ERA	GEOLOGIC AND CLOCK TIME (Approximate length of geologic period and age of boundaries in millions of years)	ROCK UNIT (Numbers from table 2)	ROCK COLUMN	THICKNESS (FEET)	DESCRIPTION
CENOZOIC	1 QUATERNARY	Sand, gravel, and landslide deposits Qal, Qtg, Qc, Qr		0–100	Loose sand and gravel on valley floors (Qal) and in stream terraces (Qtg), landslide deposits (Qc), and rubble streams (Qr).
		Basalt QTb		0–1000	Dark-green and gray lava flows. Caps mesas.
	TERTIARY 70	Intrusive igneous rocks Tdp, Ta, Tl			Dacite porphyry (Tdp), porphyritic andesite (Ta), and lamprophyre (Tl). Relative ages unknown. Form ledges and cliffs.
	70 +	Poison Canyon Formation Tpc intertongued with upper part of Raton Formation TKr (Unit 1)	(Rocks omitted) TKr TKr	2000±	Poison Canyon Formation: Coarse-grained yellow sandstone and conglomerate, washed from mountains to west by streams. Forms ledges. Lower part intertongued with Raton Formation. Raton Formation: Basin deposits. Fine-grained yellow and gray sandstone, deposited by streams; dark-colored shale and coal, deposited in overflow ponds and swamps. Yellow and gray stream conglomerate at base. Imprints of leaves of extinct ferns, evergreen trees, and flowering trees in shale and sandstone. The coal is mostly composed of compressed and altered plant fragments.
MESOZOIC	CRETACEOUS 65	Vermejo Formation Kv (Unit 2)		0–170	Yellow and gray beach sandstone alternating with coastal-swamp shale and coal; coal is composed of compressed and altered pieces of plants.
		Trinidad Sandstone Kt (Unit 3)		0–100	Light-gray beach sandstone. Forms cliffs. Leaf imprints and fossil burrows.
	135 JURASSIC 45	Pierre Shale and upper part of Niobrara Formation Kpn (Unit 4a)	(Rocks omitted)	2000–2700	Black marine shale containing many lenses of orange-stained limestone and a few thin layers of orange shale composed of altered volcanic ash. Fossil shells of clams, oysters, snails, ammonites; shark teeth.
		Fort Hays Limestone Member of Niobrara Formation Knf (Unit 4b)		40–60	Gray marine limestone and thin layers of black shale. Same kinds of fossils as in Pierre Shale.
	180	Carlile, Greenhorn, and Graneros Formations Kcg (Unit 4c)		800–900	Black marine shale containing a few beds and lenses of dark-colored limestone in the middle and a few thin layers of orange shale composed of altered volcanic ash. (Carlile Shale [top], 500 ft thick; Greenhorn Limestone, 20 to 40 ft thick; Graneros Shale, 300 ft thick.) Same kinds of fossils as in Pierre Shale.
	TRIASSIC 45	Dakota Sandstone Kd (Unit 5)		100–200	Two thick units, one yellow and one light-gray, of crossbedded beach sandstone, separated by dark-colored marine shale. Sandstone forms ledges and cliffs.
		Morrison Formation Jm (Unit 6)		400	Red, gray, and brown shale and sandstone, stream laid. Thin beds of pond limestone, containing veinlets of red jasper, at base.
		Entrada Sandstone Je (Unit 7)		30–60	Light-gray crossbedded dune sandstone. Forms low ledges and cliffs.
	225	Dockum Group Td (Unit 8)		400–500	Shale and fine-grained sandstone, mostly red, partly brown, tan, and green, containing many lenses of gray limestone conglomerate. Much red sandstone and a little conglomerate near base. Stream-channel and flood-plain deposits. (These rocks usually divided into Chinle Formation [top], 300 to 400 ft thick, and Santa Rosa Sandstone, 100 ft thick.)
PALEOZOIC	PERMIAN 45	Sangre de Cristo Formation PIPsc (Unit 9)		0–5000	Red and gray conglomerate and red sandstone containing a few layers of red shale and gray limestone. Stream and lake deposits. Shale has fossil seed-ferns.
	270 PENNSYLVANIAN 30				
	300 MISSISSIPPIAN TO CAMBRIAN 300 (This part of time column shortened to 1/10 proper length.) No rocks of this age in Philmont region	Granodiorite p€gr			Coarse-grained pink granodiorite cut by dikes of dark-colored diorite.
	PRECAMBRIAN 1350+ Includes all geologic time before the Cambrian Period. (This part of time column is shortened to less than 1/70 proper length)	Gneiss and schist p€g	? (Thickness of p€g unknown)		Light-colored gneiss, dark-colored schist, and minor quartzite, intruded by many small bodies of pink granodiorite and by dikes of dark-colored diorite and one dike of coarse-grained diorite porphyry.

THE PARADE OF PHILMONT ROCKS

719-525 O - 64 (In pocket)