

diated valley-sides, is graded, and thus covered more or less deeply with soil. Eastern Persia, however, is so arid that the ordinary state of affairs is reversed. All the mountains, whether young or mature, are characterized by nakedness. In the mountains between Neh and Sistan, for instance, which are now passing from youth to maturity, the aridity is so great that the growth of plants is prevented, and free play is allowed to the activity of the wind. The result is that the hills are almost absolutely free from soil and present a remarkable degree of roughness. On one small mountain near Aliabad, for instance, the highly tilted shale of which it is composed stands entirely naked, and even the cracks between the fragments are free from bits of soil. In structure, although not in color or texture, the mountain suggests a great mass of small quartz crystals tied loosely into enormous bundles, with the points up. Another good example of the influence of aridity is found in the neighborhood of Birjand. Here the mountains are composed of dark volcanic rocks, and their main outlines are not sharp and steep in outline like those among the regions of stratified rock to the south, which have just been described. They lie rather in long ridges with rolling crests, rising to a nearly even height, but yet with considerable variation. The sides rise with a steep but by no means abrupt slope, and the drainage is completely established and seems to have become subsequent. In a well-watered country such mountains would be wholly covered with soil and vegetation, and their rounded outlines and graded slopes would leave no doubt that they were in the stage of maturity. In the arid region of Birjand, on the other hand, but few of the slopes are graded, vegetation is very rare, naked rock is as prominent as soil, and many of the small valleys have precipitous sides. Everywhere the same phenomena appear. Most of the mountains are rocky and jagged, with numerous small, sharp peaks and little points; and very often a small hill, which forms but a tiny island in a plain of gravel, still retains the ruggedness and sharpness of outline of an Alpine peak. Graded slopes are not a feature of maturity in an arid climate, for the mountains may be much reduced in height, the drainage may become completely adjusted to the strata, and all the other characteristics of maturity may be developed before the graded condition makes its appearance.

*Mature basins.*—In the maturity of an arid mountain region the basins are the most important and characteristic feature. In the Persian basins the rock floors are hidden far from sight; the deposits of Tertiary age which were first laid down in them are also invisible for the most part. Only the deposits which are now in process of formation contribute largely to the geographic appearance of the country as it exists to-day. In Eastern Persia these modern deposits are in part aqueous and in part æolian. The latter vary little in texture, and consist largely of fine sand, covering the drier plains and sometimes mantling the leeward side of the hills. Their most remarkable development is at Sistan (Plate 4 and fig. 169), where the violent winds move the sand with phenomenal celerity and heap it into dunes of great height, which are to-day fast encroaching on areas of gravel and silt. The aqueous deposits, on the other hand, vary from the finest clays of lacustrine deposits, through the silts and sands of playas, to coarse gravel and boulders in the huge piedmont fans and in the mountain valleys. The basin deposits seem to occur almost invariably in one