July 8–9. Rain fell not infrequently between noon and night, for the most part from the mountain-made, overgrown cumulus or nimbus clouds, which drifted slowly eastward, their cirro-stratus cover far outreaching the main cloud mass. Many of the showers fell only on the mountains, leaving the open, inter-range depressions, such as the Alabuga and Narin valleys and the Issik Kul basin, dry and of subarid appearance. Thunder showers swept by while we were in the (western) Kugart Valley, June 30, and while we were crossing the Kugart and Oi-Kain passes, July 1 and 2; heavy rain and hail showers drifted over us at Son Kul, July 10. We wore long, black woolen waterproof cloaks (burkas) of the Caucasus, that protected us admirably while riding in the rain. The Chaar Tash range, ending eastward in the angle between the Alabuga and Narin rivers, fed a series of floating cumuli (July 6), which slowly dissolved as they drifted beyond the mountains. We saw a number of distant thunder storms over the mountains by Issik Kul. The fair-weather days on this lake were characterized by clear sky over the water and by long rows of cumuli over the snowy Kungei and Terskei Alatau to the north and south. We were troubled with high wind only on July 17, when a dry gale from the west swept over the plain by Issik Kul; and for a short time in the afternoon of August 2, when a furious dust squall from the west beset us as we rode into Semipalatinsk.

The only climatic feature which our short excursion brought clearly forth is the contrast between the mountains and the deeper valleys as to rainfall and relative aridity. As already noted in the Kopet Dagh, a difference of elevation of a few thousand feet produced a marked difference in the appearance of the surface. Vegetation was scanty in June in the deeper interior valleys or basins of the Tian Shan at elevations of 7,000 feet or less; it was abundant in the higher valleys above 8,000 feet. The cause of this contrast did not seem to reside merely in increase of rainfall with altitude, and in the protection of the inner valleys from the rain-bringing winds by the inclosing mountain barriers, but also in the direct excitement of rain-making processes on the mountain ranges and in the cessation or perhaps even the reversal of these processes in the large, open valleys. The preceding paragraph tells of several examples in which the growth of thunder-shower clouds was intimately associated with mountain ranges, thus suggesting their dependence on the ascending diurnal breezes on the mountain sides, as has often been noted elsewhere. In contrast with the mountain cloud masses was the prevailingly clear sky over the open depressions, as noted in the Alabuga and Narin valleys and over Issik Kul; and here a descending component of atmospheric movement should prevail to compensate for the ascending component where the cloud masses occur. Hence the open valleys not only receive very little summer rainfall, but they are swept over by air whose dryness has been increased by the descending component of its motion. Their descending component is not merely that by which a wind should, after crossing a range, turn downward into a basin. The descending component of this general origin must be largely increased by the local convectional circulation that is excited by the mountains. Thus the basins not only get little rainfall, but are parched by evaporation into the drying winds that settle upon them. The seasonal migration of the Kirghiz, with their herds