

# COLUMNAR SECTION

GENERALIZED SECTION OF THE ROCKS OF THE CASTLE ROCK QUADRANGLE.						
SCALE: 1 INCH=1,000 FEET.						
SYSTEM.	SERIES.	FORMATION.	SYMBOL.	COLUMNAR SECTION.	THICKNESS, IN FEET.	CHARACTER OF ROCKS AND TOPOGRAPHY.
TERTIARY	OLIGO-CENE	Castle Rock conglomerate.	Ter		300	Light-colored arkosic conglomerate and conglomeratic sandstone; fragments of rhyolite at base. Caps mesas in the plains.
	EOCENE	UNCONFORMITY	(Th)			
		Andesite sandstone member.	(Tds)			
		Dawson arkose.	Td		2,000±	Chiefly coarse varicolored arkosic grits with lenses of conglomerate and shale throughout formation. Conglomerate at base contains pebbles derived from the rocks of the foothills and of the Front Range. Rhyolite lava and tuff interbedded near the top. A thin bed of andesitic sandstone in upper part expands northwestward and becomes the Denver formation. Occupies most of the surface of the plains in the quadrangle; buttes capped by rhyolite lava.
CRETACEOUS	UPPER CRETACEOUS MONTANA GROUP	UNCONFORMITY	(Kl)		1,500±	Drab shale with small nodules of clay ironstone and beds of white and brown fine-grained sandstone and possibly workable beds of coal. Narrow belt near western border of the plains.
		Laramie formation.	Kl		1,500±	Drab shale with small nodules of clay ironstone and beds of white and brown fine-grained sandstone and possibly workable beds of coal. Narrow belt near western border of the plains.
	COLORADO GROUP	UNCONFORMITY	(Kof)		8,000±	Upper part sandy shale and sandstone, representing the Fox Hills sandstone. Lower part clay shale and a few thin beds of limestone, representing the Pierre shale. Not separately mapped because of poor exposures. Lowland northeast of hogback ridges.
		Fox Hills sandstone and Pierre shale.	Kof		8,000±	Upper part sandy shale and sandstone, representing the Fox Hills sandstone. Lower part clay shale and a few thin beds of limestone, representing the Pierre shale. Not separately mapped because of poor exposures. Lowland northeast of hogback ridges.
		Niobrara and Benton formations.	Kbn		1,000±	Shale and two limestones. The upper limestone and shale comprise the Niobrara formation; the lower shale and interbedded limestone comprise the Benton formation. Not separately mapped because of poor exposures. Forms low hogback ridges.
		Dakota sandstone.	Kd		60	Indurated fine-grained quartzose sandstone. Forms a prominent hogback ridge.
CRETACEOUS OR JURASSIC	LOWER CRETACEOUS	Purgatoire formation.	Kp		240	Lower part gray sandstone, upper part shale, chiefly black. Occupies inner flanks of Dakota hogback ridge.
	UNCONFORMITY	(Km)		200	Varicolored shale, sandstone, and limestone. Forms valleys and low ridges.	
	PERMIAN	Lykins formation.	Clk		225	Brilliantly colored (chiefly red) sandy and clay shale and thin beds of gray limestone and white sandstone. Massive gypsum at the top. Forms low hills and valleys.
CARBONIFEROUS	PENNSYLVANIAN	Lyons sandstone.	Clo		600	Fine-grained quartzose sandstone; lower part brick-red, upper part usually white. Forms wall-like ridges and ledges.
		UNCONFORMITY	(Cf)		2,000±	Varicolored (chiefly red) coarse-grained cross-bedded arkosic sandstone, some shale, and lenses of conglomerate. Low hills and ridges at the base of the mountains.
	Fountain formation.	Cf		2,000±	Varicolored (chiefly red) coarse-grained cross-bedded arkosic sandstone, some shale, and lenses of conglomerate. Low hills and ridges at the base of the mountains.	
	MISSISSIPPIAN	Millsap limestone.	Cm		0-85	Gray to purplish limestone with nodules of chert. Forms outer slopes of hogback ridges.
ORDOVICIAN	LOWER ORD.	Manitou limestone.	Om		0-50±	Gray magnesian and arenaceous limestone. Forms outer slope of hogback ridge.
CAMBRIAN	UPPER CAMB.	Sawatch sandstone.	Cs		115	Fine-textured white quartzose sandstone overlain by calcareous glauconitic sandstone. Forms low hogback ridges.
PRE-CAMBRIAN		Pikes Peak granite.	ogr			Massive, coarse-textured biotite granite. Forms Front Range.

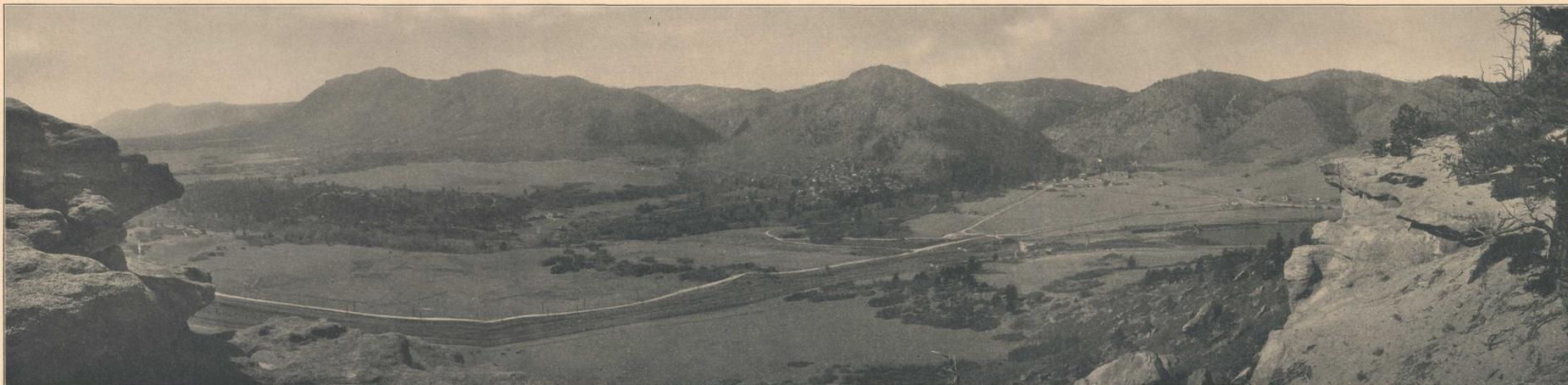


PLATE I.—THE FRONT RANGE FROM HILL EAST OF PALMER LAKE.  
The mountains are composed of Pikes Peak granite; the slopes along their base are covered with Quaternary wash. Cliffs of nearly horizontal Dawson arkose in foreground; Palmer Lake at extreme right; Mount Hermon in left center. Photograph by Denver & Rio Grande Railroad Co.



PLATE II.—PENEPLAIN ON TOP OF THE FRONT RANGE AT AN ELEVATION OF ABOUT 9,000 FEET.  
View northward along the range west of Mount Hermon. Peneplain is cut on Pikes Peak granite.

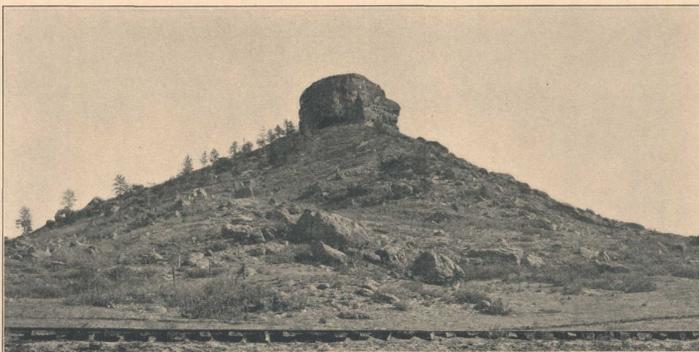


PLATE III.—CASTLE ROCK, A BUTTE CAPPED BY CASTLE ROCK CONGLOMERATE.  
Looking east.



PLATE IV.—CASTLE ROCK AND MESA IN DISTANCE, BOTH CAPPED BY CASTLE ROCK CONGLOMERATE.  
Looking north.



PLATE V.—UNCONFORMITY AT BASE OF CASTLE ROCK CONGLOMERATE AT CONTACT WITH DAWSON ARKOSE IN CLIFFS OF CASTLE ROCK.  
Shows uneven surface of contact and boulders of rhyolite in basal conglomerate.



PLATE VI.—CASTLEWOOD RESERVOIR AND MESA TO THE EAST CAPPED BY CASTLE ROCK CONGLOMERATE.  
Unconformable contact of Dawson arkose and overlying Castle Rock conglomerate occurs in cliffs at left.



PLATE VII.—CASTLE-LIKE EROSION REMNANT OF DAWSON ARKOSE, JUST NORTH OF DEADMANS CREEK.  
Looking northward along Quaternary wash-covered slope at foot of Front Range.



PLATE VIII.—"MONUMENT" OF DAWSON ARKOSE, 2 MILES WEST OF THE TOWN OF MONUMENT.

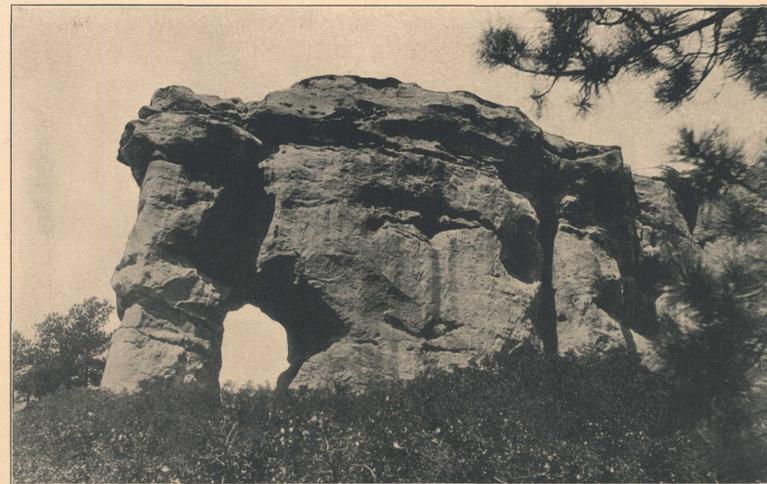


PLATE IX.—GROTESQUE EROSION REMNANT OF DAWSON ARKOSE CALLED "ELEPHANT'S HEAD" EAST OF PALMER LAKE.



PLATE X.—TYPICAL EXPOSURE OF FOUNTAIN FORMATION.  
 Looking southeast from west side of Gove Creek, Perry Park. Raspberry Butte, capped by rhyolite, in central distance.



PLATE XI.—SCULPTURED EROSION FORMS OF FOUNTAIN FORMATION IN SOUTHEASTERN PART OF PERRY PARK.  
 "Profile Rock" at right.



PLATE XII.—HOGBACK RIDGES OF PERRY PARK.  
 Looking northwest across Bear Creek. Curved double row of hogbacks of vertical Lyons sandstone on left and Dakota sandstone on right, separated by valley of softer rock. Sandstone of Purgatoire formation makes shoulder on left slope of Dakota hogback in distance. Gypsum of Lykins formation composes low white ridge in middle ground.



PLATE XIII.—CLOSER VIEW OF HOGBACK RIDGES OF PERRY PARK.  
 Looking northwest across Bear Creek. Dip of Dakota sandstone, which is nearly vertical on the high knob, becomes less steep toward the right. Sandstone of the Purgatoire, which forms a shoulder on the Dakota hogback, makes the white hill across the lake. Morrison and Lykins formations occupy depression between hogback ridges. Vertical Lyons sandstone makes an almost continuous wall on left.



PLATE XIV.—DAKOTA HOGBACK IN PERRY PARK WEST OF GOVE CREEK.  
 Looking northwest. Band of white gypsum of Lykins formation in middle ground. Lyons sandstone in foreground. Front Range in distance.



PLATE XV.—GATEWAY TO PERRY PARK.  
 Looking east from a point near Bear Creek. Nearly vertical Lyons sandstone in foreground. Hogback in distance capped by Dakota sandstone. Sandstone of Purgatoire formation makes lower cliff and slopes.

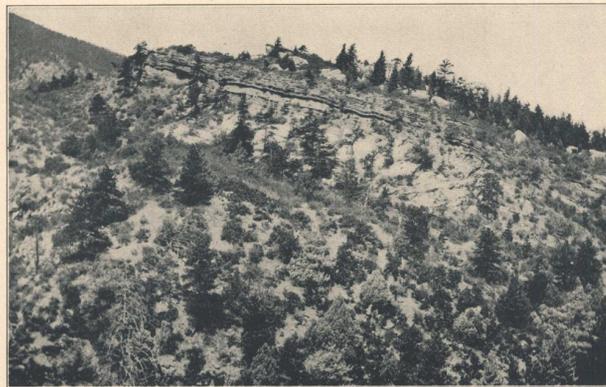


PLATE XVI.—GENTLY DIPPING PALEOZOIC ROCKS RESTING ON PIKES PEAK GRANITE,  
 WEST SIDE OF BEAR CANYON, PERRY PARK.  
 White Sawatch sandstone in lower part of cliff, thin-bedded Millsap limestone in upper part, and white sandstone of Fountain formation on top of hill.

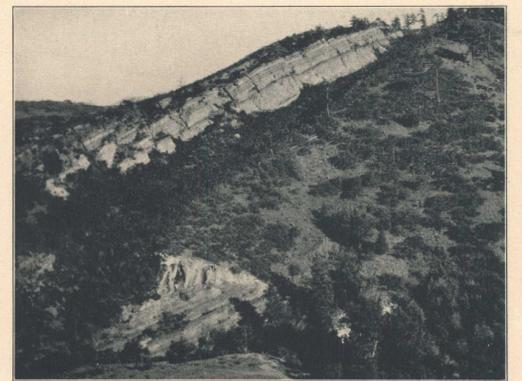


PLATE XVII.—WHITE SAWATCH SANDSTONE RESTING ON PIKES PEAK GRANITE,  
 OFFSET APPARENTLY BY A THRUST FAULT.  
 Looking southeast across Gove Canyon. Sawatch sandstone cliff capped by thin-bedded Millsap limestone.

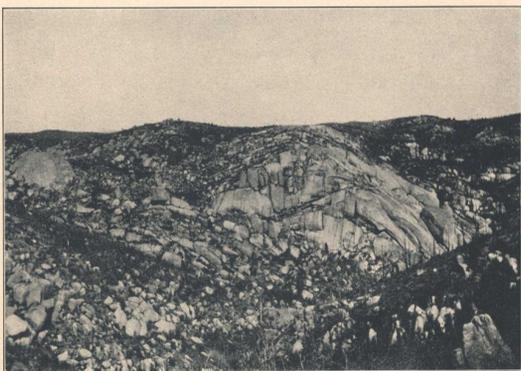


PLATE XVIII.—PIKES PEAK GRANITE ON TOP OF FRONT RANGE SOUTHWEST OF PALMER LAKE.  
 Showing jointing and rounded weathering of the granite.



PLATE XIX.—SLOPING TERRACE OF QUATERNARY WASH AT BASE OF FRONT RANGE.  
 Looking south across Beaver Creek.

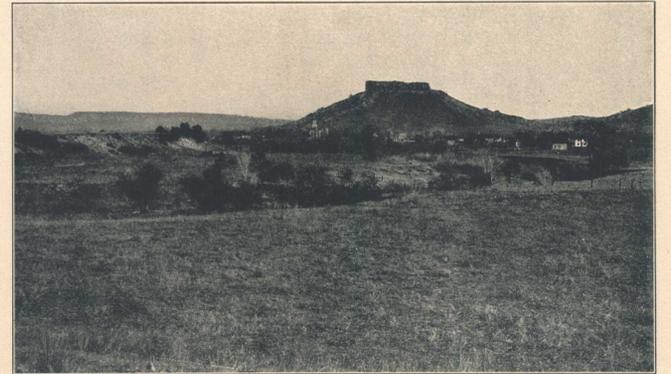


PLATE XX.—QUATERNARY TERRACES IN VALLEY OF EAST PLUM CREEK AT CASTLE ROCK.  
 Lower terrace in foreground and stream at right; higher terrace at left. Castle Rock in background.