

descends into the Caspian. Here a typical section shows anticlinal and monoclinal Aralo-Caspian ridges, with strata dipping 20° or 30° , and crests rising from 600 to 800 feet over the present Caspian level. The existing Caspian is by a still greater measure of time separated from that ancestral water body in which the Akchlagyl strata of the Ust-urt plateau as described by Andrussof (1902) were laid down, these being pre-Pontic and post-Sarmatian. The Tertiary seas represented by the Sarmatian and Mediterranean stages (Miocene) were yet more ancient. Their deposits are so widely distributed on existing lands and so much deformed and eroded that their parent waters had little resemblance to the seas of to-day.

The Quaternary Caspian, with whose shorelines and deposits we are concerned, is more modern than the latest of the seas above named. It does not seem to have been the immediate successor of the expanded Tertiary seas, for although Neumayr thought that there had been a progressive diminution of water area from Sarmatian times, not interrupted by expansion even during the glacial period (1875, 32), Andrussof says that at the end of the Tertiary the Caspian was probably lower than at present (1888, 113). Our observations confirm the latter view. There must have been indeed a considerable period of late Tertiary or early Quaternary time when the Caspian had a lower level than now, for not only the high-level Quaternary shorelines, but even the present Caspian shorelines, contour around the eroded ridges of the deformed (Tertiary) Aralo-Caspian strata at Baku. The low-water epoch between the Tertiary and Quaternary periods of Caspian expansion must have endured for a much longer measure of time than that of the Quaternary high-water stage and the present mid-water stage, taken together; for the erosion that the deformed (Tertiary) Aralo-Caspian strata suffered before the Quaternary Caspian rose upon them at Baku is hundreds of times greater than the sum of the erosions recorded in the Quaternary strands, and thousands of times greater than the erosion that the strands have suffered since the waters retired from them. It is also important to note that the historic oscillations of the Caspian are all short-lived events, and that their order and rate of change can not be safely used to determine the time since the high-level Quaternary shorelines were occupied.

The Quaternary Caspian appears to have been confluent with the Aral on the east, as will be more fully stated farther on; hence the term Aralo-Caspian has been applied to this expansion of the sea as well as to that of late Tertiary time; and it is not always easy to understand which sea is meant when this ambiguous name is employed. The Quaternary Caspian was also confluent with the Black Sea, for its strands are hundreds of feet above the existing water level, while the pass between the two seas in the Manych depression north of the Caucasus range is only 26 feet over the Black Sea, and 112 feet over the Caspian. It is indeed eminently possible that the confluence of the Caspian and Black seas may have taken place at the time when the Bosphorus was a normal river; hence our passing sight of this beautiful water passage was of peculiar interest in connection with our later observations farther east.