

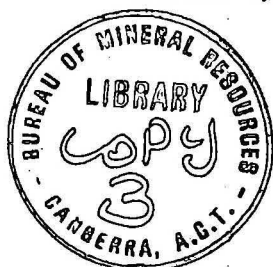
DEPARTMENT OF
MINERALS AND ENERGY

056277



BUREAU OF MINERAL RESOURCES, GEOLOGY AND GEOPHYSICS

RECORD 1975/69



BIOSTRATIGRAPHICAL SYNOPSIS:

EASTERN GEORGINA BASIN

(Appendix to International Geological Congress
Excursion Q4 Guidebook)

J.H. SHERGOLD

The information contained in this report has been obtained by the Department of Minerals and Energy as part of the policy of the Australian Government to assist in the exploration and development of mineral resources. It may not be published in any form or used in a company prospectus or statement without the permission in writing of the Director, Bureau of Mineral Resources, Geology and Geophysics.

BMR
Record
1975/69
c.3

RECORD 1975/69

BIOSTRATIGRAPHICAL SYNOPSIS:

EASTERN GEORGINA BASIN

(Appendix to International Geological Congress
Excursion Q4 Guidebook)

J.H. SHERGOLD

INTRODUCTION

This synopsis of biostratigraphic units in the eastern part of the Georgina Basin is intended to be read in conjunction with the International Geological Congress Excursion Q4 Guidebook, to which it forms an appendix.

Identified fauna is listed for each of the zones recognized. These lists highlight the disciplines - mainly the studies of trilobites and conodonts which to date have contributed to our understanding of Cambrian and early Ordovician palaeontology, and establish degrees of precision in the subdivision of the biostratigraphical scale. Zones, assemblage-zones, and 'biostratigraphic operational units' (Opik 1970b) have all been employed. Date of introduction into the Australian literature and category of units heads each list.

Whereas the late Middle Cambrian and Early Ordovician have been finely and accurately zoned on internationally recognized faunal sequences, dating of other parts of the stratigraphic column is based on provincial faunas limited in areal extent by the present distribution of rock types.

Biostratigraphic zonation in the eastern Georgina Basin is complete in one form or another for the intervals late Ordian (early Middle Cambrian) to Idamean (Late Cambrian), and Payntonian (latest Cambrian) to earliest 'Arenigian' (Early Ordovician). Post-Idamean but pre-Payntonian faunas are referred to here as Assemblages A-C, the elucidation of which is in preparation. Post-Warendian faunas are listed under formations; they are largely undescribed and their time significance is poorly understood.

The lists have been compiled mainly from the published works listed under 'Sources of Information'. Cambrian fossils determined from the Northern Territory (the western part of the Georgina Basin) have been largely ignored in this compilation.

TABLE 1. MID-CAMBRIAN TO EARLY ORDOVICIAN BIOSTRATIGRAPHICAL UNITS CURRENTLY UTILIZED IN THE EASTERN GEORGINA BASIN

A-Z = ASSEMBLAGE ZONE, Z = ZONE, BOU = BIOSTRATIGRAPHIC OPERATIONAL UNIT

LATE CAMBRIAN	MINDYALLAN	<u>Glyptagnostus stolidotus</u> Z. <u>Cyclagnostus quasivespa</u> Z. <u>Erediaspis eretes</u> Z. Zone of Passage (<u>Damesella torosa</u> / <u>Ascionepea janitrix</u>)
	NO STAGES DESIGNATED	III <u>Holteria arepo</u> Z. II <u>Proampyx agra</u> Z. <u>Leionyx laevigata</u> Z. I <u>Ptychagnostus casis</u> Z. <u>Ptychagnostus nathorsti</u> Z. <u>Ptychagnostus nathorsti</u> / <u>P. punctuosus</u> Z. <u>Ptychagnostus punctuosus</u> Z. <u>Eugagnostus opimus</u> Z. <u>Ptychagnostus atavus</u> Z.
	TEMPLETONIAN	<u>Ptychagnostus gibbus</u> Z. <u>Xystridura templetonensis</u> Z.
	ORDIAN	'Assemblage 1' <u>Redlichia chinensis</u> BOU 'Assemblage 2' <u>Redlichia versabunda</u> / <u>R. Vertumnia</u> / <u>R. myalia</u> BOU
EARLY CAMBRIAN	NO STAGES	No biostratigraphical units designated

TABLE 1. MID-CAMBRIAN TO EARLY ORDOVICIAN BIOSTRATIGRAPHICAL UNITS
CURRENTLY UTILIZED IN THE EASTERN GEORGINA BASIN

A-Z = ASSEMBLAGE ZONE, Z = ZONE, BOU = BIOSTRATIGRAPHIC OPERATIONAL
UNIT

EARLY ORDOVICIAN	ARENIGIAN*	<u>Drepanodus? gracilis/Scolopodus sexplicatus</u> A.-Z.
	WARENIGIAN	<u>Chosonodina herfurthi/Acodus</u> A.-Z. <u>Cordylodus rotundatus/C. angulatus</u> A.-Z. <u>Cordylodus prion/Scolopodus</u> A.-Z.
	DATSONIAN	<u>Cordylodus oklahomensis/C. lindstromi</u> A.-Z. <u>Oneotodus bioussidatus/Drepanodus simplex</u> A.-Z. <u>Cordylodus proavus</u> A.-Z.
	PAYNTONIAN	<u>Mictosaukia perplexa</u> A.-Z. <u>Pseudagnostus quasibilobus/Tsinania nomas</u> A.-Z.
LATE CAMBRIAN	PRE-PAYNTONIAN	<u>Sinosaukia impages</u> A.-Z. <u>Pseudagnostus clarki maximum/P. papilio</u> A.-Z. <u>Pseudagnostus bifax/P. denticulatus</u> A.-Z. <u>Pseudagnostus clarki prolatus/Caznaia sectatrix</u> A.-Z. <u>Pseudagnostus clarki patulus/Caznaia squamosa</u> A.-Z.
	POST-IDAMEAN	Assemblage C Assemblage B Assemblage A
	IDAMEAN	<u>Irvingella tropica/Agnostotes inconstans</u> Z. <u>Erixanium sentum</u> Z. <u>Cornexochus plumula</u> Z. <u>Glyptagnostus reticulatus/Proceratopyge nectans</u> Z. <u>Glyptagnostus reticulatus/Olenus ogilviei</u> Z.

(1) MIDDLE CAMBRIAN UNITS

REDLICHIA ASSEMBLAGE 2, BOU ("ÖPIK, 1970B)

Trilobita:

Redlichia myalis "Öpik, 1970R. versabunda "Öpik, 1970R. vertumnia "Öpik, 1970Onaraspis (?) sp. "Öpik, 1967

Hyolithida:

Biconulites sp.

Echinodermata:

Cyclocystoides primotica Henderson & Shergold, 1971

REDLICHIA ASSEMBLAGE 1, REDLICHIA CHINENSIS BOU (ÖPIK 1970B)

Trilobita:

Redlichia advialis Öpik, 1970R. chinensis Walcott, 1905R. creta Öpik, 1970R. idonea Whitehouse, 1939R. lepta Öpik, 1970R. micrograpta Öpik, 1970R. venulosa (Whitehouse, 1939)R. versabunda Öpik, 1970

Bradoriida:

Bradoria alaris Öpik, 1968B. cornulata Öpik, 1968B. curvifrons Öpik, 1968B. cf. curvifrons Öpik, 1968B. petalina Öpik, 1968Comtaluta calcarata Öpik, 1968C. profunda Öpik, 1968Indota otica Öpik, 1968Ophiosema spicatum Öpik, 1968Ophiosema sp. nov. aff. spicatum Öpik, 1968Tropidiana cirrata Öpik, 1968

Echinodermata:

Cymbionites craticula Whitehouse, 1941Peridionites navicula Whitehouse, 1941

Hyolithida:

Biconulites sp.

Mollusca:

Helcionella sp.

Archaeocyatha:

Archaeocyathid

Alga:

Girvanella sp.

Xystridura templetonensis Zone [sensu "Opik 1967B"]/- Xystridura fauna
of prior accounts/

Trilobita:

Barklyella expansa Shergold, 1969

Chancia vincenalis Whitehouse, 1939

Chienaspis peregrina (Whitehouse, 1939)

Dinesus ida Etheridge, 1896

Kootenia modica (Whitehouse, 1939)

Lyriaspis sigillum Whitehouse, 1939

Oryctocephalites cf. gelasinus Shergold, 1969

O. sulcatus Shergold, 1969

Pagetia significans (Etheridge, 1902)

Pagetia spp.

Peronopsis normata (Whitehouse, 1939)

Sandoveria lobata Shergold, 1969

Xystridura templetonensis (Chapman, 1929) [- X. saintsmithi (Chapman, 1929)]/

Xystridura spp.

Xystridurinae gen. nov.

Bradoriida:

Bradoria sp.

Indota formosa Fleming, 1973

Indota sp.

Ophiosema sp. nov. aff. spicatum "Opik, 1968

Brachiopoda:

Acrothele sp.

Acrothele? sp. A Henderson, 1971

Acrothele? sp. B Henderson, 1971

Acrothelidae? indet.

Acrotretidae indet.

Botsfordia sp.

Cambrotrophia? sp.

Mollusca:

Helcionella sp.

Pelagiella sp.

Cycloholcus? sp. A Hill et al., 1971

Cycloholcus? sp. B Hill et al., 1971

Hyolithida:

Biconulites sp.

Hyolithes? sp. A Hill et al., 1971

Hyolithes? sp. B Hill et al., 1971

Ptychagnostus gibbus Zone [Opik, 1956A]

Trilobita:

Agnostus seminula Whitehouse, 1939

Nepea sp. nov. NC Opik, 1970

Pagetia ocellata Jell, 1970

Peronopsis normata (Whitehouse, 1936)

Ptychagnostus (Triplagnostus) ex gr. gibbus (Linnarsson, 1869)

Ptychagnostus (T.) ex gr. praecurrens (Westergaard, 1936)

Bradoriida:

Indiana sipa Fleming, 1973

Monasterium opiki Fleming, 1973

M. dorum Fleming, 1973

Mononotella sestina Fleming, 1973

Zepaera rete Fleming, 1973

Zepaera sp.

Brachiopoda:

Acrotretinae

Acrothelinae

Hyalolithida:

Hyalithes sp.

Mollusca:

Stenotheca sp.

Ptychagnostus atavus Zone [Öpik, 1956A]

Trilobita:

Diplagnostus sp.

Dolichometopid undet.

Folliceus nans "Öpik, 1970

Loxonepea loxophrys "Öpik, 1970

Loxonepea sp. ND "Öpik, 1970

Penarosa elaticeps "Öpik, 1970

P. meniscops "Öpik, 1970

P. rhinodelphis "Öpik, 1970

P. zeabunda "Öpik, 1970

P. sp. PD aff. vittata "Öpik, 1970

P. sp. nov. PE "Öpik, 1970

Peronopsis spp.

Ptychagnostus (Triplagnostus) ex gr. atavus (Tullberg, 1880)

Tonkinella sp.

Alga:

Dolatophycus? sp.

Brachiopoda:

Inarticulata undet.

Spongia:

Spicules

Euagnostus opimus Zone [Opik, 1970A] / [= parvifrons Zone of previous literature]

Trilobita:

Diplagnostus sp.

Dolichometopid gen. nov.

Euagnostus opimus Whitehouse, 1936

Polliceus nans "Opik, 1970

Fuchouia? sp.

Pagetia sp.

Penarosa melota "Opik, 1970

P. meniscops "Opik, 1970

P. retifera "Opik, 1970

P. vittata "Opik, 1970

Penarosa sp. PA aff. retifera "Opik, 1970

P. sp. PB aff. vittata "Opik, 1970

Penarosa sp. nov. PC "Opik, 1970

Peronopsis spp.

Ptychagnostus (Triplagnostus) ex gr. atavus (Tullberg, 1880)

Brachiopoda:

Acrothelidae

Acrotretidae

Lingulelloid undet.

Spongia:

Spicules

Ptychagnostus punctuosus Zone ["Opik 1956A"]

Trilobita:

Doryagnostus magister Whitehouse, 1939

Hypagnostus clipeus Whitehouse, 1939

Mapania angusta (Whitehouse, 1939)

Papyriaspis lanceola Whitehouse, 1939

Penarosa petalifera "Opik, 1970

Ptychagnostus (Goniagnostus) scarabaeus Whitehouse, 1939

Ptychagnostus (Ptychagnostus) ex gr. punctuosus (Angelin, 1851)

Quititalia uncata "Opik, 1967

Ptychagnostus nathorsti Zone [Opik, 1956A] [this zone has been divided into a lower portion where nathorsti overlaps punctuosus and an upper portion in which nathorsti overlaps laevigata: a composite list is given here]

Trilobita:

Amphoton serotinum Whitehouse 1939

A. spinigerum Whitehouse, 1939

Anomocare confertum Whitehouse, 1939

Asthenopsis levior Whitehouse, 1939

Centropleura sp.

Damesellinae gen. nov. B sp. nov. Opik, 1967

Dorypyge decoris Whitehouse, 1945

D. tenella Whitehouse, 1945

Doryagnostus magister Whitehouse, 1936

Hypagnostus clipeus Whitehouse, 1936

H. cf. brevifrons (Angelin, 1851)

H. vortex Whitehouse, 1936

Grandagnostus imitans Opik, 1961

Mapania angusta (Whitehouse, 1939)

Meneviella viatrix Shergold, 1973

Nepea anoxys Opik, 1970

N. exserta Opik, 1970

N. sp. cf. exserta Opik, 1970

N. narinosa Whitehouse, 1939

N. tonsillata Opik, 1970

N. sp. NA Opik, 1970

N. sp. NB Opik, 1970

Papyriaspis lanceola Whitehouse, 1939

Phalacroma cf. nudum (Beyrich, 1845)

Ptychagnostus (Goniagnostus) ex. gr. nathorsti (Brögger, 1878)

Ptychagnostus (G.) scarabaeus Whitehouse, 1939

Ptychagnostus (Ptychagnostus) cassis Opik, 1961

Ptychagnostus (P.) ex gr. punctuosus (Angelin, 1851)

Leiopyge laevigata Zone [Opik 1956A] [this zone is [either] used | undifferentiated (e.g. Opik 1967) or as a triple zone (e.g. Opik 1961).

Leiopyge laevigata I = the zone of Ptychagnostus cassis, laevigata II = the zone of Proampyx agra, and laevigata III = the zone of Holteria arepo.]

Leiopyge laevigata Zone undifferentiated

Trilobita:

Dipentaspis dipentaspis Opik, 1967

D. ratis Opik, 1967

Dolichoagnostus? undet. Opik, 1967

Leichneyella sp. B Opik, 1967

Linguagnostus aff. kjerulfi (Brögger, 1878)

Nepea avara Opik, 1970

Peronopsis aff. fallax (Linnarsson, 1869)

Ptychagnostus (Goniagnostus) fumicola Opik, 1961

Quitacetra arenata Opik, 1967

laevigata I [Zone of Ptychagnostus cassis] [Opik 1961]

Trilobita:

Acontheus burkeanus Opik, 1961

Blystagnostus laciniatus Opik, 1961

Centropleura phoenix Opik, 1961

C. sonax Opik, 1961

Dipentaspis dipentaspis Opik, 1967

Diplagnostus? sp. I "Opik, 1961

Hypagnostus brevifrons (Angelin, 1851)

Leipyge laevigata (Dalman, 1828)

Peronopsis scaphoa "Opik, 1961

Peronopsis sp. G "Opik, 1961

Pseudophalacroma dubium (Whitehouse, 1936)

Pseudophalacroma sp. L "Opik, 1961

P. (G.) nathorsti (Brögger, 1878)

Ptychagnostus (Ptychagnostus) aculeatus (Angelin, 1851)

Ptychagnostus (Ptychagnostus) cassis "Opik, 1961

Ptychagnostus (Goniagnostus) fumicola "Opik, 1961

Quititalia sp. n. aff. uncata "Opik, 1967

Tosotychia sors "Opik, 1961

Bradoriida:

Aristaluta gutta "Opik, 1961

Spongia:

Pleodioria tamacis "Opik, 1961

Vermes:

Vermes undet. "Opik, 1961

levigata II [Zone of Proampyx agra] ["Opik, 1961"]

Trilobita:

Amphoton bensoni "Opik, 1961

Amphoton? arta "Opik, 1961

Centropheura phoenix "Opik, 1961

Crepicephalus? sp. H Opik, 1961

Delagnostus dilemma "Opik, 1961

Dipentaspis dipentas "Opik, 1967

- Diplagnostus crassus "Opik, 1961
D. humilis (Whitehouse, 1936)
D. planicaudatus vestgothicus (Wallerius, 1895)
Grandagnostus velaevis "Opik, 1961
Hypagnostus brevifrons (Angelin, 1851)
H. hippalus "Opik, 1961
H. cf. hunanicus Lu, 1957
H. willsi "Opik, 1961
Hypagnostus sp. F "Opik, 1961
Leiopyge laevigata (Dalman, 1828)
L. laevigata armata (Linnarsson, 1869)
Mapania synophrys "Opik, 1961
Mapania? dicella "Opik, 1961
Oidalagnostus personatus "Opik, 1961
Proampyx agra "Opik, 1961
Proampyx sp. D "Opik, 1961
Pseudophalacroma sp. K "Opik, 1961
Ptychagnostus (Goniagnostus) fumicola "Opik, 1961
P. (G.) sp. nov. aff. fumicola "Opik, 1961
P. (G.) spiniger (Westergaard, 1931)
P. (G.) sp. P. aff. nathorsti (Brögger, 1878)
Ptychagnostus sp. Q "Opik, 1961
Quitacetra arenata "Opik, 1967
Tosotychia sors "Opik, 1961

 Bradoriida:
Aristaluta gutta "Opik, 1961
Svealuta sp. M aff. S. primordialis (Linnarsson)

 Brachiopoda:
Acrothele sp. A "Opik, 1961

laevigata III [Zone of Holteria arepo] ["Opik 1961"]

Trilobita:

Agnostus sp. E (Agnostus cf. neglectus Westergaard, 1946)

Delagnostus dilemma "Opik, 1961

Dipentaspis dipentas "Opik, 1967

Diplagnostus humilis (Whitehouse, 1936)

D. planicaudatus vestgothicus (Wallerius, 1895)

Grandagnostus velaevis "Opik, 1961

Holteria arepo "Opik, 1961

Hypagnostus hippalus "Opik, 1961

H. varicosus "Opik, 1961

Leiopyge laevigata (Dalman, 1828)

L. laevigata armata (Linnarsson, 1869)

Mapania faceta "Opik, 1961

M. cf. faceta "Opik, 1961

M. synophrys "Opik, 1961

Oidagnostus trispinifer Westergaard, 1946

Proampyx agra "Opik, 1961

Pseudophalacroma dubium (Whitehouse, 1936)

Ptychagnostus (Goniagnostus) fumicola "Opik, 1961

P. (G.) spiniger (Westergaard, 1931)

Ptychagnostus (Ptychagnostus) aculeatus (Angelin, 1851)

Quitacetra arenata "Opik, 1967

Tosotychia sors "Opik, 1961

Bradoriida:

Aristaluta gutta "Opik, 1961

Brachiopoda:

Micromitra (Paterina) sp. B "Opik, 1961

(2) LATE CAMBRIAN UNITS

Zone of Passage [= transition zone with Damesella torosa and Ascionepea janitrix] ["Opik 1967"]

Trilobita:

Alomataspis enodis "Opik, 1967

Ascionepea janitrix "Opik, 1967

Cyclagnostus sp. aff. quasivespa "Opik, 1967

Damesella torosa "Opik, 1967

Damesellidae gen. nov. et sp. nov. "Opik 1967

Hypagnostus correctus "Opik, 1967

H. hippalus "Opik, 1967

Kootenia? cf. incerta (Rusconi) Leanza, 1947

Lampropeltis nitens "Opik, 1967

Leiopyge laevigata (Dalman, 1828)

L. laevigata armata (Linnarsson, 1869)

Mapaniidae gen. nov. et sp. nov. "Opik, 1967

Modocia? immodulata "Opik, 1967

Olenoides tranans "Opik, 1967

Ptychagnostus (Goniagnostus) fumicola "Opik, 1961

Quitacetra arenata "Opik, 1967

Rhyssometropus (Rostrifinis) trio "Opik, 1967

Triadaspis bigeneris "Opik, 1967

Bradoriida:

Aristaluta spicata "Opik, 1967

Erediaspis eretes Zone ["Opik 1967"]

Trilobita:

Aedotes declivis "Opik, 1967A. instans "Opik, 1967A. mutans "Opik, 1967Agelasma laticeps "Opik, 1967A. quadratum "Opik, 1967Agnostascus gravis "Opik, 1967A. aff. gravis "Opik, 1967Agnostoglossa bassa "Opik, 1967Agnostus artelimbatus "Opik, 1967A. aff. pisiformis Linnaeus, 1758Agnostus? sp. aff. pisiformis subsulcatus Westergaard, 1946Ascionepea anitys "Opik, 1967Ascionepea sp. aff. anitys "Opik, 1967Cermataspis abundans "Opik, 1967Clavagnostus bisectus "Opik, 1967Cyclagnostus? sp. indet. "Opik, 1967Damesella torosa Opik, 1967Damesellinae gen. nov. A sp. indet. "Opik, 1967Erediaspis eretes "Opik, 1967Ferenepea hispida "Opik, 1967F. pilaris "Opik, 1967Grandagnostus everus "Opik, 1967Hadragnostus las "Opik, 1967Hypagnostus correctus "Opik, 1967H. durus "Opik, 1967Idolagnostus dryas "Opik, 1967Iniotoma iniotoma "Opik, 1967

Innitagnostus innitens? "Opik, 1967

Interalia serena "Opik, 1967

Leiopyge cos "Opik, 1967

?Lonchocephalidae gen. et sp. nov. "Opik, 1967

Meringaspis sp. A "Opik

Meropalla auriculata "Opik, 1967

M. quadrans "Opik, 1967

Norwoodella? dubitalis "Opik, 1967

Olenoides tranans "Opik, 1967

Onchonotellus offula "Opik, 1967

Placosema caelatum "Opik, 1967

Plectrifer mitis "Opik, 1967

P. plectrifer "Opik, 1967

Pseudagnostus bulgosus "Opik, 1967

Ptychagnostus (Goniagnostus) nodibundus "Opik, 1967

Ptychagnostus? serus "Opik, 1967

Rhyssometopus (Rhyssometopus) rhyssometopus "Opik, 1967

R. (Rostrifinis) rostrifinis "Opik, 1967

Triadaspis bigeneris "Opik, 1967

Pygidium No 1 "Opik, 1967

Pygidium No 2 "Opik, 1967

Pygidium No 3 "Opik, 1967

Pygidium No 5 "Opik, 1967

Cyclagnostus quasivespa Zone ["Opik 1967"]

Trilobita:

- Aedotes declivis "Opik, 1967
Agelasma laticeps "Opik, 1967
Agnostascus gravis "Opik, 1967
Agnostoglossa bassa "Opik, 1967
Ammagnostus mitis "Opik, 1967
Ascionepea anitys "Opik, 1967
Blackwelderia sabulosa "Opik, 1967
Blackwelderia? sp. A "Opik, 1967
Blackwelderia? sp. B "Opik, 1967
Cermataspis abundans "Opik, 1967
Connagnostus? zonatus "Opik, 1967
Cyclagnostus quasivespa "Opik, 1967
Ferenepea hispida "Opik, 1967
Griphasaphus griphus "Opik, 1967
Hadragnostus las "Opik, 1967
Hypagnostus correctus "Opik, 1967
Idolagnostus dryas "Opik, 1967
Leichneyella? sp. A "Opik, 1967
Leiopyge cos "Opik, 1967
Meringaspis sp. B "Opik 1967
Meropalla auriculata "Opik, 1967
M. quadrans "Opik, 1967
Oedorhachis? tridens "Opik, 1967
Oidagnostus trispinifer Westergaard, 1946
Palaeodotes aff. dissidens "Opik, 1967

P. italops "Opik, 1967

Placosema adnatum "Opik, 1967

P. caelatum "Opik, 1967

Plectrifer mitis "Opik, 1967

Plectrifer plectrifer "Opik, 1967

Rhyssometopus (Rhyssometopus) rhyssometopus "Opik, 1967

R. (R.) rugiceps "Opik, 1967

R. (Rostrifinis) rostrifinis "Opik, 1967

R. (R.) aff. rostrifinis "Opik, 1967

Stephanocare richthofeni Monke, 1902

Stephanocare sp. nov. "Opik, 1967

Triadaspis bigeneris "Opik, 1967

Tricrepicephalus? sp. "Opik, 1967

Xestagnostus rasilis "Opik, 1967

Free cheek No 2 "Opik, 1967

Bradoriida:

Svealuta cf. primordialis (Linnarsson)

Rostroconchia:

Ribeiria australiensis Pojeta & Runnegar (in press)

Euchasma sp. B Pojeta, Gilbert-Tomlinson & Shergold (in press)

Misc:

Castings No 1 "Opik, 1967

Glyptagnostus stolidotus Zone [Opik 1963]

Trilobita:

Acrodirotes fastosa Opik, 1967Adelogonus solus Opik, 1967Agnostardis amplinitis Opik, 1967A. of. amplinitis Opik, 1967Agnostoglossa bassa Opik, 1967Agnostogonus incognitus Opik, 1967Ammagnostus euryaxis Opik, 1967A. integriceps Opik, 1967A. psammius Opik, 1967Anacopodia globiceps Opik, 1967Aspidagnostus iniquilinus Opik, 1967Aulocodigma illimbatum Opik, 1967A. quasispinale Opik, 1967Auritama aurita Opik, 1967A. expansa Opik, 1967A. trilunata Opik, 1967Avonina sp. nov. Opik, 1967Biaverta biaverta Opik, 1967B. reineri Opik, 1967Blackwelderia gibberiana Opik, 1967B. repanda Opik, 1967Blountia (Mindocrusta) advena Opik, 1967B. (M.) compacta Opik, 1967B. (M.) mindocrusta Opik, 1967B. (M.) notostena Opik, 1967Brassiciocephalus sp. indet. Opik, 1967

- Catillicephala sp. indet. "Opik, 1967
 Catillicephalidae gen. et sp. nov. "Opik, 1967
Clavagnostus bisectus "Opik, 1967
Connagnostus venerabilis "Opik, 1967
C? zonatus "Opik, 1967
Cyrtoprora intricata "Opik, 1967
Discagnostus spectator "Opik, 1963
Doremataspis ornata "Opik, 1967
Dipyrgotes novella "Opik, 1967
Dipyrgotes? sp. A "Opik, 1967
Ferenepea hispida "Opik, 1967
Glyptagnostus stolidotus "Opik, 1961
Glyptagnostus (Lispagnostus) lenis "Opik, 1967
Henadoparia integra "Opik, 1967
Histiomona oculosa "Opik, 1967
Idolagnostus agrestis "Opik, 1967
I. dryas "Opik, 1967
Innitagnostus innitens "Opik, 1967
I. aff. innitens "Opik, 1967
Leichneyella caseyi "Opik, 1967
Liostracina nolens "Opik, 1967
L. volens "Opik, 1967
Liostracinoides? sp. "Opik, 1967
Lobocephalina pyriceps "Opik, 1967
Lonchocephalus sp. nov. "Opik, 1967
Lophoholcus asper "Opik, 1967
Lynaspis noakesi "Opik, 1967
Meringaspis meringaspis "Opik, 1967

- Meteoraspis bidens "Opik, 1967
M. aff. bidens "Opik, 1967
Metopotropis traversi "Opik, 1967
Nilegma sigmata "Opik, 1967
Nomadinus pristinus "Opik, 1967
 Olenidae gen. et sp. indet. "Opik, 1967
Oxyagnostus apiculus "Opik, 1967
Palaeodotes dissidens "Opik, 1967
P. italops "Opik, 1967
Paracoosia aspis "Opik, 1967
Peichiashania? lunatulata "Opik, 1967
P? pelta "Opik, 1967
Placosema adnatum "Opik, 1967
Pleurinodus discretus "Opik, 1967
P. aff. discretus? "Opik, 1967
Polycertaspis flexuosa "Opik, 1967
Pseudagnostina vicaria "Opik, 1967
Pseudagnostina? sp. indet. (aff. vicaria) "Opik, 1967
Pseudagnostus ampullatus "Opik, 1967
P. bulgosus "Opik, 1967
P. mestus "Opik, 1967
P. sericatus "Opik, 1967
Ptychagnostus? serus "Opik, 1967
Rhodonaspis longula Whitehouse, 1939
Rhyssometopus (Rhyssometopus) princeps "Opik, 1967
R. (Rostrifinis) rostrifinis "Opik, 1967
Saratogia? vetusta Opik, 1967

Saukia? priscilla "Opik, 1967

Solenopleura? erista "Opik, 1967

Talbotinella notulata Opik, 1963

Teinistion? amydiu "Opik, 1967

Townleyella townleyi "Opik, 1967

Xestagnostus legirupa "Opik, 1967

X. aff. legirupa "Opik, 1967

Larva gen. indet., sp. indet. "Opik, 1967

Free cheek No 1 "Opik, 1967

Misc:

Burrows No 2 "Opik, 1967

Zone of Glyptagnostus reticulatus with Olenus ogilviei [Opik 1963]

Trilobita:

Aspidagnostus parmatus Whitehouse, 1936

A. stictus Opik, 1967

Glyptagnostus reticulatus (Angelin, 1851)

Innitagnostus inexpectans (Kobayashi, 1938)

Olenus ogilviei Opik, 1963

Hydroida:

Hydroidea sp. indet. Opik, 1963

Zone of Glyptagnostus reticulatus with Proceratopyge nectans

[Opik 1963]

Trilobita:

Eugonocare tessellatum Whitehouse, 1939

Eugonocare sp. indet. "Opik, 1963

Glyptagnostus reticulatus (Angelin, 1851)

Innitagnostus inexpectans (Kobayashi, 1938)

Olenus sp. W "Opik, 1963

Proceratopyge nectans Whitehouse, 1939

Pseudagnostus cf. cyclopyge (Tullberg, 1880), sensu Whitehouse, 1936

P. vastulus Whitehouse, 1936

Corynexochus plumula Zone [["]Opik 1963]

Trilobita:

Blountia (?Mindycrusta) georginae ["]Opik, 1967

Corynexochus plumula Whitehouse, 1939

Eugonocare tessellatum Whitehouse, 1939

Innitagnostus inexpectans (Kobayashi, 1938)

Pagodia (Idamea) superstes? Whitehouse, 1939

Pagodia (Idamea) venusta Whitehouse, 1939

Proceratopyge lata Whitehouse, 1939

Pseudagnostus idalis ["]Opik, 1967

P. cf. idalis ["]Opik, 1967

P. vastulus Whitehouse, 1936

Stigmatoa siler? ["]Opik, 1963

Erixanium sentum Zone [["]Opik 1963]

Trilobita:

Asilluchus nanus ["]Opik, 1963

Blountia (?Mindycrusta) georginae ["]Opik, 1967

Charchaquia errugata Whitehouse, 1939

Charchaquia spp. Whitehouse, 1939

Corynexochus plumula Whitehouse, 1939

Ellipsocephalus (?) sp. Whitehouse, 1939

Erixanium alienum ["]Opik, 1963

E. sentum ["]Opik, 1963

E. strabum ["]Opik, 1963

Eugonocare propinquum Whitehouse, 1939

E. tessellatum Whitehouse, 1939

Homagnostus cf. obesus (Belt, 1867)

?Olenus sp. A ["]Opik, 1963 (aff. Parabolina? quadrisulcata Henningsmoen 1957)

Pagodia (Idamea) baccata ["]Opik, 1967

P. (I.) extricans ["]Opik, 1967

P. (I.) venusta Whitehouse, 1939

Peratagnostus nobilis ["]Opik, 1967

Proceratopyge lata Whitehouse, 1939

Proceratopyge polita? Whitehouse, 1939

P. rutellum Whitehouse, 1939

Pseudagnostus vastulus Whitehouse, 1936

P. cf. vastulus Whitehouse, 1936

Stigmatocia diloma ["]Opik, 1963

S. siler? ["]Opik, 1963

S. tysoni ["]Opik, 1963

Zone of Irvingella tropica with Agnostotes inconstans [Opik 1963]

Trilobita:

Agnostotes inconstans Opik, 1963

? Aphelaspis sp. B Opik, 1963

Hercantyx rudis Opik, 1963

Homagnostus cf. obesus (Belt, 1867)

Irvingella tropica Opik, 1963

Olenus delicatus Opik, 1963

Proceratopyge cf. chuhsiensis Lu, 1956

P. lata Whitehouse, 1939

Pseudagnostus vastulus? Whitehouse, 1936

Stigmatia sidonia Opik, 1963

Trilobite sp. C Opik, 1963

Bradoriida:

Beyrichonidae? sp. D Opik, 1963

Post-Idamean assemblages A-C [these assemblages are currently under description: in many instances identifications are provisional and names may change].

Assemblage A [the assemblage immediately post-dating the Irvingella tropica with Agnostotes inconstans fauna].

Trilobita:

Elviniid 2

Elviniid 5

Erixaniid?

Housia?

Pterocephaliid 1

Pterocephaliid 2

Ptychoparioid 5

Ptychoparioid 6

Assemblage B

Trilobita:

Acomarhaechis hybrida sp. nov.

Asaphid A1

Asaphid B1

'Bienvillia' sp.

Ceratopygid gen. nov. 1

Ceratopygid gen. nov. 2

Homagnostus aff. tumidosus (Hall & Whitfield, 1877)Innitagnostus sp. nov.Maladioidella sp. nov.

Mansuyiinae? A1

Neagnostus greeni sp. nov.Peratagnostus sp. nov.Pseudagnostus aspis sp. nov.P. aulax sp. nov.P. mortensis sp. nov.P. tricantha sp. nov.Pseudagnostus sp. VIIP. sp. VIII

Ptychoparioid 1

Ptychoparioid 4

Assemblage C [the assemblage immediately pre-dating that assigned to the patulus-squamosa Assemblage-Zone]

Trilobita:

Asaphid A2

Asaphid B1

Asaphid B2

Asaphid C

Asaphid D

Ceratopygid gen. nov. 1

Dokimocephalid gen. nov. 1

Dokimocephalid gen. nov. 2

Homagnostus aff. tumidosus (Hall & Whitfield, 1877)

Homagnostus sp. nov. ?

Maladioidella sp. nov.

Neoagnostus felix sp. nov.

N. greeni sp. nov.

Neoagnostus sp. I

Pagodia (Lotosoides) sp.

Pagodiid

Peichiashania prima sp. nov.

P. secunda sp. nov.

P. tertia sp. nov.

P. quatra sp. nov.

aff. Prismenaspis sp.

Prochuangia? sp.

Pseudagnostus aspis sp. nov.

P. aulax sp. nov.

P. macrambitus sp. nov.

P. mortensis sp. nov.

P. parvus sp. nov.

P. tricanthus sp. nov.

Pseudagnostus sp. VI

Ptychoparioid 1

Ptychoparioid 2

Ptychoparioid 3

Ptychoparioid 4

Ptychoparioid 5

Assemblage - Zone of Pseudagnostus clarki patulus with Caznaia squamosa
[Shergold 1975]

Trilobita:

Caznaia squamosa Shergold, 1975

Ceronocare sp. Shergold, 1975

Euloma (Plecteuloma) strix Shergold, 1975

Hapsidocare chydaeum Shergold, 1975

Idahoiid indet. Shergold, 1975

Koldinioidia cf. cylindrica (Shergold, 1972)

Mendosina sp. Shergold, 1975

Pagodia (Pagodia) sp. Shergold, 1975

Pseudagnostus clarki patulus Shergold, 1975

P. coronatus Shergold, 1975

P. elix Shergold, 1975

Pseudagnostus sp. A Shergold, 1975

Pseudagnostus sp. B Shergold, 1975

Sigmakainella primaeva Shergold, 1975

Wuhuia cf. W. dryope (Walcott, 1905)

Conodonta:

Furnishina furnishi ["]Muller, 1959

F. primitiva ["]Muller, 1959

F. rotundata (Druce & Jones, 1971)

Oneotodus tenuis ["]Muller, 1959

Westergaardodina bicuspidata ["]Muller, 1959

Assemblage - Zone of Pseudagnostus clarki prolatus with Caznaia sectatrix
[Shergold 1975]

Trilobita:

- Atopasaphus stenocanthus Shergold, 1975
Atratebia nexosa Shergold, 1975
Caznaia sectatrix Shergold, 1975
C. squamosa Shergold, 1975
Ceronocare pandum Shergold, 1975
Duplora clara Shergold, 1972
Hapsidocare grossum Shergold, 1975
Koldinioidia cf. cylindrica (Shergold, 1972)
Lophosaukia torquata Shergold, 1972
Lorettina macrops Shergold, 1972
Pagodia (Lotosoides) calcarata Shergold, 1975
P. (L.) turbinata Shergold, 1975
Pagodia (Oreadella) cf. buda (Resser & Endo in Kobayashi, 1933)
Prosaukia sp. A Shergold, 1975
Pseudagnostus bifax Shergold, 1975
P. clarki patulus Shergold, 1975
P. c. prolatus Shergold, 1975
Pseudagnostus sp. C Shergold, 1975
?Richardsonella sp. Shergold, 1975
Sigmakainella translira Shergold, 1972

Conodonta:

- Furnishina furnishi Müller, 1959
F. primitiva Müller, 1959
F. rotundata (Druce & Jones, 1971)
Oneotodus nakamurai Nogami, 1967

O. tenuis ^mMuller, 1959

Proconodontus muelleri Miller, 1959

Westergaardodina bicuspidata ^mMuller, 1959

Gen. et sp. indet. A Druce & Jones, 1971

Assemblage - Zone of Pseudagnostus denticulatus with Pseudagnostus bifax [Shergold 1975]

Trilobita:

Atopasaphus stenocanthus Shergold, 1975

Atratebia nexosa Shergold, 1975

Ceronocare pandum Shergold, 1975

Connagnostus conspectus Shergold, 1975

Duplora clara Shergold, 1972

Geragnostus (Micragnostus) cf. acrolebes Shergold, 1972

G. (Strictagnostus) chronius Shergold, 1975

Golasaphus simus Shergold, 1975

G. triquetrus Shergold, 1975

Hapsidocare grossum Shergold, 1975

Lophosaukia acuta Shergold, 1975

L. torquata Shergold, 1972

Lorrettina macrops Shergold, 1972

Lotagnostus (Trilobagnostus) irretitus Shergold, 1975

Pagodia (Lotosoides) calcarata Shergold, 1975

P. (L.) turbinata Shergold, 1975

Parakoldinioidia bigranulosa Shergold, 1975

Pseudagnostus bifax Shergold, 1975

P. clavus Shergold, 1972

P. denticulatus Shergold, 1975

Sigmakainella translira Shergold, 1972

?Sigmakainella trispinosa Shergold, 1972

Conodonta:

Coelocerodontus tricarinatus (Nogami, 1967)

Furnishina furnishi Muller, 1959

F. primitiva Müller, 1959

F. rotundata (Druce & Jones, 1971)

Oneotodus nakamurai Nogami, 1967

O. tenuis Müller, 1959

Problematoconites perforata Müller, 1959

Proconodontus muelleri Miller, 1969

Westergaardodina amplicava Müller, 1959

W. bicuspidata Müller, 1959

Assemblage - Zone of Pseudagnostus clarki maximus with Pseudagnostus papilio
[Shergold 1975]

Trilobita:

Atopasaphus petasatus Shergold, 1972

Atratebia nexosa Shergold, 1975

Connagnostus junior Shergold, 1972

Crucicephalus ocellatus Shergold, 1972

Dellea? laevis Shergold, 1972

Duplora clara Shergold, 1972

Geragnostus (Micragnostus) acrolebes Shergold, 1972

Golasaphus monedahensis Shergold, 1972

G. simus Shergold, 1975

G. triquetrus Shergold, 1975

Kaolishania australis Shergold, 1972

Koldinioidia cylindrica (Shergold, 1972)

Lophosaukia torquata Shergold, 1972

Lophosaukia sp. A Shergold, 1975

Lorrettina macrops Shergold, 1972

Lotagnostus (Trilobagnostus) ergodes (Shergold, 1972)

L. (T.) irretitus Shergold, 1975

Maladioidella cf. chinchiaensis (Endo, 1937)

Mansuyites futiliformis Shergold, 1972

Mansuyites spp. indet. Shergold, 1975

Mendosina laciniosa (Shergold, 1972)

Palacorona bacculata (Shergold, 1972)

Palacorona sp. indet. Shergold, 1975

Prosaukia sp. indet. Shergold, 1975

?Protopeltura sp. Shergold, 1975

Pseudagnostus clarki maximus Shergold, 1975

P. clavus Shergold, 1972

P. papilio Shergold, 1972

Pseudagnostus sp. 1 Shergold, 1972

?Richardsonella kainelliformis Shergold, 1972

Rudagnostus avius Shergold, 1972

Sigmakainella longilira Shergold, 1972

S. translira Shergold, 1972

?Sigmakainella trispinosa Shergold, 1975

Sinosaukia impages Shergold, 1975

Conodonta:

Coelocerodontus tricarinatus (Nogami, 1967)

Furnishina dahlmani (Müller, 1959)

F. furnishi Müller, 1959

F. primitiva Müller, 1959

F. rotundata (Druce & Jones, 1971)

Oneotodus gallatini Müller, 1959

O. nakamurai Nogami, 1967

O. tenuis Müller, 1959

O. terashimai Nogami, 1967

Problematoconites perforata Müller, 1959

Proconodontus muelleri Miller, 1969

Sagittodontus eureka Müller, 1959

Westergaardodina amplicava Müller, 1959

W. bicuspidata Müller, 1959

W. mosseburgensis Müller, 1959

Brachiopoda:

Schizambon sp. nov. Henderson, 1971.

Sinosaukia impages Assemblage - Zone [Shergold 1975]

Trilobita:

Geragnostus (Strictagnostus) chronius Shergold, 1975

Mansuyia cf. orientalis Sun, 1924

?Prosaukia cornigra Shergold, 1975

Pseudagnostus clarki maximus Shergold, 1975

Sinosaukia impages Shergold, 1975

?Wanwanaspis sp. indet. Shergold, 1975

Assemblage - Zone of Pseudagnostus quasibilobus with Tsinania nomas
[Shergold 1975]

Trilobita:

Anderssonella beauchampi Shergold, 1975

A. eweyi Shergold, 1975

Galerosaukia galerita Shergold, 1975

G. ptyxis Shergold, 1975

Galerosaukia sp. Shergold, 1975

Geragnostus (Micragnostus) cf. intermedius Palmer, 1968

Haniwa mucronata Shergold, 1975

Koldinioidia payntonensis Shergold, 1975

Lophosaukia sp. B Shergold, 1975

Lophosaukia sp. C Shergold, 1975

Lophosaukia sp. D Shergold, 1975

Maladioidella sp. Shergold, 1975

Mansuyia cf. tani Sun, 1935

Pagodia (Datsonia) subterior Shergold, 1975

Palacorona torosa Shergold, 1975

?Prosaukia absona Shergold, 1975

?Prosaukia nema Shergold, 1975

Pseudagnostus orbiculatus Shergold, 1975

P. quasibilobus Shergold, 1975

Ptychaspis (Asioptychaspis) delta Shergold, 1975

Quadraticephalus cf. teres Resser & Endo, 1937

Sinosaukia sp. indet. Shergold, 1975

Tsinania (Tsinania) necopina Shergold, 1975

T. (T.) nomas Shergold, 1975

T. (T.) cf. pagoda (Sun, 1924)

Tsinania (Dictyites) antidictys Shergold, 1975

T. (D.) cf. trigonalis Kobayashi, 1933

Wanwanaspis pygidion Shergold, 1975

W. cf. semicircularis (Kobayashi, 1933)

Wanwanaspis sp. indet. Shergold, 1975

Conodonta:

Furnishina furnishi Müller, 1959

F. primitiva Müller, 1959

F. rotundata (Druce & Jones, 1971)

F. tricarinata (Nogami, 1967)

Oneotodus nakamurai Nogami, 1967

O. temuis Müller, 1959

Proconodontus muelleri Miller, 1969

Mictosaukia perplexa Assemblage - Zone [Shergold 1975]

Trilobita:

?Calvinella solitaria Shergold, 1975

Mictosaukia perplexa Shergold, 1975

Pagodia (Datsonia) subterior Shergold, 1975

Quadraticephalus cf. teres Resser & Endo, 1937

Wanwanaspis cf. semicircularis (Kobayashi, 1933)

Conodonta:

Oneotodus nakamurai Nogami, 1967

Proconodontus muelleri Miller, 1969

Rostroconchia:

Cymatopigma semiplicatum Pojeta, Gilbert-Tomlinson & Shergold (in press)

Kimopigma pinnatum Pojeta, Gilbert-Tomlinson & Shergold (in press)

Ribeiria huckitta Pojeta, Gilbert-Tomlinson & Shergold (in press)

(3) EARLY ORDOVICIAN UNITS

Cordylodus proavus Assemblage - Zone [Druce & Jones 1971_7

Trilobita:

Leiostegiacean gen. incertae sedis 1 Shergold, 1975Leiostegiacean gen. incertae sedis 2 Shergold, 1975Onychopyge assula Shergold, 1975Niobella sp. indet. Shergold, 1975Symphysurina sp. Shergold, 1975

Conodonta:

Cordylodus proavus " Muller, 1959C. sp. cf. C. proavus " Muller, 1959Fryxellodontus inornatus Miller, 1969Oneotodus gracilis (Furnish, 1938)O. nakamurai Nogami, 1967

Rostroconchia:

Apoptopegma dickinsi Pojeta, Gilbert-Tomlinson & Shergold (in press)Bransonia sp. Pojeta, Gilbert-Tomlinson & Shergold (in press)Eopteria struszi Pojeta, Gilbert-Tomlinson & Shergold (in press)

Assemblage - Zone of Oneotodus bicuspatatus with Drepanodus simplex

[Druce & Jones 1971]

Trilobita:

Leiostegium (Leiostegium) floodi Shergold, 1975

Leiostegiacean gen. incertae sedis 3 Shergold, 1975

Conodonta:

Cordylodus proavus Muller, 1959

Drepanodus simplex Branson & Mehl, 1933

Oneotodus bicuspatatus Druce & Jones, 1971

O. datsonensis Druce & Jones, 1971

O. erectus Druce & Jones, 1971

O. gracilis (Furnish, 1938)

O. nakamurai Nogami, 1967

Rostroconchia:

Eopteria struszi Pojeta, Gilbert-Tomlinson & Shergold (in press)

Euchasma caseyi Pojeta, Gilbert-Tomlinson & Shergold (in press)

Ptychopegma burgeri Pojeta, Gilbert-Tomlinson & Shergold (in press)

Ribeiria sp. Pojeta, Gilbert-Tomlinson & Shergold (in press)

Wanwania drucei Pojeta, Gilbert-Tomlinson & Shergold (in press)

Assemblage - Zone of Cordylodus oklahomensis with Cordylodus lindstromi

[Druce & Jones 1971]

Conodonta:

Acanthodus uncinatus Furnish, 1938

Cordylodus intermedius Furnish, 1938

C. lindstromi Druce & Jones, 1971

C. oklahomensis Müller, 1959

C. proavus Müller, 1959

Drepanodus simplex Branson & Mehl, 1933

Hirsutodontus hirsutus Miller, 1969

Oneotodus datsonensis Druce & Jones, 1971

O. erectus Druce & Jones, 1971

O. gracilis (Furnish, 1938)

O. nakamurai Nogami, 1967

Scandodus furnishi Lindstrom, 1954

Rostroconchia:

Eopteria struszi Pojeta, Gilbert-Tomlinson & Shergold (in press)

Wanwania drucei Pojeta, Gilbert-Tomlinson & Shergold (in press)

Assemblage - Zone of Cordylodus prion with Scolopodus [Druce & Jones 1971]

Conodonta:

Cordylodus caseyi Druce & Jones, 1971

C. intermedius Furnish, 1938

C. lindstromi Druce & Jones, 1971

C. prion Lindstromⁿ, 1954

Drepanodus acutus Pander, 1856

O. datsonensis Druce & Jones, 1971

Oneotodus erectus Druce & Jones, 1971

O. gracilis (Furnish, 1938)

O. nakamurai Nogami, 1967

Scandodus furnishi Lindstromⁿ, 1954

Scolopodus bassleri (Furnish, 1938)

S. gracilis Ethington & Clark, 1964

S. quadraplicatus Branson & Mehl, 1933

S. transitans Druce & Jones, 1971

S. triplicans Ethington & Clark, 1964

Rostroconchia:

Pauropegma jelli Pojeta, Gilbert-Tomlinson & Shergold (in press)

Assemblage - Zone of Cordylodus rotundatus with Cordylodus angulatus

[Druce & Jones 1971]

Trilobita:

?Asaphellus sp. Shergold, 1975

Conodonta:

Chosonodina fisheri Druce & Jones, 1971

Cordylodus angulatus Pander, 1856

C. caseyi Druce & Jones, 1971

C. intermedius Furnish, 1938

C. rotundatus Pander, 1856

Drepanodus acutus Pander, 1856

Drepanodus suberectus (Branson & Mehl, 1933)

Oistodus inaequalis Pander, 1856

O. lanceolatus Pander, 1856

Oneotodus erectus Druce & Jones, 1971

O. gracilis (Furnish, 1938)

O. variabilis Lindström, 1954

Scandodus furnishi Lindström, 1954

Scolopodus bassleri (Furnish, 1938)

S. iowensis (Furnish, 1938)

S. transitans Druce & Jones, 1971

S. warensensis Druce & Jones, 1971

Rostroconchia:

Pauropegma jelli Pojeta, Gilbert-Tomlinson & Shergold (in press)

Ribeiria sp. Pojeta, Gilbert-Tomlinson & Shergold (in press)

Assemblage - Zone of Chosonodina herfurthi with Acodus [Druce & Jones
1971]

Trilobita:

Agnostina undet.

Asaphacea undet.

Dikelocephalinidae undet.

Leiostegiacea undet.

Richardsonellinae undet.

Warendia bidecorata Gilbert-Tomlinson, 1969

Conodonta:

Acanthodus costatus Druce & Jones, 1971

Acodus oneotensis Furnish, 1938

Chosonodina herfurthi Müller, 1964

Cordylodus angulatus Pander, 1856

C. caseyi Druce & Jones, 1971

C. rotundatus Pander, 1856

Drepanodus subarcuatus Furnish, 1938

D. suberectus (Branson & Mehl, 1933)

Oistodus inaequalis Pander, 1856

O. lanceolatus Pander, 1856

Oneotodus erectus Druce & Jones, 1971

O. gracilis (Furnish, 1938)

O. variabilis Lindström, 1954

Scandodus furnishi Lindström, 1954

Scolopodus asymmetricus Druce & Jones, 1971

S. bassleri (Furnish, 1938)

S. iowensis (Furnish, 1938)

S. transitans Druce & Jones, 1971

S. warendensis Druce & Jones, 1971

Assemblage - Zone of Drepanodus? gracilis with Scolopodus sexplicatus
 [Jones 1971] [- seventh un-named zone of Jones, Shergold & Druce
 1971]

Conodonta:

Acanthodus costatus Druce & Jones, 1971

Acodus oneotensis Furnish, 1938

Cordylodus angulatus Pander, 1856

C. caseyi Druce & Jones, 1971

C. rotundatus Pander, 1856

Drepanodus? gracilis (Branson & Mehl, 1933)

D. homocurvatus Lindstrom["], 1954

D. parallelus Branson & Mehl, 1933

D. suberectus (Branson & Mehl, 1933)

D. tenuis Moskalenko, 1967

Oneotodus gracilis (Furnish, 1938)

O. sp. cf. O. rotundus Moskalenko, 1967

O. simplex (Furnish, 1938)

Scandodus furnishi Lindstrom["], 1954

Scolopodus asymmetricus Druce & Jones, 1971

S. bassleri (Furnish, 1938)

S. filiosus Ethington & Clark, 1964

S. iowensis (Furnish, 1938)

S. sp. cf. S. iowensis (Furnish, 1938)

S. quadraplicatus Branson & Mehl, 1933

S. sexplicatus Jones, 1971

S. staufferi (Furnish, 1938)

S. transitans Druce & Jones, 1971

S. triplicatus Ethington & Clark, 1964

S. warendensis Druce & Jones, 1971

Ulrichodina sp. cf. U? deflexus Furnish, 1938

U. wisconsinensis Furnish, 1938

(4) POST-WARENDIAN FAUNAS

Faunas are known from three formations in the Toko-Toomba Ranges, along the eastern margin of the Northern Territory, which appear to have post early Arenigian ages.

(4.1) Coolibah Formation

Trilobita (Gilbert-Tomlinson 1973):

Asaphoids (2 taxa)

aff. Cybelopsis gen. nov.?

cf. Prosopiscus sp.

Psalikilus sp.

Brachiopoda (Gilbert-Tomlinson 1973):

Clarkella? sp.

Orthoid undet.

Cephalopoda (Beard in Hill et al. 1969; Gilbert-Tomlinson 1973):

Armenoceras? sp.

Endoceratoids?

cf. Hardmanoceras sp.

Kochoceras sp.

Gasteropoda (Gilbert-Tomlinson 1973)

cf. Calaurops sp.

Ecculiomphalus sp.

aff. Helicotoma sp.

cf. Hormotoma sp.

cf. Lesueurilla sp.

Lophospira sp.

cf. Macluritella sp.

cf. Raphistomina sp.

Teiichispira cornucopiae (Gilbert-Tomlinson, in Hill et al. 1969)

Rostroconchia (Pojeta et al. in press):

Euchasma skwarkoi Pojeta, Gilbert-Tomlinson & Shergold (in press)

Undetermined sponges and stromatolites.

(4.2) Nora Formation

Trilobita (Gilbert-Tomlinson 1973; in Hill et al. 1969; pers. comm.):

cf. Annamitella sp.

aff. 'Asaphus' howchini Etheridge, 1894

? "Asaphus" thorntoni Etheridge, 1892

Asaphelloid indet.

Asaphids indet.

Carolinites sp.

Cheiruroid undet.

Dikelocephalinid undet.

cf. Encrinurella sp.

Isotelus sp.

aff. Ogygitella sp.

Pliomerina sp.

Proetus sp.

aff. Prosopiscus sp.

Conodonta (Neiper 1970; in Hill et al. 1969):

Cordylodus spp. A and B Neiper, 1969

Distacodus sp. nov. Neiper, 1969

Drepanodus arcuatus Pander, 1856

D. toomeyi Ethington & Clark, 1964

Drepanodus spp. A, B, C, and D Neiper, 1969

Histiodella sinuosa (Graves & Ellison, 1941)

Cistodus spp. nov. A, B, and C Neiper, 1969

Scandodus sinuosus Mound, 1965

Scolopodus spp. nov. A, B, C, and D Neiper, 1969

Tokognathus proclinatus Neiper, 1969

Tokognathus sp. nov. Neiper, 1969

Trigonodus triangularis Neiper, 1969

Trigonodus sp. nov. Neiper, 1969

Brachiopods (Hill et al. 1969):Chaulistoma? sp.Plectorthis? sp.Cephalopoda (Beard in Hill et al. 1969):Actinoceras sp.Cacheoceras trifidum Flower, 1968Cacheoceras spp. nov. A and B Beard, 1969Manchuroceras adnatum (Flower, 1968)Mirabiloceras multitubulatum Flower, 1955Nanno sp.Protocameroceras sp. nov. Beard, 1969

Pseudorthoceratacean gen et sp. nov. Beard, 1969

Pelecypoda (Hill et al. 1969; Pojeta & Gilbert-Tomlinson, in press):

Actinodontoid undet.

Copidens browni Pojeta & Gilbert-Tomlinson (in press)Cyrtodonta spp.Lecanychia doylei Pojeta & Gilbert-Tomlinson (in press)Noradonta shergoldi Pojeta & Gilbert-Tomlinson (in press)Palaeoneilo smithi Pojeta & Gilbert-Tomlinson (in press)Palaeotaxodonta sp.Praenucula? sp.Sthenodonta eastii Pojeta & Gilbert-Tomlinson (in press)S. passmoreae Pojeta & Gilbert-Tomlinson (in press)Gasteropoda (Hill et al. 1969; Gilbert-Tomlinson, pers. comm):

Bellerophontid undet.

?Clathrospira sp.Helicotoma sp.?Lophospira sp.Raphistoma sp.?Rhaphistorina sp.Rostronconchia (Pojeta et al. in press):?Euchasma sp.

Technophorus sp.

Ichnofossils:

Cruziana sp.Diplocraterion sp.

Bryozoa:

Trepostomes

Pelmatozoa:

Crinoid ossicles

(4.3) Carlo Sandstone

Trilobita (Gilbert-Tomlinson in Pojeta & Gilbert-Tomlinson, in press):"Asaphus" thomtoni Etheridge, 1893

Pelecypoda (Pojeta & Gilbert-Tomlinson, in press):

Ambonychiid genus A, sp. A Pojeta & Gilbert-Tomlinson (in press)Glyptonychia wilsoni Pojeta & Gilbert-Tomlinson (in press)Pteronychia aff. P. haupti Pojeta & Gilbert-Tomlinson (in press)Runnegaria cuneata Pojeta & Gilbert-Tomlinson (in press)

(4.4) "Toko Group" undifferentiated

Pelecypoda (Pojeta & Gilbert-Tomlinson, in press):

Brachylyrodesma radkei Pojeta & Gilbert-Tomlinson (in press)Cyrtodonta sp. A Pojeta & Gilbert-Tomlinson (in press)Sthenodonta passmoreae Pojeta & Gilbert-Tomlinson (in press)

SOURCES OF INFORMATION

- BEARD, D., 1969 - See HILL, D., et al., 1969.
- de KEYSER, F., 1968 - The Cambrian of the Burke River Outlier. Bur. Miner. Resour. Aust. Rec. 1968/67, 48 pp. (unpubl.).
- de KEYSER, F., 1969 - The phosphate-bearing Cambrian formations in the Lawn Hill and Lady Annie districts, northwestern Queensland. Bur. Miner. Resour. Aust. Rec. 1969/147, 35 pp [unpubl.].
- DRUCE, E.C., & JONES, P.J., 1971 - Cambro-Ordovician conodonts from the Burke River Structural Belt, Queensland. Bur. Miner. Resour. Aust. Bull. 110, 158 pp, 20 pls.
- FLEMING, P.J.G., 1973 - Bradoriids from Xystridura Zone of the Georgina Basin, Queensland. Qld Dept Mines. Geol. Surv. Qld Publ. 356, palaeont. Pap. 31, 9 pp, 4 pls.
- GATEHOUSE, C.G., 1967 - First record of lithistid sponges in the Cambrian of Australia. Bur. Miner. Resour. Aust. Bull. 92, 57-68, pls. 7-8.
- GATEHOUSE, C.G., 1968 - Early Middle Cambrian trilobites of the Litchfield area, N.T. Bur. Miner. Resour. Aust. Bull. 80, 54-64, pls. 5-7.
- GILBERT-TOMLINSON, Joyce, 1968 - A new record of Bothriolepis in the Northern Territory of Australia. Bur. Miner. Resour. Aust. Bull. 80, 191-227, pl. 15.
- GILBERT-TOMLINSON, Joyce, 1973 - The Lower Ordovician gastropod Teichispira in northern Australia. Bur. Miner. Resour. Aust. Bull. 126, 65-88, pls. 29-34.
- HENDERSON, R.A., 1971 - See HILL, D., et al., 1971.

HENDERSON, R.A., 1974 - Shell adaption in acrothelid brachiopods to settlement on a soft substrate. Lethaia, 7, 57-61.

HENDERSON, R.A., in press - Idamean (early Upper Cambrian) trilobites from northwestern Queensland

HENDERSON, R.A., & SHERGOLD, J.H., 1971 - Cyclocystoides from early Middle Cambrian rocks of northwestern Queensland, Australia. Palaeontology, 14(4), 704-10, pl. 138.

HILL, D., PLAYFORD, G., & WOODS, J.T., [Eds] 1969 - Ordovician and Silurian fossils of Queensland. Brisbane, Qld Palaeontogr. Soc. 18 pp, 15 pls.

HILL, D., PLAYFORD, G., & WOODS, J.T., [Eds] 1971 - Cambrian fossils of Queensland. Brisbane, Qld Palaeontogr. Soc., 32 pp, 15 pls.

JELL, P.A., 1970 - Pagetia ocellata, a new Cambrian trilobite from northwestern Queensland. Mem. Qld Mus., 15(4), 303-13, pls 23-4.

JONES, P.J., 1971 - Lower Ordovician conodonts from the Bonaparte Gulf Basin and the Daly River Basin, northwestern Australia. Bur. Miner. Resour. Aust. Bull. 117, 80 pp, 9 pls.

JONES, P.J. SHERGOLD, J.H., & DRUCE, E.C., 1971 - Late Cambrian and Early Ordovician Stages in western Queensland, Australia. J. geol. Soc. Aust., 18(1), 1-32.

NEIPER, Christine, 1969 - See HILL, D., et al., 1969.

NEIPER, Christine, 1970 - Middle Ordovician conodont faunas, Toko and McDonnell Range, Australia. Ph. D. Thesis, Univ. Qld [unpubl.]

"OPIK, A.A., 1956A - Cambrian geology of Queensland. In El Sistema Cambrico su Paleogeografia y el Problema de su Base. 20th Sess. int. geol. Congr.. Mexico. 2, 1-24.

"OPIK, A.A., 1956B - Cambrian geology of the Northern Territory. Ibid, 2, 25-84.

"OPIK, A.A., 1958A - The Middle Cambrian trilobite Centropleura in Queensland. Nature, 182, 204.

"OPIK, A.A., 1958B - The Cambrian trilobite Redlichia: organisation and generic concept. Bur. Miner. Resour. Aust. Bull. 42, 50 pp, 6 pls

"OPIK, A.A., 1960 - Cambrian and Ordovician geology. In HILL, D., & DENMEAD, A.K., (eds) - The geology of Queensland. J. geol. Soc. Aust., 7, 89-109.

"OPIK, A.A., 1961A - Alimentary caeca of agnostids and other trilobites. Palaeontology, 3(4), 410-38, pls. 68-70.

"OPIK, A.A., 1961B - The geology and palaeontology of the headwaters of the Burke River, Queensland. Bur. Miner. Resour. Aust. Bull. 53, 249 pp 24 pls.

"OPIK, A.A., 1963A - Nepea and the nepeids (Trilobites, Middle Cambrian, Australia). J. geol. Soc. Aust., 10(2), 313-6.

" OPIK, A.A., 1963B - Early Upper Cambrian fossils from Queensland.

Bur. Miner. Resour. Aust. Bull. 64, 133 pp, 9 pls.

" OPIK, A.A., 1966 - The early Upper Cambrian crisis and its correlation;

Clark Memorial Lecture for 1965. J. Proc. Roy. Soc. NSW, 100, 9-14.

" OPIK, A.A., 1967A - The Mindyallan fauna of northwestern Queensland.

Bur. Miner. Resour. Aust. Bull., 74, vol. 1, 404 pp; vol. 2, 167 pp,

67 pls.

" OPIK, A.A., 1967B - The Ordian Stage of the Cambrian and its Australian

Metadoxididae. Bur. Miner. Resour. Aust. Bull. 92, 133-170,

pls 19-20.

" OPIK, A.A., 1968 - Ordian (Cambrian) Crustacea Bradoriida of Australia.

Bur. Miner. Resour. Aust. Bull. 103, 44 pp, 4 pls.

" OPIK, A.A., 1970A - Nepeid trilobites of the Middle Cambrian of northern

Australia. Bur. Miner. Resour. Aust. Bull. 113, 48 pp, 17 pls.

" OPIK, A.A., 1970B - Redlichia of the Ordian (Cambrian) of northern Australia

and New South Wales. Bur. Miner. Resour. Aust. Bull. 114, 66 pp,

14 pls.

POJETA, J., GILBERT-TOMLINSON, J., & SHERGOLD, J.H., in press - Cambrian

and Ordovician rostroconch Molluscs from northern Australia.

Bur. Miner. Resour. Aust. Bull. 171.

POJETA, J., & RUNNEGAR, B., in press - The palaeontology of rostroconch

mollusks and the early history of the Phylum Mollusca. U.S. geol.

Surv. prof. Pap.

RUNNEGAR, B., & POJETA, J., 1974 - Molluscan phylogeny: the paleontological viewpoint. Science, 186, 311-17.

SHERGOLD, J.H., 1968 - Appendix: Cambrian Palaeontology. In de KEYSER, F., 1968.

SHERGOLD, J.H., 1969A - Appendix. In de KEYSER, F., 1969

SHERGOLD, J.H., 1969B - Oryctocephalidae (Trilobita: Middle Cambrian) of Australia. Bur. Miner. Resour. Aust. Bull. 104, 66 pp, 12 pls.

SHERGOLD, J.H., 1972 - Late Upper Cambrian trilobites from the Gola Beds, western Queensland. Bur. Miner. Resour. Aust. Bull. 112, 126 pp, 19 pls.

SHERGOLD, J.G., 1973 - A new conocoryphid trilobite from the Middle Cambrian of western Queensland. Bur. Miner. Resour. Aust. Bull. 126, 19-26, pls. 10-12.

SHERGOLD, J.H., 1975. Late Cambrian and Early Ordovician trilobites from the Burke River Structural Belt, western Queensland, Australia. Bur. Miner. Resour. Aust. Bull. 153 (2 vols), 251 pp, 58 pls.

WHITEHOUSE, F.W., 1936 - The Cambrian faunas of northeastern Australia.
Part 1 - Stratigraphical outline. Part 2 - Trilobita (Miomera).
Mem. Qld Mus., 11(1), 59-112, pls. 8-10.

WHITEHOUSE, F.W., 1939 - The Cambrian faunas of northeastern Australia.
Part 3 - The polymerid trilobites (with supplement no. 1).
Mem. Qld Mus., 21(3), 179-282, pls. 19-25.

WHITEHOUSE, F.W., 1941 - The Cambrian faunas of northeastern Australia.

Part 4 - Early Cambrian echinoderms similar to the larval forms of Recent ones. Mem. Qld Mus., 12(1), 1-28, pls. 1-4.

WHITEHOUSE, F.W., 1945 - The Cambrian faunas of northeastern Australia.

Part 5 - The trilobite genus Dorypyge. Mem. Qld Mus., 12, 117-123-pl. 11.