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REPORT ON THE CRETACEOUS
FORAMINIFERAL SEQUENCE IN

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FROME BROKEN HILLS FLAXMAN'S
NO. 1 WELL

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REPORT ON THE CRETACEOUS FORAMINIFERAL SEQUENCE
IN FROME BROKEN HILLS FLAXMAN'S NO.1 WELL

by David J. Taylor.

Some 60 samples, including cores, were examined from Flaxman's No.1 Well in order to establish the range and nature of the Cretaceous foraminiferal sequence. The sample interval was approximately 50 feet. Contamination was prevalent in many of the rotary cutting samples. No figures have been prepared to accompany this report as they would require redrawing when the Mines Department's bore at Peterborough is drilled. Relative correlation information has been tabulated.

The Cretaceous foraminiferal sequence was first encountered at 4,000 feet and continued to 6,600 feet. Below 6,600 feet the cores (cores 19 to 34) were barren of Foraminifera, although the cuttings ^{from 6,600 to 8000 ft} contained Foraminifera. But these cuttings must be dismissed due to positive contamination. (The hole was cased to only 1038 ft).

Despite initial difficulties the sequence can be divided into the five faunal units (Faunules) which were established in the Port Campbell No.2 sequence. The division of the faunules on the basis of vertical distribution of selected species has been refined in order to eliminate facies influence. Because of this the Port Campbell No.2 section was restudied although the only alteration is for Faunule 2 which is proved to extend from 7,420 feet to 7,000 feet and not from 7,340 to 7,050 feet as previously stated. This redefinition was necessary due to the paucity of the characteristic calcareous forms of Faunule 2 in Flaxman's No.1. This faunule now includes the full range of *Textularia* ~~primitiva~~ ^{sp. 5.} (sp.nov), which is easily identifiable and apparently not influenced by lateral facies changes. The following table shows the range of the five faunules in Flaxman's No.1 and the first two Port Campbell Wells. Depth given are from the rotary table of each Well.

FAUNULE	Flaxman's No.1	Port Campbell No.2	Port Campbell No.1
No.5	4000 - 5000 ft.	5300 - 5900 ft.	4250 - 4650ft.
No.4	5000 - 6000 "	5900 - 6250 "	4650 - 5080 "
No.3	6000 - 6220 "	6250 - 7000 "	5080 - 5350 "
No.2	6220 - 6480 "	7000 - 7420 "	5350 - 5650 "
No.1	6480 - 6600 "	7420 - 7909 "	ABSENT

From this table it will be noted that the first three Faunules in Flaxman's No.1 have a shorter vertical range than they do in Port Campbell No.2, but the last two Faunules extend over a much greater range. The result is that the complete Cretaceous foraminiferal sequence has approximately the same thickness in both wells.

Apart from a brief incursion of open marine fauna at the base of Faunule 4 (Core 16), the Foraminifera in the Flaxman's sequence are indicative of restricted marine conditions e.g. barred basin or embayment facies. In such conditions one would expect a thinning of the sequence. However, if the embayment were fault controlled (e.g. constantly but slowly down-faulted) it would not be filled with sediment and semi-marine conditions would persist. It has already been suggested that the Cretaceous sediments (i.e. Belfast Mudstone) were deposited in a downfaulted basin which was gradually filled. Thus in comparing Flaxman's No.1 with Port Campbell No.2 it is suggested the effect of faulting was more apparent in the upper part of the Cretaceous sequence in the former, whilst it was more accentuated in the lower part of the sequence in the latter.
