<table>
<thead>
<tr>
<th>Period</th>
<th>Formation Name</th>
<th>Symbol</th>
<th>Columnar</th>
<th>Thickness in Feet</th>
<th>Character of Rocks</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cretaceous</td>
<td>Lewis shale.</td>
<td>Kls</td>
<td>300+</td>
<td>A series of gray or clab-shales, very similar to the Mancos shale in character. The shales include, in varying percentage, thin carbonate lenses or concretions of impure limestone, which occur in the Mancos shale. Only 200 or 300 feet of the formation now remains in this quadrangle. In the adjacent Durango quadrangle a total thickness of 300 feet is shown.</td>
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<tr>
<td></td>
<td>Mesaverde formation.</td>
<td>Kmv</td>
<td>100</td>
<td>An alternating series of gray or yellowish quartzose sandstones and sandy shales. In the lower portion is a massive, coarse, cross-bedded sandstone, which causes the most prominent of the Mesa Verde. Above this is a variable complex of sandstones and shales containing a number of productive coal seams. Invertebrate fossils, of which a list is given in the text, occur at numerous horizons. A few fossil plants have been found.</td>
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<tr>
<td></td>
<td>Mancos shale.</td>
<td>Kmc</td>
<td>1200</td>
<td>Soft, dark-gray or almost black, carbonaceous clay shales, containing thin lenses or concretions of impure limestone. Embraces the Colorado group and a portion of the Pierre division of the Rockies. Fossils occur more or less abundantly at several horizons. The species identified are enumerated in the text.</td>
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<td></td>
<td>Dakota sandstone.</td>
<td>Kd</td>
<td>200-300</td>
<td>Gray or rusty-brown quartzose sandstone, with a variable conglomerate containing small chert pebbles at or near the base. Carbonaceous shale partings occur at several horizons. Coal of poor quality is locally present in these shales. The fossil flora is sparse and varied.</td>
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<td></td>
<td>Mollusca formation.</td>
<td>Jmm</td>
<td>200-300</td>
<td>A complex of alternating flinty, the, light sandstones and siltstones, and fossiliferous sandstones. The sandstones are usually more than 10 feet thick. They often include shales of graywacke sand or shale. The shales are chiefly carbonaceous, and contain thin bands of fossiliferous shales and carbonaceous shale. No fossils have been found.</td>
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<tr>
<td></td>
<td>La Plata sandstone.</td>
<td>Jpl</td>
<td>300-400</td>
<td>Consists principally of two very massive, friable, white sandstones, with a narrow band of dark limestone or calcareous shale between them. The sandstones are massive, of even grain, distinctly cross bedded, and form massive cliffs where exposed. A delicate net veining with white quartz is characteristic. No determinable fossils have been found.</td>
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<tr>
<td>Jurassic</td>
<td>Dolores formation.</td>
<td>Jd</td>
<td>1700+</td>
<td>A series of reddish sandstones, grits, and conglomerates with persistent calcareous cement. The upper third of the formation is fine-grained and yellowish in color than the lower part. Many of the beds are locally calcareous and locally become dense, calcareous limestones, rather soft and grey, with somewhat flinty. The lower part is more calcareous and of a very variable nature, with a soft, grey, flinty, and compact, calcareous cement. The middle of the formation is more massive and shows a number of dark sandstones. The upper third of the Dolores formation is about 150 feet thick, while the total thickness, seen at the adjacent Durango quadrangle, is about 300 feet.</td>
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WHITMAN CROSS, Geologist.
FIG. 1.—VIEW FROM BALD KNOLL, LOOKING NORTH ALONG THE EAST FACE OF THE LA PLATA MOUNTAINS.
The steep slope on the left belongs to Lewis Mountain. The metamorphosed Dolores beds are steeply upturned and seamed by many dikes. Beyond these slopes appear the scarps of Snowstorm Peak. The projecting shoulder of the middle ground exhibits nearly horizontal Dolores strata, with several intrusive sheets of porphyry. The distant peaks belong to the western part of the Siskiyou Mountains.

FIG. 2.—VIEW FROM BALDY PEAK, LOOKING SOUTHEAST TOWARD DURANGO.
The prominent valley is that of Lightner Creek. The prominent pointed ridges represent remnants of a sloping mesa caused by the Mesaverde sandstones. Below the scarps are the exposures of the homogeneous Mancos shales.

FIG. 3.—VIEW SOUTHWEST FROM THE BOWFART HILLS, SHOWING THE DOLORES PLATEAU, THE MESA VERDE, AND THE EL LATE MOUNTAINS.
The nearly level floor of the plateau is underlain by the Dakota sandstone, upon which are rounded knolls and ridges of Mancos shale. On the left appears the Mancos Valley as it cuts into the Mesa Verde. The escarpment of the Mesa Verde is caused by the heavy sandstones of the formation of the same name. Ute Peak, the most prominent summit of the El Late Mountains, appears at the extreme right of the view.

FIG. 4.—INDIAN TRAIL RIDGE, AS SEEN FROM THE EAST, LOOKING ACROSS THE LA PLATA VALLEY FROM SILVER LAKE BASIN.
The view shows the light-colored La Plata sandstone forming the top of the ridge, the basins excavated in the Dolores strata immediately below it, and the steep eastern slope of the main La Plata Valley.

FIG. 5.—THE SHARKSTOOTH, FROM THE EAST LOOKING ACROSS BEAR CREEK.
The summit of this most northern point of the La Plata Mountains is due to an intrusive sheet in the Mancos shales. The debris from the disintegration of that sheet spreads out over the soft shales as a wide field of slide rock. A notable talus slope from the upper cliffs partially obscures the outcrops of the Mancos shales, the Dakota sandstone, and the Lower McElmo formation, within which is a thick intrusive sheet of porphyry.

FIG. 6.—A RAVINE UPON THE NORTHEAST SLOPE OF GIBBS PEAK.
The rock within which this ravine is excavated is brecciated and iron-stained porphyry. Erosion is progressing very rapidly at the present time. The site of this ravine was once forested.
FIG. 7.-VIEW DOWN THE LA PLATA VALLEY FROM THE ENTRANCE TO THE MOUNTAINS.

The level ground in the center of the view belongs to the terrace called the Gold Bar. The present stream bed of the La Plata is on the left. The gray line represents the principal waterline horizons of the Mesaverde formation. In the gap on the left is located the station Hesperus. Beyond that may be seen another strong terrace line.

FIG. 8.—VIEW UP THE LA PLATA VALLEY FROM THE ENTRANCE TO THE MOUNTAINS.

The view shows the U-shaped valley of the La Plata. To the left of the center are Babcock and Spiller peaks, where a stock or monzonite causes the more rugged forms.

FIG. 9.—VIEW DOWN THE LA PLATA VALLEY FROM THE DIVIDE AT ITS HEAD.

This view shows how wide and deep the valley is at the very heart of the mountains. The steep slopes on the right are characteristic of both sides of the valley. The summits near the center are Parrott and Madden peaks, the former capped by porphyry, the latter by the light La Plata sandstone.

FIG. 10.—THE WESTERN SUMMITS OF THE LA PLATA MOUNTAINS FROM THE DIVIDE AT THE HEAD OF THE RIVER.

This view is panoramic with Fig. 9. It shows the rugged character of the summits within the monzonite stocks. Near the center is Mount Moss. The sharp point on the left is Diorite Peak. Banded Mountain and Hesperus Peak are on the right.

FIG. 11.—THE HEAD OF THE WEST MANCOS RIVER FROM JACKSON RIDGE, SHOWING HESPERUS PEAK, MOUNT MOSS, AND SPILLER PEAK.

In Hesperus Peak, on the left, are many intrusive sheets or porphyry intercalated in the Mancos shale. The intrusive rocks of Mount Moss, in the center of the view, send off a wedge-like area which upturns the strata and rocks of Hesperus Peak. On the right is Spiller Peak, the summit of which is also formed of monzonite, which has greatly indurated the shales of the Mancos formation forming the cliffs seen in the view. The base rock of the foreground belongs to the syenite-porphyry sheet of Jackson ridge. The cliffs in the gorge of the West Mancos belong to the indurated La Plata sandstone.