

one between the first and second glacial epochs, another after the second glacial epoch. The first movement appears to have given a relative uplift to the southern range, the second to have been an uplift of the whole valley, raising its western end at least 200 feet, probably several times that amount, and causing its outlet to cut down a narrow canyon. The Kizil Su is still corradating there rapidly on rock bottom.

The first movement, it was shown, might be explained as a transverse block-tilt of the valley plain with the Alai Mountains north, on a dislocation along the Trans-Alai scarp; and one north of the Alai Mountains tilting the Alai valley down while the mountains north of the rotation axis were raised (see plate 63). This might have resulted because of the heavy load of moraines and alluvium piled in the Alai valley during the first epoch. Then, if the whole block was set in motion, it necessarily sank down on the Alai valley side, while its northern side was raised by displacement from the sinking Fergana plains. If the Alai valley had been larger, it probably would have gone through an independent set of movements; but, being a basin of small dimensions, it appears to have acted as a dead weight, an increasing load against surrounding mountain movements.

There appears to have been some deviation from this general geodynamic scheme. Midway between the two ends of the valley and by the northern edge of its steppe the Kizil Su is truncating a low spur composed of displaced Alai valley alluvial gravels with a slight dip diagonally to the valley axis. This local departure merely indicates that though the Alai Range probably moved as a whole it was at the same time (or perhaps afterwards) more or less broken up.

TENTATIVE RECONSTRUCTION OF EVENTS IN THE ALAI VALLEY.

First cycle (Pliocene).

Uncertain as to whether the valley was defined.

Second cycle (Quaternary).

Uplift of Pamir with differential block uplift of border ranges.

Alai valley defined.

Expansion of first-epoch glaciers, and piedmont ice-flows from the Trans-Alai reach all the way across the valley.

Third cycle (Quaternary).

Transverse tilting-down of the Alai Mountains and Alai valley with dislocation along the northern base of the Trans-Alai.

Expansion of second-epoch glaciers and deepening of glacial valleys with troughs narrower than those of the first.

Fourth cycle (Postglacial).

Uplift of whole region.

Cutting-down in the lower half of the valley.

Loess and sand-dunes now accumulating.

Glaciers have recently (probably during the last few hundred or a thousand years) receded between 200 and 300 feet.