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Physiographic Significance of the Mesa de Maya

Charles R. Keyes

PHYSIOGRAPHIC SIGNIFICANCE OF THE MESA DE MAYA.

BY CHARLES R. KEYES.

The Mesa de Maya is a small elevated tableland lying on the borders of Colorado and New Mexico, between Trinidad and Raton. It has an elevation of over 9,000 feet above sea-level and about 3,600 feet above the valleys on either side.

This mesa is a part of the Raton range of mountains which trends slightly south of east along the southern boundary of Colorado. It is lava-capped, as are also many other similar flat-topped mountains in the same range. The lava-cap is 500 feet in thickness. On the borders of the mesa is a vertical cliff all around—hence its name, the Spanish meaning "armored mesa."

The Raton range, of which the Mesa de Maya is a part, extends eastward, at right angles, from the Rocky cordillera. The summits of the individual mountains and spurs which go to make up the range are quite even; and many like the Mesa de Maya are covered by remnants of old basalt flows. The general even surface which the range everywhere exhibits, is manifestly merely a fragment of a much more extensive surface that once existed. It is all that remains of an old plain of great extent. This old plain bevels the tilted stratified rocks of its substructure. The old plain is inclined slightly towards the eastward. At the Rocky Mountain front it has an elevation of about 10,000 feet above mean-tide; at the Texas line 130 miles away, it is about 5,000 feet above sea-level. The geological and physiographical relationships are shown in the accompanying diagram:

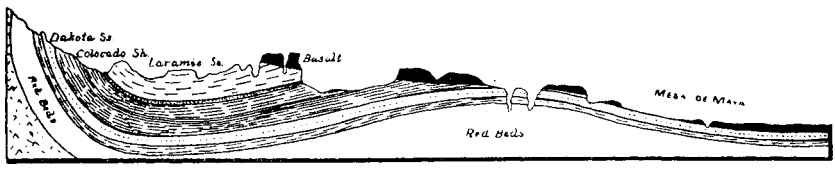

Fig. I.—Substructure of the Mesa de Maya.

The even level, which the top of the Raton range represents, is a physiographic feature that has been given the designation of the Mesa de Maya plain. It is now a mere ragged remnant of a plain

which in Tertiary times was one of vast extent and formed the general upland surface of this part of the North American continent.

The Mesa de Maya plain stands 3,000 feet above another well defined plain which is much better preserved than itself, and at the present time is of much wider extent. This last mentioned plain is called the Ocate plain—from the great Ocate volcano that was built up on this level and over which it poured out its basaltic lavas for hundreds of square miles, thus preserving the plain from the ravages of time.

Ocate mesa or plain lies 500 feet above still another very extensive tableland—the Las Vegas plain, which is now the main upland surface of most of New Mexico, western Texas, Oklahoma and Kansas, and southeastern Colorado. Beneath the level of the last mentioned plain the present waterways have corraded canyons and valleys 2,000 to 3,000 feet still lower. There are besides these principal peneplains many other distinct levels at which general degradation temporarily stopped at one time or another.

Of the old Tertiary peneplanation surface of once so vast extent little now remains outside of the Raton region. When the flatness of a few of these mountain tops disappears and this will be ere long, the last vestiges of this important and interesting plain will be gone. There will be then only a long row of what would be called monadnocks to suggest the existence of a former higher level. The very existence of this plain would then be hypothetical and its height above the Ocate level a matter of conjecture.

The great interest which now attaches to the Mesa de Maya plain is that it is a part of the former great plain still handed down to us on account of the great basalt flows which were poured out over its surface. In place of monadnocks or nothing at all to suggest its former existence as a great peneplain a fragment of that great plain itself remains. Its real significance as an exact measure for late Tertiary can not be overlooked.

In this region of northeastern New Mexico there are, then, four important physiographic levels, 3,000, 500, and 2,000 feet apart. By them it is possible to correlate several important episodes during Tertiary and Quaternary times. The Las Vegas plain probably marks the beginning of Quaternary time in the Rocky Mountain region. With this measure of erosion may be compared the measures of deposition. Above the level of the Mesa de Maya plain there rises, so far as we know, only the central Archaezoic peaks of the southern Rockies.