

Interpretations of Late Cretaceous to Recent geologic history

		Western Montana							
Eastern Montana (Alden, 1932)		(Alden, 1953)	(Atwood, 1916)	(Pardee, 1950)			Townsend Valley, Montana (Freeman, Ruppel and Klepper, 1958)	Elkhorn Mountains, Montana (Klepper, Weeks and Ruppel, 1957)	Basin quadrangle, Montana (This report)
Pleistocene and Recent	See Ruppel (1962). Uplift and dissection on Flaxville plain.	See Ruppel (1962). Erosion of deep canyons.	Early glaciation.	Present cycle of renewed uplift and valley cutting.			Deposition of gravels. ?	See Ruppel (1962).	See Ruppel (1962).
Pliocene	Development of Flaxville plain or No. 1 Bench and deposition of Flaxville gravel.	Erosion, cutting of piedmont benches and upland erosion surface.	Drainage changes and dissection of valley fills.	Recurrent uplift and local block faulting and warping; old valley cycle coincides with a halt in the uplift.			Slight tilting or warping. Period of relative stability, pediment formed. Slight tilting or warping.	Deposition of late Miocene-early Pliocene tuffaceous sediments and gravel.	Erosion; cutting of strath terraces; superposition of Boulder River.
Miocene				Renewal of mountain growth; tilting of Bozeman beds.	General relevation of region; accelerated local crustal movements.				
Oligocene	Uplift and erosion of deep valleys. Development of Cypress Plain and deposition of gravel.	Deposition of Bozeman "lake-beds." Western Montana a region of considerable relief with hills and mountains in much the same position as now although not as high above adjacent valley floors.	Intermediate erosion surface in mountain valleys.	Drainage becomes sluggish or ponded because of slow crustal movements that outlined present basins and ranges.	Erosion of highlands and development of late Tertiary peneplain.	Deposition of lake beds in basins.	Erosion.	Erosion to surface of low relief.	
				Closing of the drainage by Snake River lavas.	Development of intermontane troughs and a mature topography in mountains.	Deposition of Oligocene sedimentary tuff.			Volcanism, eruption of quartz latite.
Eocene	Uplift, increasing westward.	Paleocene and Eocene Erosion; uplands reduced to areas of moderate relief; possibly local Eocene glaciation.	Uplift and deformation of peneplain. Development of Summit peneplain.	Crustal stability and long period of erosion to give surface of moderate to slight relief.			Paleocene and Eocene Long period of erosion to form mature mountainous area with broad intermontane basins, probably in part outlined by faults.	Erosion to produce mature landscape.	
Late Cretaceous	Folding and faulting.		Mountain growth.	Elevation.					Intrusion of monzonite stocks. Strong folding culminating in thrust faulting in Hossfeldt Hills. Volcanism and intrusion of diorite porphyry. Local warping and uplift.