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ORDOVICIAN AND SILURIAN SHEELY FOSSILS FROM CHINTIN AND OTHER LOCALITIES, VICTORIA

(PROGRESS REPORT)

by

A.A. Öpik

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Contents

INTRODUCTION

The fossils discussed in the present Progress Report were delivered for examination to the author by Dr. D.E. Thomas, Chief Government Geologist, Victoria, in 1954. The author regrets the delay in preparation of this report.

The material consists of about 145 rock specimens all of which are fossiliferous. All the fossils are tectonically deformed, and most of them are fragments only. Considering the mode of preservation the collection is still very small to allow for a proper interpretation of the taxonomy on a generic level. Some of the fossils can be described, however, specifically, as indicated below.

All specimens have been examined, and for each of them a card has been prepared with entries of the fossils in it. At this stage of the work it seems unnecessary to prepare a list of all the 145 rock specimens with the corresponding fossil identifications. The notes that follow are arranged according to collecting sites (localities), which are designated here by Roman numbers (Site I - Site XI). The order of presentation is not stratigraphic, but that of the list which accompanies the collection. In the discussion the collections are referred to these site numbers.

This study aims to establish the age of the concerned rocks by means of shelly fossils in absence of graptolites. The ages under consideration are Upper Ordovician, Silurian, and Lower Devonian. But corresponding Australian shelly faunas are very little known; and the positions of the Ordovician/Silurian and the Silurian/Devonian boundaries are disputed universally when and where shelly fossils only are available. These boundaries refer to the sequences of the Northern Hemisphere and it cannot be *a priori* accepted that comparable genera have similar ranges in both halves of the Globe. Finally, shelly fossils cover wide intervals and, for example, in the Silurian, large samples and well-preserved material are needed to orient oneself (within wide limits) as regards its three (or four) main subdivisions. The situation in Australia is best illustrated by the example of the distribution of the genus *Notoleptaena* Gill. It is assumed to be a Lower Devonian genus, but in the Silurian of Yass *Notoleptaena* (collections of this Bureau) occurs 200 feet below *Monograptus bohemicus* and *M. nilssoni*, at the passage from Wenlockian to Ludlovian.

This example indicates also that I am using in my interpretations observations on the distribution of Silurian fossils in the sequences of Yass and Canberra, and that for the same purpose I am re-examining available collections, and have even undertaken collecting in Canberra in beds that may yield some relevant material. I hope that in the course of time not only trilobites, but also a proper study of dalmanelloid brachiopods may contribute to the understanding of the stratigraphy of the Australian Wenlockian, Ludlovian, and Lower Devonian sequences.

COMMENTS ON THE COLLECTING SITES

Site I

Deep Creek, Allotment 28, Ph. Chintin, Loc. X/A/20B. No. 30414.

Solitary tetracoral (a horn)
Loxonema

I have no reason to call it Devonian. It is Silurian.

Site II

Deep Creek, Allotment 28, Ph. Chintin, Loc. X/B/21. No. 30316, four specimens.

Homalonotid pygidium (the same as in Site III).
Dalmanelloid, new genus; the same in Site V, and Site VII.

Site III

Monegeeta-Springfield road; on fence between allotments 15A and 15B, Ph. Chintin. Nos. 30420, 7 specimens.

Homalonotid, one cranidium and several pygidia. Same as Site II.
Proetid, immature pygidium.

The homalonotid is a new form; its cranidium is comparable with that of Brongniartella, and its pygidium with Eohomalonotus, which are both Upper Ordovician genera. The age of the new form is not evident on its own merit; but via Site II (dalmanelloid) it can be connected with Sites II and VII.

Site IV

Boyd's Creek, allotment 11, Ph. Springfield, Loc. B25, No. 30881, 11 specimens.

Fragment of a strophomenoid, probably Leptaena.
Dalmanelloids, of the family Onniellidae. Generic identification is in progress.

Comparable dalmanelloids occur in the Silurian of Europe and in the Lower Devonian of New Zealand (Baton River). The same form is present in Site V.

Site V

Near junction of Creeks, allotment B19, Ph. Goldie. Nos. 33705-33771.

Dalmanites (fragments of pygidia, one hypostoma, and one cranidium). A segment of the thorax of a homalonotid trilobite, probably of a Digonus.
Proetid (pygidia, useless).

A pentamerid, probably Barrandella.
Dalmanelloid brachiopod (probably as in Site IV).
Dalmanelloid, new genus, as in Site II.
Palaeoneilo (a fragment).
Large rhynchonelloid (2 cm. long), possibly the same as in Site X. Dorsal cardinalia indicate an undescribed genus related to Camarotoechia.

The final fossil list of this site will be larger, depending on the interpretation of the remaining forms.

The presence of Dalmanites indicates a Silurian age, supported by Barrandella and Palaeoneilo. Nothing is present that could be interpreted as Devonian.

Site VI

MacDonald's Creek, Darraweit Guim, about one chain west of Upper Ordovician outcrop. Nos. 46893, 46895, 46897 (3 specimens).

A miserable fragment of a formerly complete trilobite (Dalmanites?).

A graptolite (interpretation impossible).

Site VII

On a tributary of Boyd's (No. 3) Creek, Ph. Chintin. Nos. 46925-46931.

Eye of a Phacops.
A plate of a crinoid.
Chonetes (abundant; needs study of all the fragments).
A rhynchonellid, small, provisionally regarded as a Rhynchotreta; in absence of a ventral valve, however, the matter is still open.
Dalmanelloid (a new genus) - see Sites II and V. Test very thick; ventral area exceptionally high, large; ventral muscles as in Schizophoria vulvaria, or as in some species of Isorthis; but dorsal valve with a sulcus, excluding Schizophoria from consideration.

The value of the dalmanelloid is local, permitting a tie between the Sites II, V and VII. Dalmanelloids with a similar external habit occur already in Upper Ordovician (Salopia Williams, in lower Bala at Arenig).

Site VIII

Tributary of Deep Creek, allotment 20, Ph. Chintin. Nos. 50265, 50269.

A problematical fragment, and a compressed nautiloid, same as in Site XI.

Site IX

Under bridge over Deep Creek, Darraweit Guim, Locality 5, Nos. 50306-50325; 52197-52202, and 52203 (number worn).

Dalmanitina, n.sp.

It is a Dalmanitina with a narrow f ontal border, as in the subgenus Chattiaspis Struve. All species of Dalmanitina are Ordovician, and Chattiaspis is not the youngest among them. Delo mentions Silurian species of Dalmanitina in U.S.A. These forms, in my opinion, represent a separate genus.

Age: Upper Ordovician.

Site X

Gully north of Gallagher's Ford, Romsey. Nos. 52230-52236.

Chonetes
Entomis
Large rhynchonelloid, possibly the same as in Site V.
Small pelecypods, same as in Site XI.

The identity of the "large rhynchonellid" with that of Site V cannot be established, because the internal structure of the specimens of Site X is not well enough preserved, and some difference is apparent in the character of ribs. The possible similarity refers only to the "large size".

Site XI

Small tributary gully to MacDonald's Creek, near Upper Ordovician outcrop, Darraweit Guim. Nos. 52237-52240.

Pelecypods, as in Site X.
Compressed nautiloids, as in Site VIII.
A large pygidium, genus indet.

Included here are the specimens Nos. 52203-52221. No position has been given for them.

Compressed "nautiloids" (abundant).
Pelecypods, as in Site X.
Two cranidia, apparently of a Calymene.
Pygidium, genus indet. (as above).

FAUNAL SUBDIVISIONS

The table below summarizes the relationship of the faunas, as presented in the "Comments on the Collecting Sites". The fossils indicate the presence of three distinct faunal sequences.

1) Sequence A, recorded in the Site IX, is Upper Ordovician.

2) Sequence B, recorded in the Sites II, III, IV, V, and VII is Silurian. It consists of several assemblages which may represent a superpositional order. This order cannot be established from the fossils themselves because the relevant

ones are new. As regards its position within the Silurian the following considerations may be of some help: Llandovery is not likely, unless it is represented here by a completely new fauna; Upper Ludlow is quite well known in Victoria and New South Wales, and the sequence B contains no fossils indicating such a high Silurian age. It is, therefore, probable that the sequence B is to be placed somewhere between the top of Llandovery and Lower Ludlow.

3) Sequence C, in Sites VIII, X and XI. The fossils from these sites cannot be interpreted stratigraphically on their own merit, and no ties with the faunas of the other two sequences are recognizable. Upper Ordovician and Silurian are both possibilities. In other words, within these limits the collections are "mute", and more collecting is needed. Field observations also may provide a clue to the understanding of this sequence.

Finally, Site I is perhaps somewhere within the Sequence B, and Site VI, if the lithology is considered, may belong with the mysterious Sequence C.

	I	II	III	VI	V	VI	VII	VIII	IX	X	XI
	?	B	B	,B	B	?	B	C	A	C	C
Homalonotid (new)		x	x								
Dalmanelloid (new genus)		x			x		x				
Dalmanelloid (Onniellidae)				x	x						
Dalmanites					x						
Barrandella					x						
Rhynchonellid, large					x					?	
Chonetes							x			x	
Rhynchotreta							x				
Pelecypods										x	x
Paleoneilo					x						
Dalmanitina									x		
"Nautiloids"								x			x
Graptolite						x					

DIAGNOSTIC FOSSILS

The following fossils are diagnostic in the sence that they can be described on a specific level:

1) Dalmanitina
2) Homalonotid
3) Rhynchotreta (perhaps)
4) "Rhynchonellid, large"
5) Dalmanelloid (new genus)
6) Dalmanelloid ("Onniellidae").