

ment, were also, for the most part, Cretaceous seas with still wider limits and larger intercommunications. The *London-Paris* basin, spreading eastward to Denmark, was one of these partly isolated areas; it was 800 miles wide from north to south in the Cretaceous period, 400 in the Jurassic, and about 250 in the Tertiary. Southwestern France and the northeastern half of Spain, making the *Pyrenean* basin, was another, 450 miles broad; Switzerland and a broad area across Bavaria was another. Italy and the eastern coast region of the Adriatic, with a very broad region in northern Africa, in Egypt and Syria to the eastward, made another, the *Mediterranean* basin. A great *Austro-Russian* basin spread beyond the Azof and Black seas to the Caspian, the Caucasus, and farther east over large areas in Persia; and in the Neocomian, it is supposed to have extended by the west side of the Urals to the borders of the Arctic Sea. Only parts of the borders of these great areas are at surface Cretaceous, the Tertiary being the overlying formation.

It is necessary thus to view the Tertiary with the Cretaceous in order to appreciate the fact that Cretaceous Europe, across from the Bay of Biscay and Spain to its eastern border, was mostly a submerged region. The Mediterranean basin, like that of the West India and Gulf basin in America, was the deeper part of the submerged area. The dry land included the regions of Scandinavia with the Baltic provinces in Russia, a western and northern part of Great Britain, and some isolated areas along the western border and over the central portions of the continent. The resemblance to North American distribution consists in the fact that the dry land was most extensive to the north, and that the deepest waters were about the Mediterranean Sea on the south. The contrast consists in the widespread submergence of the continental surface across from east to west, and the absence of any distinctively Atlantic border region.

In India, there is no evidence of marine Cretaceous beds in the great valley of the Ganges, and only small areas near Pondicherry in the southeastern part of the Peninsula. They cover a large area in Queensland, northeastern Australia, and occur in some other parts of that continent. They are found also in New Zealand, where they contain valuable coal-beds.

In South America, narrow belts of Cretaceous rocks extend, in Venezuela, from Cumana to Pamplona, and from there northward and southward along the Andes, being at an elevation of 9000 to 14,000 feet at the passes of the Portillo and Rio Volcan, and having a height of 20,000 feet. The Upper Cretaceous forms most of the peaks of the eastern Andes, some of the ridges having a height of nearly 19,700 feet. In Peru, latitude  $11\frac{1}{2}^{\circ}$  S., near the pass of Antaranga, its height is about 15,750 feet, and in the Province of Huamachuco, the Gault reaches a height of 16,405 feet. In Chile, in the Cordillera of Chillan ( $36^{\circ} 18'$ ), the Cenomanian has a height of nearly 15,000 feet. The Cretaceous are the oldest of the beds exposed over the most of northern South America, the crystalline rocks (Archæan) excepted (H. Karsten). There is a large area also in the eastern part of Brazil.