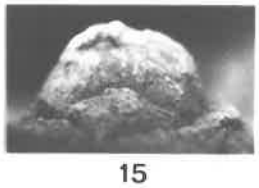
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PLATE 25

Glyptagnostus reticulatus (Angelin) p. 353

Fig. 1 UT 54143a, almost complete specimen, x6.4.

Fig. 2 UT 54129, cephalon, x11.

Fig. 3 UT 89517d, cephalon, x7.6.

Fig. 4 UT 54143b, almost complete specimen, x7.6.

Fig. 5 UT 54129, pygidium, x8.

Fig. 6 UT 54133, pygidium, x7.9.

Fig. 7 UT 89517b, cephalon, x9.

Fig. 8 UT 89517c, pygidium, x7.6.

Fig. 9 UT 89517a, cephalon, x8.

All these specimens come from Unit 18 of the Huskisson River Group at lat. 41°45.1'S, long. 145°27.2'E.

PLATE 25

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PLATE 26

Agnostardis sp. 1 — p. 357

Figs. 1, 2, 6 — UT 92649, figs. 1, 2, poorly preserved almost complete specimen; fig. 1, external mould, x14; fig. 2, internal mould, x10; fig. 6, pygidium, E-W distortion, x7.8; locality, siltstone in Barkers Creek near lat. 41°51.4'S, long. 145°26.1'E (grid 3487E, 8462N).

Fig. 3 — UT 92650, cephalon, N-S distortion, x8.6; locality, as above.

Fig. 4 — UT 92651, pygidium, E-W distortion, x8; locality, as above.

Fig. 5 — UT 92652, pygidium, N-S distortion, x6; locality, as above.

Agnostardis sp. 2 — p. 358

Fig. 7 — UT 54928, pygidium, x20; locality, siltstone in Tom Creek, lat. 41°55.5'S, long. 145°26.3'E (grid 3491E, 8378N). In this specimen the axis reaches the pygidial border.

Fig. 8 — UT 54926, pygidium, internal mould, x8.5; locality, as above. In this specimen the axis stops well short of the pygidial border.

Agnostardis sp. 3 — p. 359

Fig. 9 — UT 54730, internal mould of pygidium, intermediate distortion, x5.7; siltstone and shale unit, Black Hill section, Dundas, lat. 41°51.4'S, long. 145°25.1'E (grid 3472E, 8462N) (GP_1 fauna).

Agnostid, gen. et sp. indet. no. 1 — p. 360

Fig. 10 — UT 92653, enrolled specimen with cephalon visible, intermediate distortion, x6; locality, Que River Beds, lat. 41°34.7'S, long. 145°41.0'E (grid 3710E, 8803N).

Fig. 11 — UT 92654, enrolled specimen with pygidium visible, E-W distortion, x5.5; locality, as above.

PLATE 26 continues on preceding page.

PLATE 26 continued.

Agnostid, gen. et sp. indet. no. 2 p. 361

Fig. 12 UT 92730, small pygidium, internal mould, x10; locality, main fauna near St. Valentines Peak, lat. 41°21.6'S, long. 145°44.3'E (grid 3758E, 9064N).

Fig. 13 UT 92733, pygidium, x12; locality, as above.

Agnostid, gen. et sp. indet. no. 3 p. 362

Fig. 14 UT 92691, pygidium, x25; locality, as above.

Fig. 15 UT 92690, pygidium, x24; locality, as above.

Agnostid, gen. et sp. indet. no. 4 p. 363

Fig. 16 UT 86878m, cephalon, N-S distortion, x7; locality, Christmas Hills, upper fauna, lat. 40°54.1'S, long. 144°29.8'E (grid 3075E, 9610N).

Figs. 17, 18 UT 86620, fig. 17, cephalon, N-S distortion, x8.2; fig. 18, complete specimen, N-S distortion, x9.2; locality, as above.

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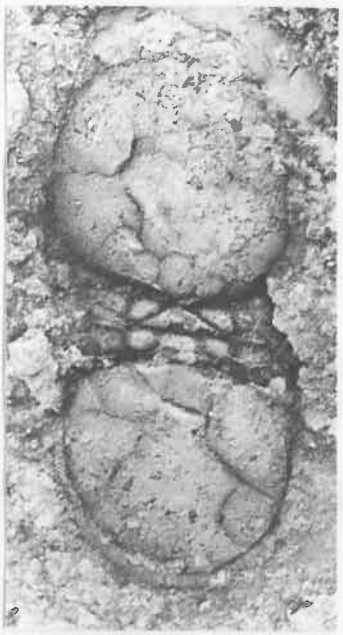

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PLATE 27

Agnostid, gen. et sp. indet. no. 4 p. 363

Fig. 1 UT 92470, complete specimen, E-W distortion, x8; locality, Christmas Hills, upper fauna, lat. 40°54.1'S, long. 144° 29.8'E (grid 3075E, 9610N).

Fig. 2 UT 86878a, cephalon, intermediate distortion, x9.3; locality, as above.

Fig. 3 UT 86878c, pygidium, N-S distortion, x14.3; locality, as above.

Fig. 4 UT 86880g, pygidium, N-S distortion, x14; locality, as above.

Fig. 5 UT 86878g, pygidium, N-S distortion, x10.6; locality, as above.

Fig. 6 UT 86878i, pygidium, E-W distortion, x11.7; locality, as above.

Fig. 7 UT 86876a, pygidium, E-W distortion, x8.5; locality, as above.

Fig. 8 UT 86878s, pygidium, N-S distortion, x10.5; locality, as above.

Agnostid, gen. et sp. indet. no. 5 p. 365

Fig. 9 UT 92655, pygidium, N-S distortion, x13; locality, Black Hill Section, Dundas, siltstone at lat. 41°50.8'S, long. 145°24.7'E (grid 3466E, 8474N) (RB locality).

Fig. 10 UT 92656, pygidium, N-S distortion, x11; locality, as above.

Agnostid, gen. et sp. indet. no. 6 p. 366

Fig. 11 UT 88132, pygidium, x18; locality, as above.

PLATE 27 continues on preceding page.

PLATE 27 continued.

Agnostid, gen. et sp. indet. no. 7 p. 367

Fig. 12 UT 92657, pygidium, intermediate distortion, x8.1; locality, southern of the two Climie Formation localities near lat. 41°54.2'S, long. 145°24.2'E (grid 3460E, 8405N).

Fig. 13 UT 92658, pygidium, intermediate distortion, x9; locality, as above.

Fig. 14 UT 92659, pygidium, E-W distortion, x10; locality, as above.

Agnostid, gen. et sp. indet. no. 8 p. 368

Fig. 15 UT 89438b, cephalon, x10; locality, upper part of Singing Creek Siltstone, Denison Range area.

Agnostid, gen. et sp. indet. no. 9 p. 370

Fig. 16 UT 92660, cephalon, x11.3; locality, mudstone, McLeans Creek, lat. 41°55.3'S, long. 145°17.5'E (grid 3357E, 8381N).

Fig. 17 UT 92661, pygidium, internal mould, x8.6; locality, as above.

Agnostid, gen. et sp. indet. no. 10 p. 371

Fig. 18 UT 92662, pygidium, E-W distortion, x32.5; locality Brewery Junction Formation, lat. 41°52.8'S, long. 145°25.0'E (grid 3471E, 8434N) (FE_1 locality).

Agnostid, gen. et sp. indet. no. 11 p. 372

Fig. 19 UT 92663, pygidium, intermediate distortion, x7.2; locality, as above.

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PLATE 28

Agnostid, gen. et sp. indet. no. 11 p. 372

Fig. 1 UT 92663, cephalon, intermediate distortion, x6; locality, Brewery Junction Formation, lat. 41°52.8'S, long. 145°25.0'E (grid 3471E, 8434N) (FE_1 locality).

Fig. 2 UT 92662, cephalon, E-W distortion, x8; locality, as above.

Fig. 3 UT 92664, cephalon, E-W distortion, x8; locality, as above.

Figs. 4, 5 UT 92554, fig. 4, cephalon, N-S distortion, x8.6; fig. 5, poorly preserved cephalon, x8.6; locality, as above.

Figs. 6, 8 UT 92665, fig. 6, pygidium, N-S distortion, x10; fig. 7, pygidium, E-W distortion, x9.6; locality, as above.

Fig. 7 UT 92666, pygidium, N-S distortion, x11; locality, as above.

Fig. 9 UT 92667, pygidium, E-W distortion, x6.4; locality, as above.

Fig. 10 UT 92668, pygidium, E-W distortion, x8.7; locality, as above.

Fig. 11 UT 92669, pygidium, N-S distortion, x12; locality, as above.

Fig. 12 UT 92670, pygidium, E-W distortion, x12.5; locality, as above.

Schmalenseeia amphionura Moberg

Fig. 13 US 256, almost complete specimen figured by Westergård, 1922 (pl. 1, fig. 19) from the Agnostus pisiformis Zone of Sweden, x11. N.B. Westergård's figure is printed back to front.

Fig. 14 US 257, cranidium and first thoracic segment of a previously unfigured specimen, x10.6.

PLATE 28 continues on preceding page.

PLATE 28 continued.

Schmalenseeia spinulosa Lazarenko

Fig. 15 Complete specimen (x10), figured by Lazarenko, 1960, as pl. 5, fig. 18; early Upper Cambrian, North Siberian Platform.

Opsidiscus argusi sp. nov. p. 379

Fig. 16 UT 92004, pygidium, side view, x20. Note the fusion of the fourth and fifth axial segments. Locality, main fauna near St. Valentines Peak, lat. 41°21.6'S, long. 145°44.3'E (grid 3758E, 9064N).

Fig. 17 UT 92001, cephalon, x20; locality, as above.

Fig. 18 UT 92008, cephalon, x16; locality, as above.

Fig. 19 UT 92010, cephalon, x22; locality, as above.

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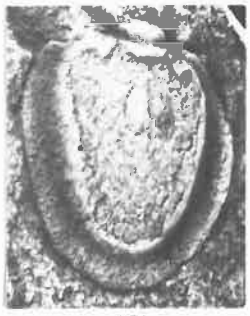
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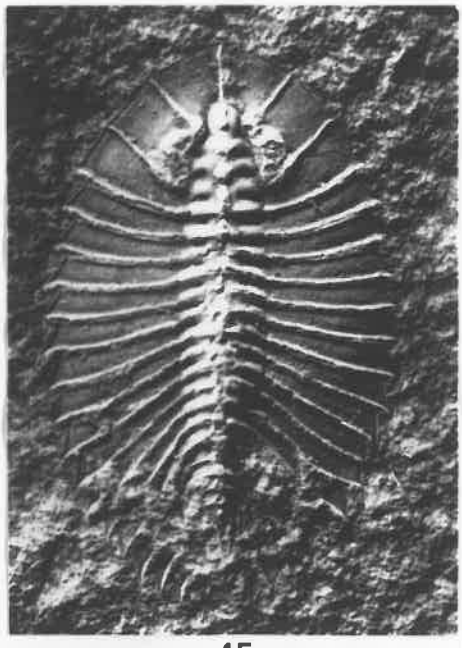
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PLATE 29

Opsidiscus argusi sp. nov. p. 379

Fig. 1 UT 92011, a complete specimen, the holotype, x22.

Figs. 2, 4 UT 92011, separate cephalon; fig. 2, cephalon, showing distinct eye ridges, x18; fig. 4, right eye, x20.

Figs. 3, 6, 9, 11 UT 92011, the second complete specimen on UT 92011; fig. 3, cephalon, showing fine granulation as well as coarse pustules, x22; fig. 6, right eye from the anterior, x30; fig. 9, right eye from posterior, x25; fig. 11, thorax, x22.

Figs. 5, 15 UT 92006, cephalon; fig. 5, faint terrace lines on edge of doublure, x19; fig. 15, dorsal view, x20.

Fig. 8 UT 92004, pygidium, showing fusion of fourth and fifth axial segments, x16.

Figs. 10, 14 UT 92003, pygidium; fig. 10, side view showing spine base, x20 (the axial half-ring is not visible from the side); fig. 14, dorsal view, x20.

Fig. 12 UT 92009, cephalon, showing radial grooves in border, x15.

Fig. 13 UT 92001, pygidium, x22.

Figs. 16, 17 UT 92005, cephalon; fig. 16, dorsal view, x22; fig. 17, anterior view, x22.

Fig. 18 UT 92000, poor cephalon showing long spine, x22.

Opsidiscus bilobatus (Westergård)

Fig. 7 US 274, right eye region of rubber cast of holotype cephalon figured by Westergård, 1946, pl. 1, fig. 21.

Schmalenseeia gostinensis sp. nov. p. 390

Figs. 19, 20 UT 92012, the holotype partial cranidium; fig. 19, external mould, x10; fig. 20, internal mould, x13.

Figs. 21, 22 UT 92013, pygidium and part of thorax; fig. 21, internal mould showing full pygidium as well as an associated partial cranidium, x7; fig. 22, external mould, x8.5.

All specimens, except that shown in fig. 7, come from the main fauna near St. Valentines Peak, lat. 41°21.6'S, long. 145°44.3'E (grid 3758E, 9064N).

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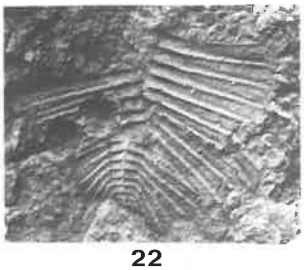

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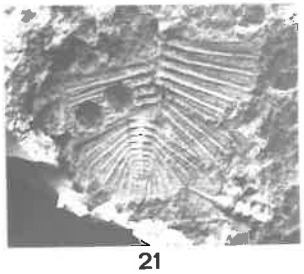

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PLATE 30

Pianaspis (?) *leveni* sp. nov. p. 399

Figs. 1-5 UT 92671, holotype cranidium; fig. 1, dorsal view, x3.3; fig. 2, left anterolateral part of glabella showing eye ridge meeting glabellar furrow, x9; fig. 3, right posterolateral part of cranidium, x5.5; fig. 4, left posterolateral part of cranidium, x5.5; fig. 5, right anterolateral part of glabella showing eye ridge meeting glabellar furrow, x9.

Fig. 6 UT 92672, right librigena, x4.

Fig. 7 UT 92673, partial cranidium, x7.

Figs. 8, 9 UT 92674; fig. 8, hypostome, N-S distortion, x9.4; fig. 9, hypostome, E-W distortion, x11.3.

Fig. 10 UT 92671, part of eight thoracic segments, x3.8.

Fig. 11 UT 92675, poorly preserved cranidium plus anterior pair of thoracic segments, x11.5.

Fig. 12 UT 92676, internal mould of partial cranidium, x5.

All specimens come from Unit 13, lower sedimentary sequence Radfords Creek Group, as exposed on the main road to Gunns Plains, lat. 41°16.1'S, long. 146°03.7'E (grid 4056E, 9175N).

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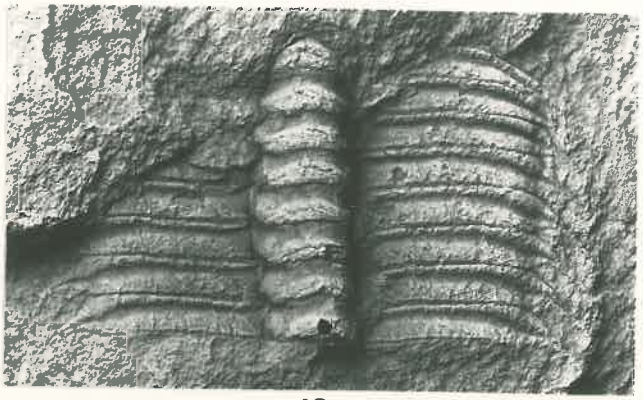

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PLATE 31

Opsidiscus bilobatus (Westergård)

Fig. 1 US 274, holotype cephalon, figured by Westergård, 1946, pl. 1, fig. 21; x17.7.

Fig. 2 US 275, pygidium, figured by Westergård, 1946, pl. 1, fig. 20; x19.

Corynexochidae, gen. et sp. indet.

Fig. 3 UT 53440b, partial cephalon, x7.4; locality, Cateena Group siltstone at Cateena Point, lat. 41°09.9'S, long. 146°08.6'E (grid 4131E, 9304N).

Kootenia sp.

Fig. 4 UT 89372f, cranidium, x5.5; locality, Black Hill section, Dundas, siltstone at lat. 41°50.8'S, long. 145°24.7'E (grid 3466E, 8474N) (RB locality).

Fig. 5 UT 89372a, cranidium, x3.5; locality, as above.

Fig. 6 UT 89372b, pygidium, x3.7; locality, as above.

Proampyx sp.

Fig. 7 UT 86869, cranidium, E-W distortion, x8.3; locality, Christmas Hills, lower fauna, lat. 40°54.1'S, long. 144°29.8'E (grid 3075E, 9610N).

Nepea sp.

Fig. 8 UT 86877e, cephalon, intermediate distortion, x12.1; locality, as above.

Genus et sp. indet.

Fig. 9 UT 86870z, pygidium, N-S distortion, x3.8; locality, as above.

PLATE 31 continues on preceding page.

PLATE 31 continued.

Genus nov., sp. nov.

Fig. 10 UT 868, pygidium, E-W distortion, x7; locality, as above.

Fig. 11 UT 86877e, cephalon, E-W distortion, x5.3; locality, as above.

Fig. 12 UT 86871, pygidium, N-S distortion, x7; locality, as above.

PLATE 31

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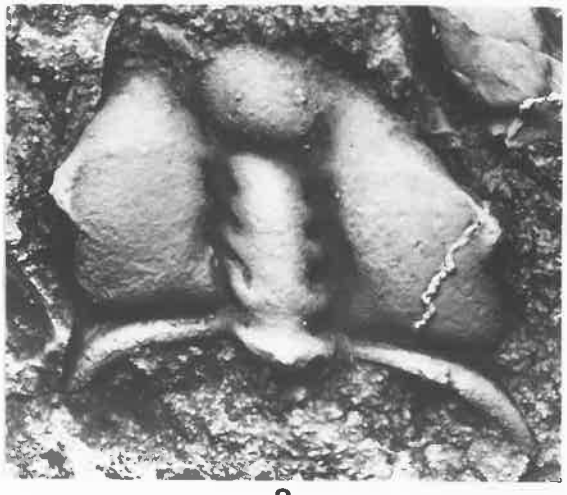

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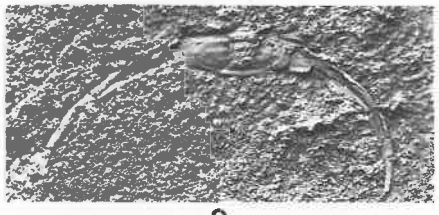

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PLATE 32

Centropleura sp.

Fig. 1 UT 92471, partial cranidium, N-S distortion, x2; locality, Christmas Hills, upper fauna, lat. 40°54.1'S, long. 144°29.8'E (grid 3075E, 9610N).

Fig. 2 UT 29061a, cranidium, intermediate distortion, x3.6; locality, as above.

Amphoton sp.

Fig. 3 UT 92477, pygidium, x5.7; locality, as above.

Pianaspis sp.

Fig. 4 UT 86872i, small cranidium, intermediate distortion, x11; locality, as above.

Fig. 5 UT 92476, cranidium, intermediate distortion, x2.7; locality, as above.

Zacanthoididae, gen. et sp. indet.

Fig. 6 UT 92709, cranidium, x8; locality, main fauna near St. Valentines Peak, lat. 41°21.6'S, long. 145°44.3'E (grid 3758E, 9064N).

cf. *Erediaspis* sp.

Figs. 7-9 UT 92677, cranidium; fig. 7, external mould, x2.9; fig. 8, internal mould, x2.3; fig. 9, anterior view of internal mould, x2.7. Fig. 9 shows the effects of distortion very well. Locality, micaceous siltstone, Beaconsfield area, lat. 41°14.4'S, long. 146°51.0'E (grid 4779E, 9217N).

Olenidae, gen. et sp. indet.

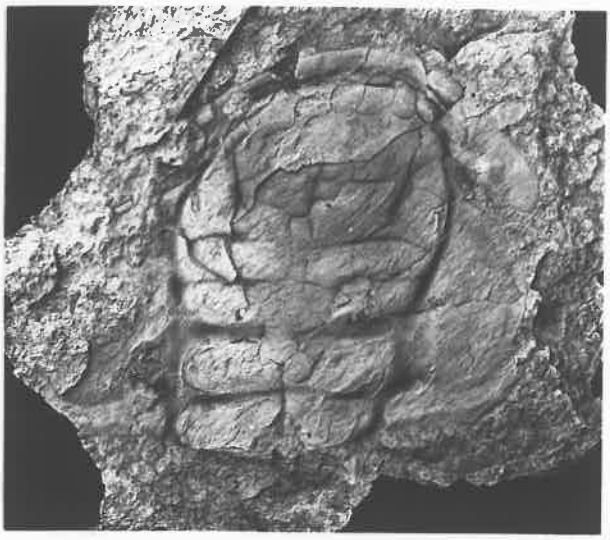
Fig. 10 UT 92678, cranidium, intermediate distortion, x5.6; locality, northern of the two Climie Formation localities near lat. 41°54.2'S, long. 145°24.2'E (grid 3459E, 8406N).

Ferenepea sp.

Fig. 11 UT 92588, partial cephalon, x22; locality, upper sedimentary sequence, Radfords Creek Group, main fossil band in quarry near Riana at lat. 41°13.0'S, long. 146°00.2'E (grid 4004E, 9240N).

Fig. 12 UT 92679, two partial cephala, x7.3; locality, as above.

PLATE 32



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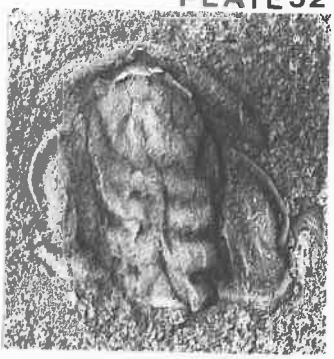

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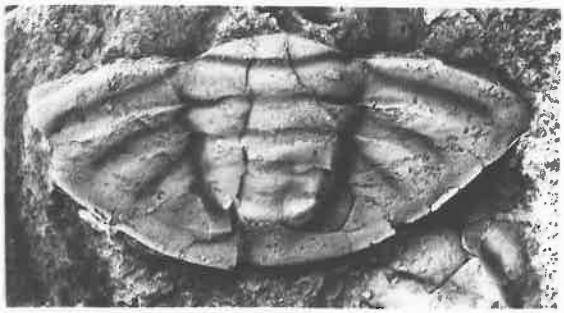

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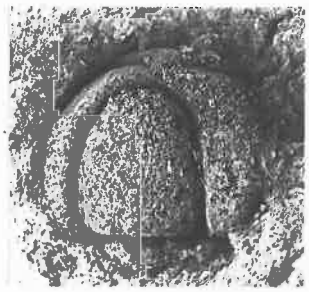

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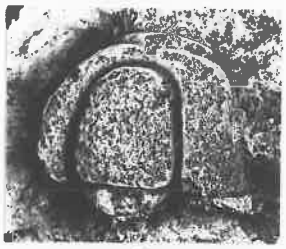

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PLATE 33

Proceratopyge sp.

Fig. 1 UT 88521, cranidium, x4; locality, upper part of Singing Creek Siltstone, Denison Range area.

Fig. 2 UT 88389b, pygidium plus last thoracic segment, x2.1; locality, as above.

Fig. 3 UT 88522, small pygidium, x4.3; locality, as above.

cf. *Sigmocheilus* sp.

Fig. 4 UT 88488, pygidium, x2.3; locality, as above.

Palaeadotes sp.

Fig. 5 UT 54733, considerably distorted pygidium and part of thorax, x1.7; locality, siltstone and shale unit, Black Hill section, Dundas, lat. 41°51.4'S, long. 145°25.1'E (grid 3472E, 8462N) (GP_1 fauna).

Fig. 6 UT 92680, pygidium, E-W distortion, x3.4; locality, as above.

Fig. 7 UT 92642, pygidium, intermediate distortion, x4.5; locality, Brewery Junction Formation at lat. 41°52.8'S, long. 145°25.0'E (grid 3471E, 8434N)(FE_1 fauna).

Nepeidae, gen. et sp. nov.

Fig. 8 UT 92662, cranidium, intermediate distortion, x5; locality, as above.

Fig. 9 UT 92646, cranidium, intermediate distortion, x6; locality, as above.

Rhyssometopus (*Rhyssometopus*) sp.

Fig. 10 UT 92627, cranidium, N-S distortion, x7; locality, as above.

Aulacodigma sp.

Fig. 11 UT 92664, partial cephalon, N-S distortion, x8; locality, as above.

PLATE33

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PAPERS AND PROCEEDINGS OF THE ROYAL SOCIETY OF TASMANIA, VOLUME 105

AN ABRUPT UPPER MIDDLE CAMBRIAN FAUNAL CHANGE, CHRISTMAS HILLS, TASMANIA, AUSTRALIA

By

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and

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(Hobart Technical College)

(with two text figures)

ABSTRACT

Sediments containing two almost entirely different Upper Middle Cambrian faunas are in direct contact near Christmas Hills, Tasmania. Two reasons are advanced in explanation for this faunal change, (a) that there is a disconformity at the position of the faunal change, or (b) that the younger fauna replaced the older fauna due to a change in environment.

INTRODUCTION

A Cambrian sedimentary succession of unknown thickness occurs in the Christmas Hills area of far north-western Tasmania (fig. 1). Much of this area is covered by thick vegetation and all the sediments are deeply weathered, with exposure being limited to occasional outcrops in stream beds and road cuttings. The most common lithologies are siltstones and tuffs (or reworked tuffs) with minor occurrences of sandstone, greywacke and conglomerate. The available dips and strikes indicate that the Cambrian rocks of this area are strongly folded in places, although in the section discussed below the sediments have shallow dips (fig. 1). The only measured section is about 160 metres thick, but the entire sequence is probably much thicker. Within this measured section, well preserved Upper Middle Cambrian fossils were discovered by Gulline (1959) in a road cutting about 2.4 km. south of the Christmas Hills Post Office. Other localities have since been found. Banks (1962, p. 134) noted a 1959 personal communication from Öpik in which Öpik identified some of the trilobites, and stated that these indicated an age in the Late Middle Cambrian *Lejopyge laevigata II* Zone of the Queensland Middle Cambrian as listed by Öpik (1960, fig. 14). However, no mention of two separate faunas is made in Banks (1962).

THE FAUNAS

There are two principal faunas at the locality 2.4 km. south of the Christmas Hills Post Office. The lower fauna contains great numbers of a species of a possible new genus cf. *Oidalagnostus,* and species of *Clavagnostus,* other agnostids, *Nepea,* and other polymerid trilobites including very rare examples of *Dorypyge.* Inarticulate brachiopods, hyolithids and rare hydroids are also present. The upper fauna includes species of *Centropleura, Amphoton,* and other polymerids, *Ptychagnostus (Goniagnostus), Ptychagnostus* cf. *aculeatus* (Angelin), *Diplagnostus, Hypagnostus* cf. *brevifrons* (Angelin) *Oidalagnostus* and other agnostids, inarticulate brachiopods, dendroids, hyolithids and sponge spicules. The hydroids and dendroids are being described by P. Quilty and the trilobites by J. Jago.

The lower fauna is contained within about 20 metres of well sorted, buff coloured, slightly micaceous siltstone, with the frequency of most fossil species increasing up the section. *Nepea* is not known from near the base of the succession. The basal part of the overlying fauna is found in a pale buff-coloured laminated siltstone which generally becomes harder and greyer up the succession. The fossil content decreases rapidly after the first two or three metres. The density of occurrence of fossils in the lower is generally greater than that of the upper fauna. However, the proportion of complete or partially complete trilobites in the upper fauna is much greater than in the lower fauna.

The two faunas are almost entirely different with only *Clavagnostus, Peronopsis,* and cf. *Oidalagnostus* being common genera. Only part of a single pygidium of *Clavagnostus* is known from the upper fauna and cf. *Oidalagnostus* is also much rarer there than in the lower fauna. The species of *Clavagnostus* present in the upper fauna is different from that in the lower fauna. However, the same species of cf. *Oidalagnostus* occurs in both faunas. The species of *Peronopsis* in the upper fauna is probably the same as that in the lower fauna, but it is much rarer in the upper fauna than within the lower fauna.

The presence of *Centropleura, Ptychagnostus* cf. *aculeatus* and *Hypagnostus cf. brevifrons* in the upper fauna suggests that the age of this fauna is either that of the *Lejopyge laevigata II* Zone or the *L. laevigata I* Zone of Öpik (1961). The age of the lower fauna is not known precisely. Its general aspect indicates that it can only be a little older than the upper fauna and the presence of *Clavagnostus* suggests that the lower fauna is probably not older than the *L. laevigata I* Zone. One rather odd feature of the lower fauna is the absence of *Ptychagnostus,* a genus usually found in the Upper Middle Cambrian agnostid faunas.

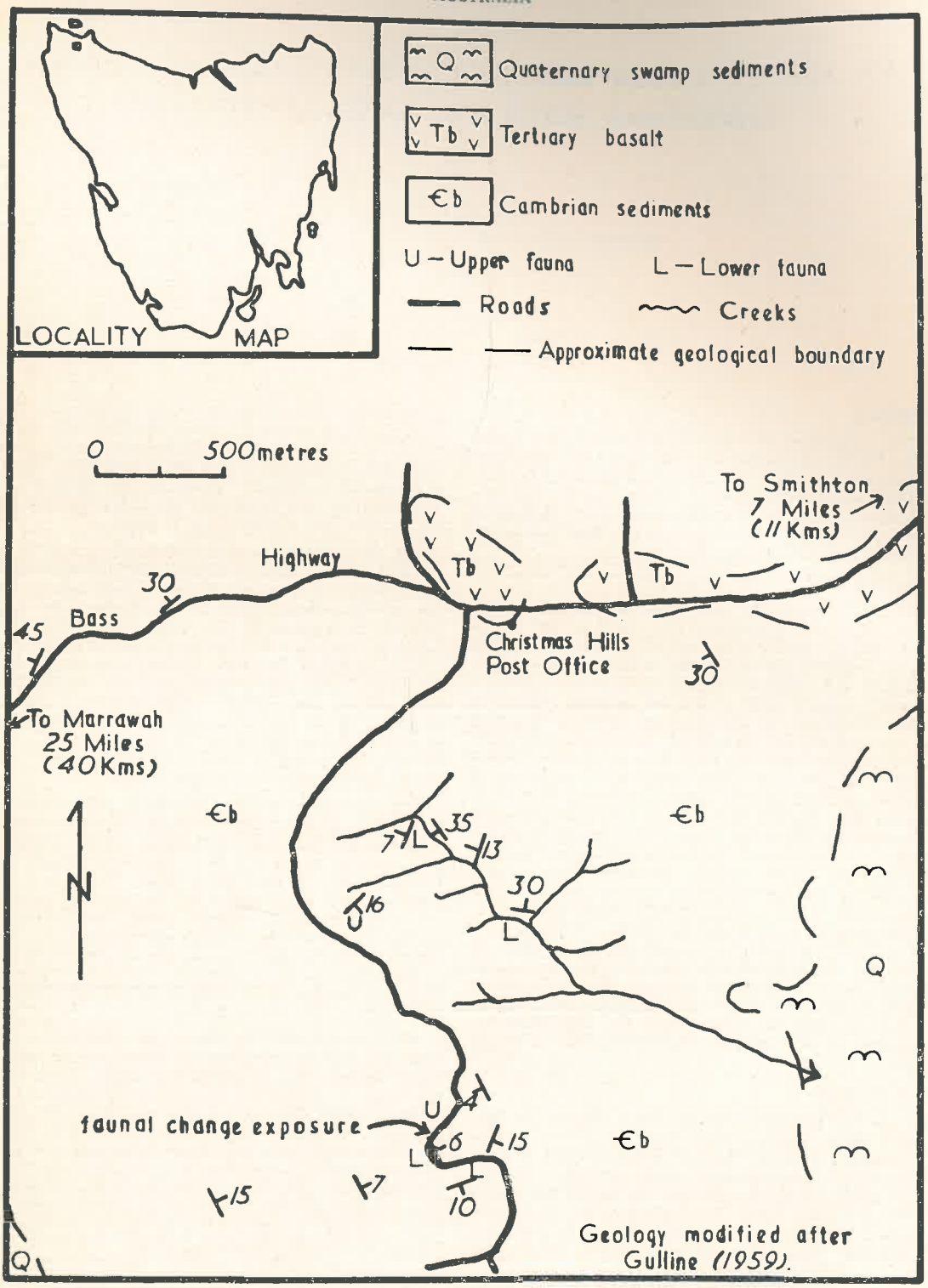

Fig. 1 — Geology of the Christmas Hills Area, Tasmania.

THE ABRUPT FAUNAL CHANGE

Prior to 1967 the boundary between the sediments containing the two faunas was unknown. In late December 1967 the authors dug out the boundary, with the results described below and summarized in fig. 2.

It was found that the faunal change is abrupt and that there are distinctly different siltstones on either side of the boundary. The uppermost 60 cm. of the lower fauna is contained within sediment that is much more weathered than the sediments above and below. The boundary between the sediments containing the two faunas occurs at the top of a 2.5 cm. band of ferruginous purple siltstone. Immediately above this purple siltstone is a 5 cm. layer of siltstone and ferruginous siltstone, which is overlain by well bedded pale siltstone containing the upper fauna. At this level the fauna includes *Hypagnostus* cf. *brevifrons* cf. *Oidalagnostus* and *Amphoton*. At the present the lowest known example of the upper fauna comes from about 9 cm. above the purple siltstone. The lowest *Centropleura* found to date is about 43 cm. above the boundary.

Immediately below the ferruginous purple siltstone is a 20 cm. thickness of clay and deeply weathered siltstone, which contains *Nepea* and other members of the lower fauna within 2 cm. of the purple siltstone. Beneath this is a slightly ferruginous siltstone 1-2 cm. thick underlain by 7.5 cm. of deeply weathered, whitish clay, which overlies 5 cm. of purple silt and ferruginous material. Below this are 19 cm. of deeply weathered siltstone and clay, which is underlain by well bedded siltstone, which contains abundant well preserved representatives of the lower fauna.

The above description indicates that there is a maximum of about 13 cm. between the lowest known member of the upper fauna and the highest known member of the lower fauna. With further collecting and excavation of the trench from which the above section was described this distance will probably decrease.

The marked change in faunas across the boundary, the different sediment types containing the faunas, and the highly weathered nature of these sediments may indicate a disconformity at this level. A second explanation for the abrupt faunal change is that there is no disconformity, but rather that the upper fauna represents an incoming fauna which displaced the original fauna due to a change in environment.

It is probable that the sediments containing the upper fauna were deposited in quieter waters than the sediments which contain the lower fauna. This is substantiated by the laminated nature of the sediments containing the upper fauna, and the greater proportion of complete trilobites in the upper fauna as compared to the lower fauna. The presence of sponge spicules and the preservation of dendroids in the upper fauna also implies quiet bottom conditions. The cause of this environmental difference is unknown, although it is possible that the upper fauna is a deeper water fauna than the lower fauna.

The lower fauna is seen at two other localities in the vicinity of Christmas Hills and the upper fauna is seen at one other place (see fig. 1). However, the nature of the outcrops at these localities does not allow the stratigraphic relationships between the sediments containing the two faunas to be determined. Thus at the present the faunal change can be inspected in the excavated section whose lateral extent is only about 60 cms. Until the field relationships are known in much more detail no firm explanation can be given.

ACKNOWLEDGEMENTS

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REFERENCES

BANKS, M. R., 1962: Cambrian System in the Geology of Tasmania. *J. geol. Soc. Aust.*, **9(2)**, 127-45.

GULLINE, A. B., 1959: The Underground Water Resources of the Smithton District. *Underg. Wat. Supply Pap., Tasm.*, **5**.

ÖPIK, A. A., 1960: Cambrian and Ordovician geology (of Queensland). *J. geol. Soc. Aust.*, **7**, 91-103.

————, 1961: Cambrian geology and palaeontology of the headwaters of the Burke River, Queensland. *Bur. Min. Resour. Bull.* **53**.

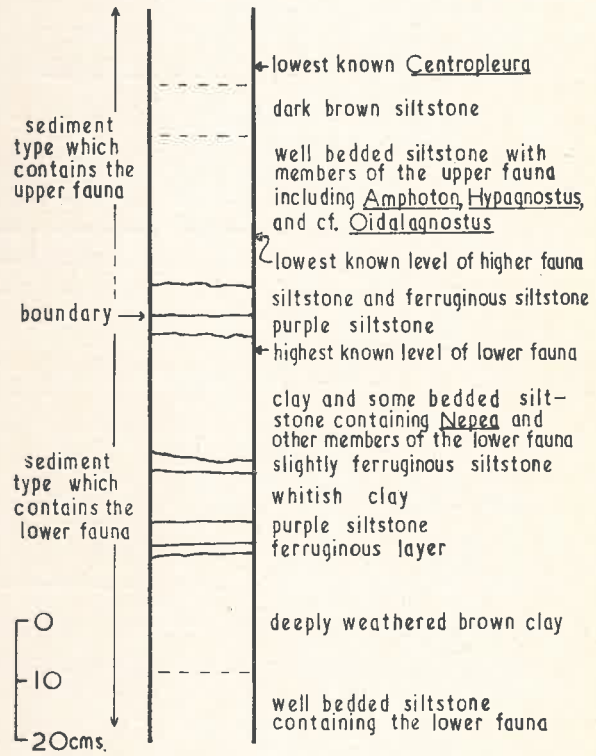
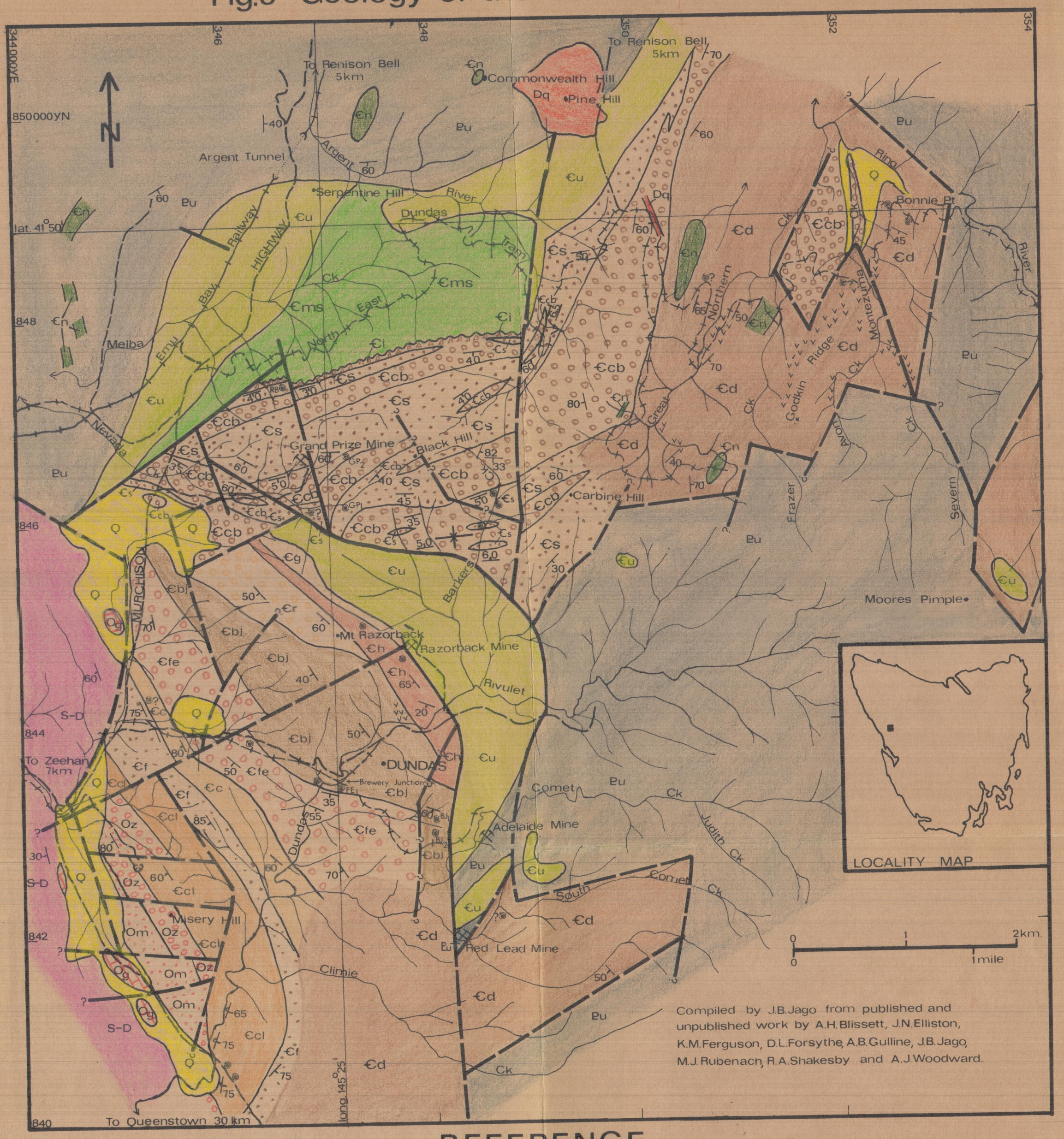


Fig.2 —— Section through the faunal change, Christmas Hills, Tasmania.

Gee, C. E., Jago, J. B., & Quilty, P. G. (1970). The age of the Mt Read Volcanics in the Que River area, western Tasmania. *Journal of the Geological Society of Australia*, *16*(2), 761-763.

Fig.3 Geology of the Dundas district.



Compiled by J.B.Jago from published and unpublished work by A.H.Blissett, J.N.Elliston, K.M.Ferguson, D.L.Forsythe, A.B.Gulline, J.B.Jago, M.J.Rubenach, R.A.Shakesby and A.J.Woodward.

REFERENCE

QUATERNARY
- Q Alluvium

SILURIAN–DEVONIAN
- S-D Eldon Group Undifferentiated

ORDOVICIAN (Junee Group)
- Og Gordon Limestone
- Om Moina Sandstone
- Oz Mt.Zeehan Conglomerate (=Misery Conglomerate)

CAMBRIAN
- Ccl Climie Formation
- Cf Fernflow Formation
- Cc Comet Formation
- Cfe Fernfields Formation
- Cbj volcanics Brewery Junction Formation
- Cr Razorback Conglomerate
- Ch Hodge Slate
- Cg Greywacke conglomerate

  } Dundas Group (section between Mt.Razorback and Misery Hill)

- Ccb Chert-breccia and/or greywacke conglomerate
- Cs Siltstone, mudstone and slate with subordinate sandstone and greywacke
- Ci Spilite conglomerate

  } Middle and Upper Cambrian sediments away from the Mt.Razorback–Misery Hill section

- Cd volcanics Cambrian Undifferentiated

?LOWER CAMBRIAN–PRECAMBRIAN
- Pu Crimson Creek Formation, Oonah Formation and Concert Schist. Undifferentiated

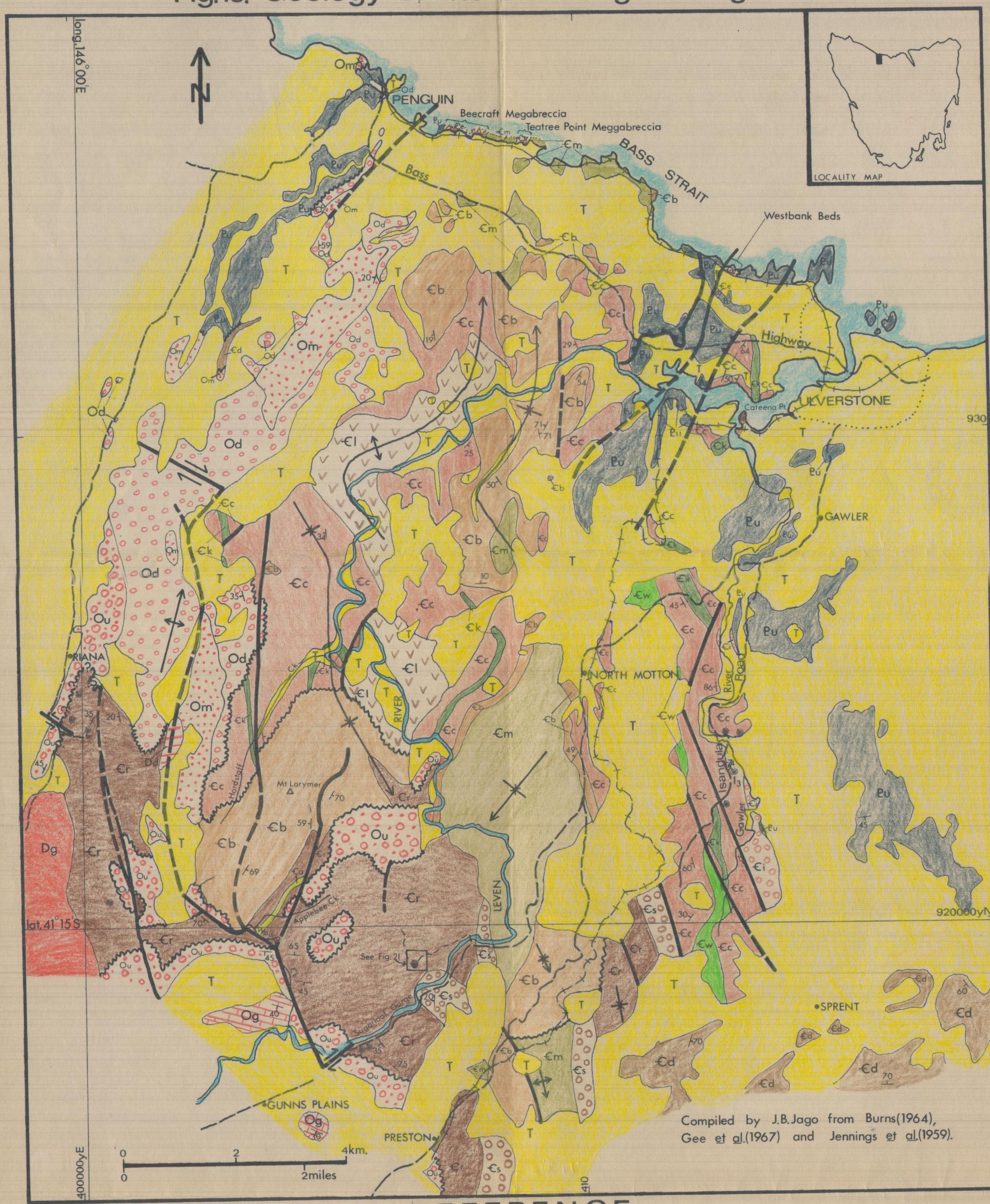
IGNEOUS ROCKS

DEVONIAN
- Dq Quartz porphyry

CAMBRIAN
- Cms Melba Spilite
- Cn Gabbro, norite and dolerite
- Cu Serpentinite and pyroxenite

- geological boundary
- unconformity
- 70 strike and dip of strata
- 75 overturned strata
- syncline
- established fault
- fault, position approximate
- fault, inferred
- BJ1 Cambrian fossil locality [discovered or relocated], with designation [if any] used in text
- ? Cambrian fossil locality, previously reported, not relocated
- mine or prospect
- quarry
- roads
- railway (in use)
- railway (abandoned)
- creeks

Fig. 19. Geology of the Dial Range Trough.



REFERENCE

QUATERNARY–TERTIARY
- T — Undifferentiated

ORDOVICIAN (Junee Group)
- Og — Gordon Limestone
- Om — Moina Sandstone
- Od — Duncan Conglomerate
- Ou — Moina Sandstone, Duncan Conglomerate; Undifferentiated.
- Oo — Gnomon Mudstone

(Om, Od, Ou: Dial Subgroup)

IGNEOUS ROCKS

DEVONIAN
- Dd — Dolerite
- Dg — Granite

CAMBRIAN
- Ce — Beecraft Megabreccia, Teatree Point Megabreccia, Westbank Beds.
- Cr — mudstone, sandstone and conglomerate
- Ca — Applebee Volcanics
- Cr — mudstone, tuff, sandstone and conglomerate
- Cs — Sprent Formation

(Cr, Ca, Cr, Cs: Radfords Creek Group)

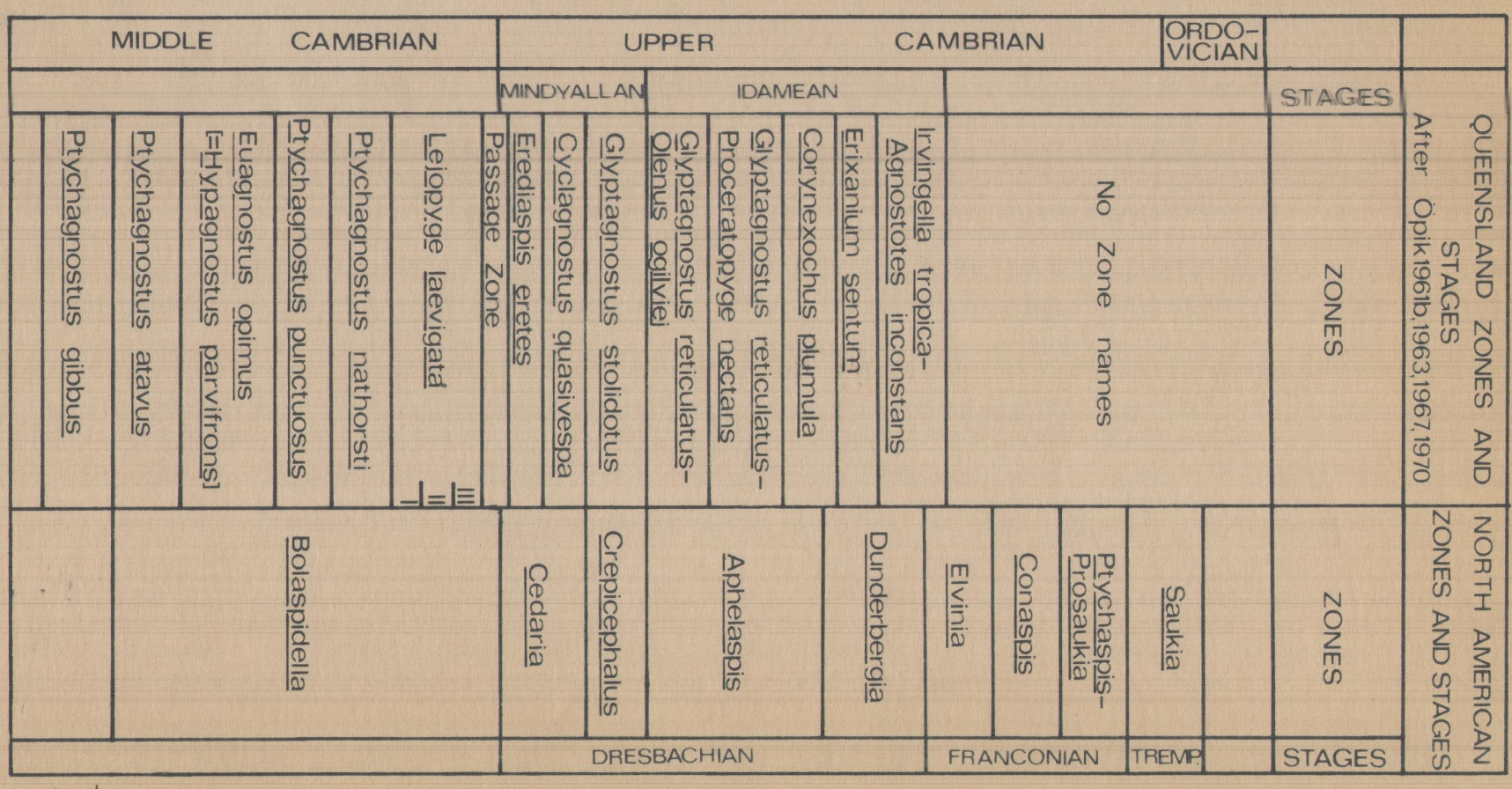
- Cm — Motton Spilite
- Cb — Barrington Chert
- Cc — mudstone, sandstone and conglomerate
- Cw — Wilsonia Volcanics
- Cc — mudstone and sandstone
- Ck — Kerrison Volcanics
- Cc — mudstone, sandstone, claystone and conglomerate
- Ci — Isandula Conglomerate

(Cc, Cw, Cc, Ck, Cc, Ci: Cateena Group)

- Cl — Lobster Creek Volcanics
- Cd — Cambrian Undifferentiated

PRECAMBRIAN
- Pu — Undifferentiated

- geological boundary — position approximate
- unconformity
- possible unconformity
- /69 — dip and strike of strata
- anticline
- syncline
- thrust or reverse fault, teeth on upper plate
- established fault showing relative movements
- faults with unspecified or multiple movements
- I_3 — Cambrian fossil locality with designation (if any) used in text
- quarry
- roads
- railway (in use)
- railway (abandoned)



Peronopsis gullini sp. nov.
Peronopsis ekip sp. nov.
Peronopsis sp.1
Peronopsis sp.2
Peronopsis? sp.1
Hypagnostus cf. brevifrons (Angelin)
Hypagnostus sp. aff. H. parvifrons (Linnarsson)
Hypagnostus sp.
Grandagnostus sp.
Valenagnostus banksi sp. nov.
Valenagnostus brittoni sp. nov.
Valenagnostus sp.1
Valenagnostus(?) sp.
Pseudophalacroma? sp.
Birchagnostus inleti sp. nov.
Ptychagnostus(Ptychagnostus) stenorrhachis (Grönwall)
Ptychagnostus(Ptychagnostus) hodgei sp. nov.
Ptychagnostus(Ptychagnostus) cf. aculeatus (Angelin)
Ptychagnostus(Ptychagnostus) sp.
Ptychagnostus? murchisoni sp. nov.
Ptychagnostus (Goniagnostus) rubenacha sp. nov.
Ptychagnostus(Goniagnostus) buckleyi sp. nov.
Ptychagnostus(Goniagnostus) sp.
Ptychagnostus ? sp.1
?Lejopyge laevigata (Dalman)
Lejopyge laevigata armata (Linnarsson)
Lejopyge(?) sp.
Agnostus sp.1
Agnostus sp.2
Agnostus(?) sp.
Idolagnostus sp.
Geragnostus sp.1
Geragnostus sp.2
Geragnostus sp.2
Acmarhachis sp.
cf. Cyclagnostus sp.
Lotagnostus sp. aff. L. trisectus (Salter)
?Lotagnostus sp.
Clavagnostus milli sp. nov.
Clavagnostus burnsi sp. nov.
Clavagnostus rawlingi sp. nov.
Clavagnostus sp.1
Clavagnostus sp.2
Clavagnostus sp.3
Clavagnostus sp.4
Pseudoclavagnostus sisponorep sp. nov.
Pseudoclavagnostus(?) nevel sp. nov.
Pseudoclavagnostus(?) inara sp. nov.
Aspidagnostus riani sp. nov.
Aspidagnostus cf. riani
Aspidagnostus sp.1
Aspidagnostus sp.2
Aspidagnostus sp.3
Aspidagnostus sp.4
Diplagnostus geei sp. nov.
Diplagnostus sp.1
Diplagnostus sp.2
Diplagnostus sp.3
Diplagnostus sp.4
Oedorhachis(?) distortus sp. nov.
Oedorhachis(?) sp.
Oidalagnostus sp.
Buckagnostus debori sp. nov.
Buckagnostus compani sp. nov.
Buckagnostus sp.
Ammagnostus(?) sp.
cf. Kormagnostus sp.
Denagnostus keithi sp. nov.
Agnostascus(?) sp.1
Agnostascus(?) sp.2
Agnostascus(?) sp.3
Agnostascus(?) sp.4
Agnostascus(?) sp.5
Pseudagnostus corbetti sp. nov.
Pseudagnostus cf. corbetti
Pseudagnostus sp. aff. P. ampullatus Öpik
Pseudagnostus sp.1
Pseudagnostus sp.2
Pseudagnostus sp.3
Pseudagnostus sp.4
Pseudagnostus sp.5
Glyptagnostus reticulatus (Angelin)
Agnostardis sp.1
Agnostardis sp.2
Agnostardis sp.3
Agnostid, gen. et sp. indet. no.1
Agnostid, gen. et sp. indet. no.2
Agnostid, gen. et sp. indet. no.3
Agnostid, gen. et sp. indet. no.4
Agnostid, gen. et sp. indet. no.5
Agnostid, gen. et sp. indet. no.6
Agnostid, gen. et sp. indet. no.7
Agnostid, gen. et sp. indet. no.8
Agnostid, gen. et sp. indet. no.9
Agnostid, gen. et sp. indet. no.10
Agnostid, gen. et sp. indet. no.11
Opsidiscus argusi sp. nov.
Schmalenseeia gostinensis sp. nov.
Pianaspis(?) leveni sp. nov.

The range of each species, as shown, covers the whole of the zone (or zones) in which it is thought to occur. In some cases this leads to the apparently anomalous result of species having overlapping time ranges. However, this is preferable to placing limits on the ranges which are even more arbitary than the zone boundaries. The broken lines give the possible time ranges of species from faunas which have not been dated accurately.

Table 10. Time ranges of some Tasmanian Cambrian trilobites as determined in this study.