the existence during this period of large freshwater lakes over the summit of the mountain region; for much rise would have made slopes that would have drained the lakes (Hayden). The Wasatch and Uinta Eocene basins of Utah and Wyoming, lettered with *W*'s and *U*'s on the map (Fig. 335), were two of these lakes. Miocene lake basins, farther to the east, show that even in Miocene time the progress was slow.

Contemporaneously, similar movements were in progress over the other continents: along the Andes, affecting half, at least, of South America; the Pyrenees, Carpathian Alps and a large part of Europe; the Himalayas and much of Asia.

2. *The Rocky Mountain geosynclines.* — The geanticline, above described, had made little progress when local geosynclines, or subsidences, commenced over the summit region of the mountains. The areas of the fresh-water lakes, referred to above, were the sinking areas; and the sinking went forward, and concurrent deposition of beds, until the troughs contained strata of Eocene Tertiary 8000 to 10,000 feet in thickness — the earlier half in the Wasatch epoch and the later in the Green River. After these Eocene basins ceased to subside, more eastern Miocene and Pliocene geosynclines were formed.

Moreover, an epoch of upturning and *plicating* took place, both after the laying down of the Wasatch beds and of the Green River beds; and of upturning, in some places, after the close of the Miocene depositions. These were local disturbances apparently quite independent of the great geanticlinal movement, which was also in progress.

Igneous eruptions. — During these Tertiary movements the greatest of igneous ejections occurred over the Rocky Mountain region from its summit westward. It is supposed that a large part of the volcanoes of the world had their birth at the close of the Cretaceous and during the Tertiary era.

3. *Faults in the Great Basin and elsewhere.* — The Great Basin has many bare ridges, 3000 to 5000 feet above their bases, standing in the great area of lakes and alluvium-like islands in a sea. These ridges trend northward.

There are outcropping crystalline rocks in some of the ridges, but the rocks, according to King, are mostly Paleozoic, except west of the meridian of 117½° W., within 100 miles of the Sierra Nevada, where Triassic and Jurassic rocks occur. The beds of the ridges are more or less upturned, often in great anticlines or synclines, or elsewhere in simple monoclines; but the island-like isolation of the ridges prevents a study of their stratigraphic relations. King suggested that the more western of the ridges were perhaps part of the Sierra system, which dates from the beginning of the Cretaceous period, or the close of the Lower Cretaceous; and that the more eastern were perhaps post-Carboniferous in epoch of disturbance.

Among the Basin Ranges, according to King, great anticlines characterize the Agui Range, the Promontory, Gosiute, Egan, Peoquop, and Toyabe ranges; the Humboldt Range, although having a nucleal axis of Archæan; the Piñon Range, in which the anti-