

stopped for a day, the headlands to the west and east showed no elevated sea-cut benches, but they were both well cliffed with respect to the present shoreline; a low foreland, from 300 to 600 feet wide, stretched in front of the western cliff, as in fig. 12. Whether the foreland was a slightly elevated wave-cut bench, or simply a broadened wave-built beach, I could not determine, as it was seen only from the steamer; but in either case its attitude is inconsistent with any strong recent movement of

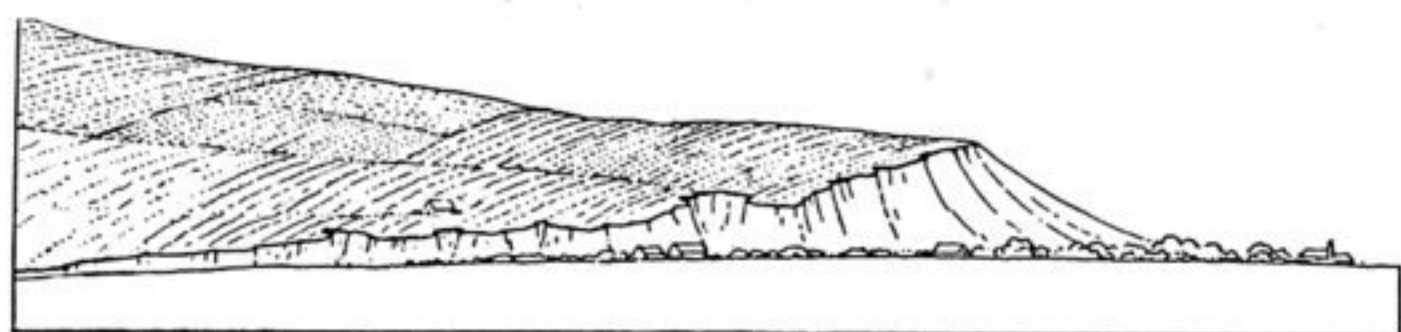


Fig. 12.—Sketch of Headland and Foreland, west of Samsun, south coast of Black Sea, looking west.

depression or elevation. Further indication of modern coastal stability in this district is seen in the large deltas of the Kyzil Irmak and Yeshil Irmak (the Halys and Iris rivers of ancient times), 20 miles west and east of Samsun.

Stieler's Hand-Atlas makes the radius of these deltas 12 or 15 miles, although the Yeshil, the smaller of the two rivers, has a drainage basin of less area than the Sakaria, where no delta is shown. A heavy rain fell while we lay in the roadstead of Samsun, and a stream east of the city spread its yellow flood gradually farther and farther from the shore. When the discolored water reached the steamer, half a mile from land, it still formed so thin a film that the oars of passing boats disclosed the blue water beneath. We steamed eastward past the delta of the Yeshil about sunset. It is an extensive plain, hardly above sea level, in strong contrast to the bold coast that we had seen earlier.

When we reached Trebizonde, near the southeastern corner of the sea, the profile of the sloping spur next east of the harbor exhibited three well-defined benches, outlined in fig. 13, which we estimated to stand 20, 100, and 250 feet

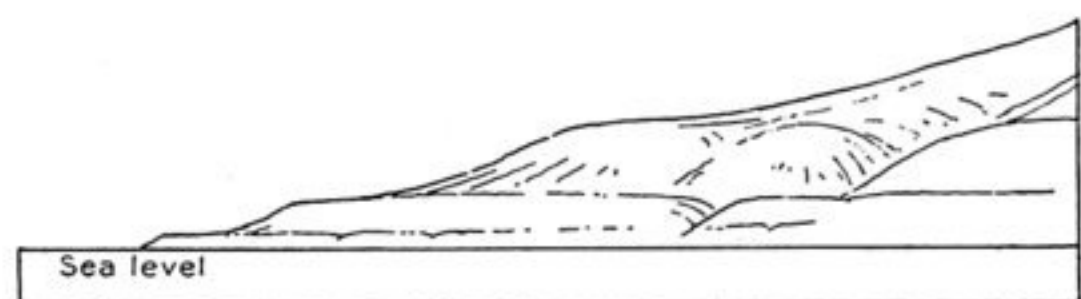


Fig. 13.—Profile of Elevated Shorelines east of Trebizonde, south coast of Black Sea, looking east.

above sea level; and a small stream that passed through the city flowed in a narrow, steep-sided gorge. Thus there seems to be indication of a modern depression of 160 feet at the Bosphorus, of no significant modern movement at Samsun, and of a modern elevation of from 100 to 250 feet at Trebi-

zonde. But somewhat farther northeast, at Batum, there was again indication of stability rather than of elevation. No benches were seen there on the hillsides, but the Choruk-Su (river), of drainage area similar to that of the Yeshil, has a well-formed gravel delta that stretches several miles forward from the end of its steep-sided valley through the mainland hills. The absence of elevated shorelines here makes it hazardous to extrapolate, towards the Manych depression and the Caspian, the indications of recent tilting that we found on the south coast.

A few words may be said on the possible eastward extension of the uplifted peneplain in which the Bosphorus trench is cut. The south coast of the Black Sea is submountainous. The valleys that we saw were rather sharply incised in uplands that sloped with moderate irregularity from higher hills or mountains in the background toward the cliffs of the shoreline. It seemed plausible to associate