

THE FERGANA BASIN.
ITS BROAD OUTLINES.

The Fergana basin lies north of the Pamirs as a deep embayment between the Alai Mountains and Tian Shan, or rather between two far-western members of the Tian Shan that branch out and nearly join again in the west to form a structural depression. Its plains, about 200 miles long and 50 miles wide, are thus nearly closed around by high mountains and connect with those of the Aralo-Caspian basin, of which it is a tributary, through a western gap only 15 miles wide, of which over 10 miles is blocked by half-buried mountains. Though it has doubtless accumulated most of its erosion products, an important portion must have escaped in the Syr Darya, through the outlet to be accumulated in the greater basin. With its border ranges the Fergana basin attains a maximum relief of 18,000 feet, while passes stand ordinarily about 13,000 feet above its lower plains of 1,000 feet elevation above sea. As an organic whole it approaches nearer the ideal type of basin than any other one considered by us. Its high mountains have responded to a varied series of glacial changes, and its nearly self-contained state has resulted in the differential crustal movements characteristic of such basins.

The Alai Mountains ranging along its southern border rise rather abruptly as seen from Marghelan. From there they appear as high snow-mantled pyramids and giant peaks with cliffs truncating broad sloping fields of crevassed snow and ice. This high crest ranges east and west behind a flanking mass of rather flat-backed mountains with but few projecting horns—a high, uplifted, outlying mass, once base-leveled, but now deeply gashed by gorges that end abruptly to open out in a fairly even line. It was shown in my report of 1903 that the Alai Range appears to have been thrice uplifted in Quaternary time.

ALAI EROSION CYCLES (BASED ON TALDIC PROFILE).

First cycle (Preglacial).

Pliocene, Alai worn to low relief and half-buried in piedmont deposits with projecting monadnocks.

Second cycle (Quaternary).

Uplifted about 1,500 feet and gashed with valleys that widened after uplift had ceased and partly refilled as the plains aggraded, raising their base-levels.

Third cycle (Quaternary).

Uplift tilting the transverse horizontal till the dissected northern side was about 3,500 feet higher than the buried southern side; valleys then alluviated again as in the second cycle.

Fourth cycle (Postglacial).

Uplift of about 100 feet with canyoning of third-cycle flood-plain still continued.

UPLIFT OF THE TIAN SHAN.

In the Bural-bas-tau of Tian Shan, northeast of the Fergana basin plains, Professor Davis found a key to the history of that side. He states:

The evenness of the plateau-like highland, all snow-covered at an estimated height of at least 12,000 or 13,000 feet, was most remarkable. . . . It must have gained its present altitude with comparative rapidity, and in geologically modern time. . . . When it still lay low, the lowland of which it was a part must have been much more extensive than the present highland; for lowlands can not be worn down on resistant crystalline rocks without the very general reduction of all neighboring and quiescent structures.