

P. HARKER, Geological Survey of Canada, Ottawa, Ontario
 G. O. RAASCH, Canadian Stratigraphic Service, Calgary, Alberta
 Megafaunal Zones in Alberta Mississippian and Permian*

Twelve faunal zones are proposed for the thick sequence of beds lying between the top of the Devonian and the base of the Mesozoic in Alberta. Of these, eleven lie within the range of time represented by the Mississippian of the type region, the remaining one is of Permian age. No beds of undoubted Pennsylvanian age have been seen in the southern Alberta Rocky Mountains or in the adjacent subsurface.

The lower four zones are grouped under a single time stratigraphic term for which the name Banffian is proposed; this includes strata equivalent to the Kinderhook and probably part of the Osage of the standard Mississippi Valley section. It corresponds with the Banff formation at the type section at Banff. The remaining Mississippian zones, of which the youngest is the *Spirifer leidy* zone of late Chesterian age, are grouped together under the term Rundlian. Strata assigned to the Rundlian include the whole of the Rundle group. The lithological junction of the Banff and Rundle is not necessarily at the close of the Banffian.

The proposed zones, together with their relationship to the lithological sequence, are shown in the table. The rock succession is neither abundantly nor uniformly fossiliferous and there are some major unfossiliferous intervals which materially hinder accurate correlation, especially in the early Rundlian. Faunal assemblages representing the Kinderhook, Osage, Meramec, and Chester of the Mississippi Valley undoubtedly occur in Alberta, but there are some gaps, notably the apparent absence of the older Chester faunas. It is not known yet to what extent these gaps are due to inhibited migration, facies control, or stratal non-sequence.

Rocky Mountain Formation, Permian

	1. <i>Plagioglypta canna</i> zone	Norquay member, lower beds
	Rundle Group, Mississippian	
RUNDLIAN	2. <i>Spirifer leidy</i> zone	Tunnel Mountain formation, upper beds
	3. <i>Spirifer increbescens</i> zone	Tunnel Mountain formation, lower beds
	4. <i>Faberothyllum languidum</i> zone	Mt. Head formation
	5. <i>Faberothyllum araneosum</i> zone	Mt. Head formation
	6. <i>Ekvasothyllum inclinatum</i> zone (This zone includes two or more "Lithostrotion" beds)	Mt. Head formation
	7. <i>Spirifer forbesi</i> zone	Turner Valley formation, lower part
	8. <i>Camarotoechia cobblestonensis</i> zone Banff Formation, Mississippian	Pekisko formation
BANFFIAN	9. <i>Spirifer rowleyi</i> zone	
	10. <i>Leptaena analoga</i> zone	
	11. <i>Spirifer marionensis</i> zone Exshaw Formation, Mississippian	
	12. <i>Goniatite</i> zone	

The proposed zonal scheme is put forward as an interim working hypothesis, based on presently available information. It will be subject to modification and revision as further paleontological data become available.

DIANE M. LORANGER, Imperial Oil Limited, Calgary, Alberta
 Mississippian Microfaunas—Their Stratigraphic and Paleogeographic Significance

Mississippian sediments in Western Canada contain several microfossil zones which can be effectively used in correlation and interpretation of the geology in this area. Three distinctive genera, *Paraparchites*, *Criboconcha*, and *Richterina*, characterize widespread zones which are of stratigraphic value. Representative fossils from these zones are illustrated and shown in relation to their associated lithology. Their distribution is discussed together with some interpretation of their significance regarding overlap, facies changes, and condensation over shelf areas.

JOHN ANDRICHUK, Alex McCoy & Associates, Calgary, Alberta
 Stratigraphy of Madison Group of Montana and Wyoming

Lithologic sequences characterized by distinct evaporite cycles are recognized in the Madison group of Montana and Wyoming. Throughout the basinal area of Montana and North Dakota, the

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