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MICROPALAEONTOLOGICAL EXAMINATION OF SAMPLES FROM
CAMPBELL'S BORE, ALLOTMENT 22, PARISH OF TUNART,
COUNTY MILLEWA, VICTORIA.

by

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MICROPALAEONTOLOGICAL EXAMINATION
OF SAMPLES FROM CAMPBELL'S BORE.
ALLOTMENT 22. PARISH OF TUNABT.
COUNTY MILLEWA, VICTORIA.

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<u>0-20 feet.</u>	Reddish sandstone composed of fine angular quartz. No fossils.
<u>20-40 feet.</u>	Ochreous sandstone. No fossils.
<u>40-60 feet.</u>	Reddish sandstone with grains coarser than in 0-40 feet. No fossils.
<u>60-100 feet.</u>	Reddish sandstone with quartz grains stained red. No fossils.
<u>100-114 feet.</u>	Reddish sandstone with coarse grains stained red. No fossils.
<u>114-148 feet.</u>	Ochreous sandstone, with grains whitish in colour when washed. No fossils.
<u>148-179 feet.</u>	Brick red sandstone. No fossils.
<u>179-192 feet.</u>	Dark brownish grey grit, with angular to rounded, fine to coarse quartz grains. No fossils.
<u>192-196 feet.</u>	Limonitic grit. No fossils.
<u>196-206 feet.</u>	Dark brownish grit similar to 179-192 feet. No fossils.
<u>206-226 feet.</u>	Dark brownish, micaceous grit. No fossils.
<u>226-244 feet.</u>	Fine angular unconsolidated quartz sand with mica. No fossils.
<u>244-266 feet.</u>	Dark grey fine grained micaceous sandstone with carbonaceous particles. No fossils.
<u>266-280 feet.</u>	Dark grey fine grained micaceous sandstone with some large polished quartz grains and carbonaceous particles. No fossils.
<u>280-299 feet.</u>	Dark grey shelly sandstone with foraminifera, mollusca and ostracoda.

Foraminifera: Quinqueloculina agglutinans, Q. seminulum, Q. sp., Hauerina compressa, Dentalina obliqua, Guttulina regina, G. problema, G. yabei, G. cf. yamasekii, Notorotalia clathrata, Planulina kelimnag, Discorbis globularis, Elphidium craticulatum, E. subnodosum.

Pelecypoda: Neotrigonia howitti, Cucullaea corionensis var. preelonga.

Gastropoda: Polinices cunninghamensis, Ancilla oryza.

Ostracoda: Cythere postdeclivia, Cytherella pulchra.

<u>299-319 feet.</u>	Grey fine shelly sandstone with a few minute foraminifera, a few bryozoa, fragments of mollusca and ostracoda.
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Foraminifera: Frondicularia sp., Parafrondicularia cf. helenae, Discorbis dimidiata, Cibicides cf. pseudoungerianus.

Ostracoda: Cythere dictyon.

319-339 feet.

Dark grey shelly sandstone with numerous grains of green glauconite, small foraminifera and broken mollusca.

Foraminifera: Planulina kalimae.

339-359 feet.

Dark grey fine grained sandstone with abundant grains of brown glauconite and a few foraminifera.

Foraminifera: Pyrgoella sphaera, Cassidulinella sp., Cibicides ungerianus, C. sp., C. cf. pseudoungerianus, Notozostella clathrata.

359-369 feet.

Dark grey sandstone with abundant grains of brown glauconite, some pyrite, small poorly preserved foraminifera and small fish tooth.

Foraminifera: Cibicides cf. ungerianus, C. sp.

369-378 feet.

Dark grey sandstone with abundant green glauconite, fine angular quartz grains pyrite and poorly preserved foraminifera.

Foraminifera: Triloculina sp., Cibicides sp.

378-398 feet.

Grey bryozoal limestone with foraminifera, corals, mollusca and ostracoda.

Foraminifera: Austrotrillina howchini, Quinqueloculina vulgaris, Q. agglutinosa, Planispirinella exigua, Articulina victoriana, Cornuspira involvens, Sigmoculina victoriana, Marginopora vertebralis, Dorothis sp., Bolivina cf. arta, B. sublobata, B. scalprata var. retiformis, B. spp., Lagenella marginata, Lenticulina sp.1, Uvigerina spp., Globigerinoides trilobus, Cibicides victoriensis (c), C. ungerianus, C. refulgens, Siphonina australis, Discorbis patelliformis, Cassidulinella intermedia, Anomalina ammonoides, Elphidium chapmani, E. crassatum, Amphistegina lessonii, Operculina victoriensis.

Anthozoa: Notophyllia variolaris.

Gastropoda: Marginella wentworthi, Emarginula sp.

Ostracoda: Cythere scutigera, C. caudispinosa, C. dictyon, C. lactea, C. sp., Cytheropteron batesfordiense, Krieh egeri, Bythocythere caudata, Cytherella lata, C. subtruncata.

398-426 feet.

Grey limestone, with foraminifera, broken mollusca and ostracoda.

Foraminifera: Austrotrillina howchini, Quinqueloculina vulgaris, Q. schreibneriana, Marginopora vertebralis, Dorothis parri, Cassidulinella subglobosa, Nodosaria, Lenticulina sp., Cibicides victoriensis, C. ungerianus, Gypsina howchini, Elphidium chapmani, E. crassatum, Amphistegina lessonii, Operculina victoriensis.

Ostracoda: Macrocypris tumida, Cythere scutigera, C. canaliculata, C. dictyon, C. lactea, Krieh egeri, Cytherella lata, Bythocythere keblei.

426-486 feet.

Bryozoal limestone with foraminifera.

Foraminifera: Clavulinoides azaboi var. victorien-
sis, Dentalina obliqua, Cibicides sp. 3, Eponides re-
pandus, Gypsina globulus, Elphidium pseudoinflatum,
Operculina victoriensis.

486-506 feet.

Bryozoal limestone similar to 466-486 feet but with foraminifera slightly more abundant.

Foraminifera: Textularia sagittula, Clavulinoides
azaboi var. victoriensis, Eggerella sp., Bolivina
scalarata var. retiformis, Ehrenbergina serrata,
Reussella decorata, Globigerinoides trilobus, Siphonina
australis, Anomalina amazonides, Eponides repandus.

Ostracoda: Cythere demissa, C. dictyon.

506-516 feet.

Grey bryozoal limestone with foraminifera and ostracoda.

Foraminifera: Textularia sagittula, Bolivina vic-
toriana, Glaukulina laevigata, Sigmomorphina subre-
gularis, Cibicides sp. 3, Heronallenia linguata, E-
ponides repandus, E. scabriculum, Siphonina australis,
Elphidium howchini, Amphistegina lessonii, Operculina
victoriensis.

Ostracoda: Kithia eggeri.

516-523 feet.

Grey bryozoal marly limestone with foraminifera and ostracoda.

Foraminifera: cf. Amphiscena, Textularia fistulosa,
Bolivina sp., Lenticulina crepidula, Sigmoidella ele-
gantissima, Globigerinoides trilobus, Sphaeroidina
bulloides, Cibicides ungerianus, C. sorrentae, Dycib-
icides biserialis, Heronallenia cf. wilsoni, Siphonina
australis, Anomalina glabrata, Notorotalia howchini,
Eponides repandus, Calcarina verriculata, Nonionella
sp., Elphidium crassum, Amphistegina sp., Operculina
victoriensis.

Ostracoda: Cytheroantheron batesfordiense.

523-525 feet.

Grey marly limestone with small foraminifera.

Foraminifera: Cassidulina laevigata, Siphonodossaria
scalaris, Eponides scabriculum, Cibicides lobatulus,
Elphidium crepiniae.

525-555 feet.

Grey bryozoal limestone with foraminifera.

Foraminifera: Gaudryina rugosa, Cibicides sorrentae,
Gypsina howchini, Calcarina verriculata, Elphidium
charmani, Amphistegina lessonii, Operculina victoriensis.

555-600 feet.

Grey bryozoal limestone with foraminifera and ostracoda.

Foraminifera: Textularia sagittula, Bolivina dil-
atata, Lenticulina cultrata, Guttulina (Sigmoidina)
silvestrii, Sigmoidella elegantissima, S. kagaensis,
Sigmomorphina sub-subregularis, Sphaeroidina bulloides,
Carpenteria rotaliformis, Gypsina howchini, G. globulus,
Acervulina inhaerens, Calcarina verriculata, Cibicides
sorrentae, C. sp. 2, Discorbis balcombensis, Eponides
scabriculum, E. repandus, Astrononion australe, Elphid-
ium howchini, E. charmani, Operculina victoriensis.

Ostracoda: Cytheroantheron batesfordiense.

600-652 feet. Grey bryozoal limestone, similar to 555-600 feet.

Foraminifera: Dorothia parri, Fronicularia cf. lorifera, Guttulina (Sigmoidina) silvestrii, Sigmoidella elegantissima, Sigmomorphina subregularis, Carpenteria rotaliformis, Calcarina verriculata, Cibicides sp. 2, Elphidium howchini, Crespinella umbonifera, Operculina victoriensis.

652-666 feet. Grey bryozoal limestone with Carpenteria rotaliformis and Cibicides victoriensis common.

Foraminifera: Gaudryina rugosa, Textularia sagittula, Listerella victoriensis, Clavulinoides azaboi var. victoriensis, Dorothia parri, Lagena orbignyana, Dentalina soluta, Guttulina problema, G. yabei, G. (Sigmoidina) silvestrii, Sigmomorphina cf. vaughani, S. subregularis, Globulina globa, Sigmoidella elegantissima, S. kagaensis, Carpenteria rotaliformis, Discorbis tuberculata var. australiensis, D. turbo, D. bertheloti var. papillata, Cibicides sorrentae, C. victoriensis, C. sp. 2, Eponides scabriculus, E. repandus, Crespinella umbonifera, Elphidium crassatum, E. chapmani, Operculina victoriensis.

Ostracoda: Hythocoria tuesfata, Cythere quadrileata, Cytherella lata.

666-686 feet. Greyish limestone slightly marly and with numerous small foraminifera.

Foraminifera: Textularia sp., Bolivina scalprata var. retiformis, B. hebes var. victoriensis, B. spp., Bulimina elephas, B. sp., Reussella pulchra, R. sp., Cassidulina subglobosa, Lagena globosa, Sigmoidella kagaensis, Globigerina bulloides, Discorbis turbo, D. bertheloti var. papillata, Cibicides victoriensis, C. sp. 2, Dycibicides biserialis, Siphonina australis, Hexanellina lingulata, Eponides scabriculus.

686-718 feet. Whitish bryozoal limestone with foraminifera.

Foraminifera: Cassidulina subglobosa, Fronicularia sp. nov., Sigmoidella elegantissima, Carpenteria rotaliformis, Gyosina howchini, Cibicides victoriensis, Eponides repandus, E. scabriculus, Calcarina verriculata.

718-851 feet. Grey limestone with fragments of flinty limestone showing replacements of foraminifera and bryozoa. A few foraminifera in the more friable portion of the limestone.

Foraminifera: Carpenteria rotaliformis, Anomalinia nonionoides, Cibicides victoriensis, C. sp. 2.

851-871 feet. Grey marl with a few small foraminifera and ostracoda.

Foraminifera: Quinqueloculina seminulum, Sphaeroidina bulloides, Anomalinia nonionoides, Notorotalia howchini, Pulvinulinella tenuimarginata.

Ostracoda: Cythere scutiger.

871-918 feet. Dark grey sandy marl with fine angular quartz grains and a few small foraminifera.

Foraminifera: Cassidulina subglobosa, Dentalina semicostata, Cibicides sp.

918-922 feet. Unconsolidated, fine angular quartz sand.

STRATIGRAPHIC NOTES ON THE SAMPLES.

One hundred and five samples from the surface down to 922 feet, were submitted for micropalaeontological examination from Campbell's Bore, Parish of Tunart, County of Millewa which includes the northern part of the Mallee. The stratigraphic sequence of beds through which the bore passed is characteristic of the subsurface deposits of the Mallee and Wimmera areas of Victoria.

The following stratigraphic horizons were met with:

Recent to Pleistocene	-	Surface down to 280 feet
Lower Pliocene (Kallimnan Stage)	-	280 feet down to 319 feet.
Upper Miocene (Mitchellian Stage)	-	319 feet down to 378 feet.
Middle Miocene (Balcombian Stage)	-	378 feet down to 871 feet.
(Anglesian Stage)		871 feet down to 922 feet.

Two hundred and eighty feet of unfossiliferous sands and sandstones overlay the marine Tertiary deposits in the bore.

At 280 feet the bore passed into the Kallimnan Stage of the Lower Pliocene, and a characteristic assemblage of fossils was present down to 319 feet.

It is suggested that the glauconitic beds from 319 feet down to 378 feet be referred tentatively to the Mitchellian stage of the Upper Miocene.

The typical bryozoal limestones of the upper part of the Middle Miocene occurred at 378 feet and extended down to 871 feet. The faunal assemblage is indicative of the Balcombian stage. The sample at 851 feet down to 871 feet is also included. The zonal species for the upper portion of the Balcombian, Austrotrillina howchini, was present at 378-398 feet and 398-426 feet, where it was associated with Marginopora vertebralis and Operculina victoriensis. The lower part of the stage contained typical forms such as Gypsina howchini, Crespinella umbonifera, Amphistegina lessonii, and Operculina victoriensis.

The sandy marls and unconsolidated sandstones from 871 feet down to 922 feet have been tentatively referred to the Anglesian stage of the Middle Miocene.

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