

unexpected result was obtained in the study of this question. The moraines were found to indicate glacial epochs so numerous that the writer was very slow to accept the conclusions that they indicated. It was not until a considerable number of glaciated valleys had been examined that credence was given to the occurrence of several glacial epochs separated by warm interglacial epochs. It thus appears that there were certainly two and probably five glacial epochs, separated by long non-glacial intervals of ordinary erosion, during which the climate was relatively warm.

AN OLDER AND A YOUNGER GLACIAL EPOCH.

The less doubtful question of two glacial epochs will be first taken up. The valleys where old moraines were found numbered over twenty, and all but three or four of them were examined up to their heads, or at least up to snow and ice. All, not even excepting the two or three small ones seen at first, show an older and a younger moraine (see Table III), although in some the distinction was but slight.

TABLE III.—*Glacial phenomena of Turkestan, showing the number of moraines in each valley visited and the glacial epoch to which each belongs.*

	Name and location of valley.	Elevation of base of lowest moraine.	Occurrence of moraines.						Elevation of foot of present moraine.
			Epoch I.	Epoch II.	Epoch III.	Epoch IV.	Epoch V.	Present VI.	
1	Nameless valley, south of Son Kul	10,300	X			X			
2	Nameless valley, northeast of Son Kul....	10,700	X			X			
3	Tuluk Su (upper), north of Son Kul	10,000	X		X	X			
4	Tuluk Su (lower), north of Son Kul	10,000	X		X	X			
5	Kashga Su, south of Issik Kul	7,400		X		X			
6	Ulakhol, south of Issik Kul.....	8,200	X			X			
*7	Jukuchak, south of Issik Kul.....	8,600	X	X	X	X	X	X	11,600
8	Jukuchak, western tributary	9,300	X		X	X	X		
*9	Yak Tash, Tian Shan plateau.....	11,200	X	X	X	X	X	X	12,600
10	Chakur Korum, Tian Shan plateau.....	11,200		X		X	X	X	12,600
11	Chakur Korum (south), branch of Kara Kul Su.	11,300				X		X	
*12	Mudirum (Als Sai), Tian Shan plateau.	10,900	X	X	X	X	(?)	X	12,900
13	Kogargun (NE. of Chatar Kul), Tian Shan plateau.	11,600	X	X	X	X	X	(?)	
14	Nameless valley, west of No. 13	11,800		X		X			
15	Terek Davan (S. side), Alai Mountains.	10,950		(?)		X			
16	Terek Davan (N. side), Alai Mountains	10,300	X	X	X	X	X		
17	Kichik Alai, Alai Mountains.....	7,900	X	(?)	X	X	X		
18	Kichik Alai (W. side), Alai Mountains.	7,500	(?)	X	X	X	X		
19	Kauk Bel, Alai Mountains.....	11,500		X	X	X			
*20	Taka, north slope of Pamir	9,700	X	X	X	X	X	X	11,500
*21	Khoja Ishken (Kok Su), Alai Mountains.	8,000	X	X	X	X	X	X	11,400
22	Bursundu, branch of No. 21, Alai Mountains.	9,500		X					
*23	Kan Su, north slope of Pamir, in Bokhara.	8,500	X	X	X	X	X	X	10,500
24	Ispairan, Alai Mountains	7,500		(?)	X	X	X		

Crosses (X) indicate moraines. Where a cross is on a line the moraine may be of either of the adjacent ages. Braces (—) indicate that though it is possible to distinguish two or more moraines they may be stages of one. The elevations are taken by aneroid, and are only approximate within five hundred feet.