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PRELIMINARY REPORT ON CAMBRIAN FOSSILS COLLECTED FROM THE BARKLY TABLELAND AND ADJACENT AREAS IN QUEENSLAND AND THE NORTHERN TERRITORY.

by

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D R A F T.
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I. INTRODUCTION.

This report describes the fossils collected by D.M. Traves early in 1948 from the Barkly Tableland and adjacent areas in Queensland and the Northern Territory. A report on fossils collected from the same area by A.A. Opik, D.M. Traves and J. Ivanac during September 1948 will be presented later.

The sequence of Cambrian faunas as far as it can be recognised in the present collection corresponds to the revised sequence given by F.W. Whitehouse in "The Cambrian Faunas of North-Eastern Australia", Part 5, Mem. Q'ld. Museum, Vol. XII, pt. 3, 1945. This sequence (in ascending stratigraphical order from 1 to 5) is as follows:-

5. Dorypyge Fauna.
4. Papyriaspis - Asthenopsis Fauna.
3. Nepea and Amphoton Fauna.
2. Xystridura Fauna.
1. Redlichia Fauna.

II. STRATIGRAPHICAL AND PALAEONTOLOGICAL NOTES.

Dorypyge Fauna. The (5) Dorypyge Fauna is found in a large area between Rankin's Store and Soudan and occurs in massive Archaeocyathinae limestones. At first glance the Archaeocyathus suggests a branching bryozoon of a trepostomatous type and belongs to Archeocyathus bollingsi, or a closely related genus. A remarkable feature is the occurrence of an unusually large and well preserved form of Helcionella (Stenotheca) or Pseudotheca (resembling Pseudotheca noetlingi from Spiti, India). Cystid plates (Eocystis ?) are abundant.

Nepea-Amphoton Fauna. The (3) Nepea-Amphoton Fauna is not recorded from the Northern Territory and is represented in only one locality (No.46) 28.1 miles E. of Camooweal in Queensland.

Xystridura Fauna. The (2) Xystridura Fauna (or more approximately Xystridura-Pagetia Fauna) in its typical development (Xystridura saint-smithi, Notasaphus sp.) is also practically absent in the Northern Territory. Representative fossils of this fauna were obtained from a single locality(No.48), 50.8 miles east of Camooweal in Queensland. In the Northern Territory the contemporaneous strata (Xystridura-Pagetia stage) are characterised by Xystridura browni, two new species of Xystridura, (X. saint-smithi is not present), Oryctocara wallcott, Oryctocephalus n.sp. and Peronopsis elkedraensis (diplorrhina in Whitehouse's papers), etc. Dinesus ida and Notasaphus are not represented.

It is necessary therefore to distinguish two separate developments of the Xystridura fauna in N.E. Australia:-

(1) The typical fauna (which will be referred to as the Eastern fauna) which occurs in Western Queensland.

(2) The Western fauna which occurs in the Northern Territory and Queensland.

Trilobites common to the Eastern and Western faunas are:-

Triplagnostus atavus, Triplagnostus gibbus, Peronopsis (Diplorrhina) normatus, Oryctocephetus discus and Pagetia significans. The last named trilobite (Pagetia significans) is represented abundantly in N.T., but shows many important peculiarities and these specimens are placed under the species Pagetia significans with distinct reservations.

Redlichia Fauna. The (1) Redlichia Fauna is characterised by the abundance of Biconulites hardmani, as also are similar beds in the eastern part of the Kimberley district of Western Australia, and adjacent parts of the Northern Territory. There are two species of Redlichia which may be compared (tentatively) with Redlichia forresti and forms from the Himalayas and Persia. The lower un-fossiliferous beds of the Redlichia stage developed in Queensland and in the Kimberley District are not represented in the Northern Territory. In the Northern Territory and especially at Gum Ridge, East of Tennant Creek, Xystridura sp. occurs together with Redlichia. These forms occur together also in the Kimberley district and in Queensland. Howchin has recorded Biconulites (Salterella hardmani) from near Mount Litchfield in the Daly River district of N.T.

The lithological character of the strata is extremely variable. Bedded limestones, massive limestones, shales, mudstones, shales composed of sponge spicules, oolitic limestones, sandstones, cherts, and flints are all present. Silicification of the surface rocks is indicated by the presence of "cherts" and "flints" which cover most of the area, and this makes it difficult in places to recognise the lithology of the unsilicified rock. However, outcrops of unsilicified rock occur along Gum Ridge, east of Tennant Creek (with Redlichia) and north of Soudan (Dorypyge - Archaeocyathinae limestones).

III. PRELIMINARY LIST OF FOSSILS WITH NOTES ON LITHOLOGY OF ROCKS IN WHICH THEY OCCUR.

Locality names are identical with those used by D.M. Traves in his report "Bag Numbers and Localities of Cambrian Fossils Collected in the Barkly Tableland Area - 1948".

1. Redlichia Fauna.

Northern Territory.

No.B. 137 - 17.7 miles North-East of Alexandria.

Biconulites hardmani; Obolus sp.

Chert, silicified limestone.

Gum Ridge localities : 4 miles East of the Gigantic Mine, Tennant Creek.

No.12 - Redlichia cf.idonea; Redlichia sp.; Xystridura sp.

Silicified limestone layers in shale.

No.13 - Billingsella cf. humboldti, Walcott; Wimanella sp.; Acrofreta sp.; Biconulites hardmani, Foard;

Silicified lenses of limestone in shale composed of crowded shells of Biconulites.

No.14 - (Similar to No.13).

The localities 12 and 13 are situated on the Northern part of the Ridge. Here and at the Southern end of the Ridge A.A. Opik, J. Ivanac and H. Krassenstein collected Redlichia in the lower shales and at the south of the Ridge, Redlichia together with Xystridura.

No.19 - 17 miles East of junction of East-West Road and North-South Road (Loc.1 of A.A. Opik).

Biconulites hardmani; Redlichia sp.; Lingulella sp.;

Flint (i.e. silicified limestone) and white porous chert (i.e. silified shale).

This seems to be the Northern prolongation of Gum Ridge. About one mile East of this locality the transition to the Xystridura fauna can be observed. Collections were made by A.A. Opik, J. Ivanac and H. Krassenstein.

Queensland.

No.B. 49 - 59.4 miles East of Camooweal (Loc. 9 of A.A. Opik).

Redlichia idonea; Redlichia sp.; Obolus sp.;

Chert, (silicified shale).

No.B. 50 - 59.9 miles East of Camooweal (loc.10 of A.A. Opik) similar to No.B.49.

No.B. 122 - 1.8 miles South of Lawn Hill.

Redlichia sp.

Flint(apparently derived from limestone).

No.B. 130 - 51.2 miles South-East of Riversleigh.

Redlichia sp.

Silicified limestone transformed to crystalline quartz.

Full of trilobite fragments.

2. Xystridura Fauna.

A. Eastern (Typical) development.

No.B. 48 - 50.8 miles East of Camooweal (loc. 8 of A.A. Opik).

Xystridura saint-smithi. Kootenia (= Notasaphus) sp.

Pagetia significans. Hyolithus sp.

Chert layers in sandstone.

B. Western development.

No.B. 27 - 54 miles East of Frowena on East-West Road (loc.2 of A.A. Opik)

Xystridura sp.; Syntrophoid bachiopods.

Chalcedony-like flint (derived from limestone).

No.B. 28 - 6 miles East of Repeatis Station (loc.3 of A.A. Opik).

Xystridura browni; Peronopsis (= Diplorrhina) elkedraensis; linguelella sp. (denticulate pygidium).

Lyriaspis alroensis; Peronopsis normatus; Acrofreta sp.

Spicules of sponges.

Shale composed mainly of sponge-spicules.

No.B. 30 - 1.6 miles West of Berrie's Caves (loc.7 of A.A. Opik).

Xystridura browni.

Thin bedded limestone.

No.B. 68 - 20.7 miles West of Dajarra.

Xystridura sp.; Lyriaspsis sp.; Obolus sp.

Soft shaly mudstone full of trilobite fragments.

No.B. 79 - 59.2 miles South-West of Lake Nash.

Xystridura sp.; Oryctocephalus discus; Peronopsis elkedraensis Peronopsis (?) n.sp.; Lingulella sp.; Stenotheca (Helcionella?) sp.

Shale (cherty) composed of sponge spicules.

No.B. 80 - ½ mile. West of Bore 18, Lake Nash (Rich fauna).

Xystridura n.sp. (dent.pyg); Xystridura n.sp.; Pagetia significans; Oryctocephalus discus; Oryctocara n.sp.; (new record, formerly known only from Idaho, U.S.A.), Conocoryphe (s. lato) n.sp.; Peronopsis elkedraensis; Triplagnostus sp.; Acrofreta; Lingulella; Obolus.

Cherty shale; composed mainly of sponge spicules.

No.B. 87 - 78.8 miles South-West of Lake Nash.

Xystridura sp.; Peronopsis elkedraensis; Triplagnostus sp.;

Cherty shale, composed of sponge spicules.

No.B. 134 - 70.2 miles West of Gallipoli (loc.12 of A.A. Opik).

Pagetia significans; Pagetia sp.; Xystridura sp.; Lyriaspis sp.? Cystids.

Silicified limestone (chalcedonic quartz) full of Trilobite fragments.

No.B. 136 - 15.0 miles North-East of Alexandria.

Xystridura n.sp. (6 rings on the pygidium), Pagetia significans; Oryctocephelus sp.

Archaeocyathus sp., Peronopsis normatus.

Porous chert and flinty layers, derived from shale.

No.B. 140 - 10.8 miles East-North-East of Alexandria.

Xystridura n.sp.; (with 6 rings), Xystridura sp.

Flint, (silicified limestone).

No.B. 144 - 3.2 miles North-East of Alexandria.

Xystridura browni; Xystridura n.sp. (with serrated pygidium); Xystridura n.sp. (with 6 rings on pygidium); Xystridura cf. saint smith; Oryctocephalus n.sp.; Pagetia significans; Eodiscus? n.sp.; Peronopsis normatus; Triplagnostus stavus; Obolus sp.; Lingulella sp.; Acrofreta (3 sp.); Linnarssonella ? sp.;

Shale (porous chert with flint nodules).

3. Nepea - Amphoton fauna.

No.B. 46 - 28.1 miles East of Camooweal.

Nepea narinosa; Agranlos n.sp. (Many specimens); Agnostus sp.

4. Papyriaspis - Asthenopsis Fauna.

No.B. 89 - 29.2 miles East of Morestone.

Papyriaspis sp.; Asthenopsis laeviar; Geragnostus magister; Acrofreta sp.,

Sponge spicules.

Limestone, thin bedded.

Remarks - Westergaarch states that Geragnostus magister-Whitehouse, is a synonym of Daryognostus incertus (Brogger) from the Scandinavian upper Zone of Paradoxides paradoxissimus stage (i.e. the upper zone of the middle part of the Middle Cambrian- nearly Paradoxides davidis of the other authors).

No.B. 132 - 78.0 miles South-East of Riversleigh.

Asthenopsis laeviae; Papyriaspis n.sp. (large pygidium with many rings); Ceratagnostus magister.

Well stratified limestone, silicified.

5. Dorypyge Fauna.

At all the localities the matrix is a massive limestone with Archaeocyathinae.

No.B. 32 - 1.1 miles north of Soudan.

Dorypyge tenella; Dorypyge sp.; Anomocare cf. confertum; Billingsella sp.; plates of Cystids; (Eocystis ?); Archaeocyathus.

No.B. 33 - 4.6 miles North of Soudan.

Dorypyge carusca; Anomocare sp.;

Helcionella? or Pseudotheca sp.

No.B. 34 - 17.6 miles North of Soudan.

Irania sp.; Archaeocyathus; Biconulites sp.;

Billingsella, Wimanella, Helcionella (as Pseudotheca), Hyolithus sp.

Remarks. Irania sp. (a trilobite) is described by King 1937 from the Middle Cambrian of Persia. The Soudan specimen is placed in this genus only tentatively.

No.B. 35 - 17 miles North of Soudan.

Archaeocyathus.

No.B. 36 - 8.8 miles North of Soudan.

Dorypyge tenella; Anomocare sp.; Eocystis.

No.B. 37 -7.8 miles North of Soudan.

Anomocare sp.; Archaeocyathus.

Some limestone specimens (F16 - 219, 222, 223, 224, 226) which are not mentioned in D.M. Traves' list belong to Stage 5 (Dorypyge fauna) and another sample (F16 - 220) with Xystridura and Pagetia is placed in the Xystridura stage.

Rocks from the following localities (per D.M. Traves) No.B. 39 (37 miles East of Soudan); B.90 (43.0 miles East of Marestone); 119 (40.4 miles West of Gregory Station); 121 (24.8 miles South of Lawn Hill) and 149 (Buchania Overshot Dam);

belong to the Middle Cambrian but could not be placed in one or other of the above mentioned faunal stages since no characteristic fossils were observed. The only fossils present are indefinite fragments of trilobites and undescribed brachiopods (Syntrophoids, Acrofreta, Obolus).
