

As our proposed route led us across the main range into Persian territory, General Ussakovsky, governor of the province of Transcaspia, was good enough to advise us concerning the necessary diplomatic arrangements, and the Persian consul at Askhabad informed his government of our plans by telegraph. General Ussakovsky also instructed Colonel Kukol-Yasnopolsky, district governor of Askhabad, to arrange for our escort of three mounted native guards, or "jiggits," and detailed his secretary, Vasily Gregorievitch Yanchevetsky, to accompany us. The latter gentleman proved most helpful from his acquaintance with the country and the people. He has since then accompanied Mr. Huntington on a winter journey to Sistan, on the border between Persia and Afghanistan.

It may be well to say at the outset that we gave practically no attention to the paleontology of the formations traversed; but we found some *Echini* in the mountain-making limestones, and an *Ostrea* in the shales of the valleys. Geological descriptions of the formations noted below are given in the report by Bogdanovitch (1887). Figure 17 is based upon unpublished maps prepared by Russian topographers and kindly lent to us by the officials at Askhabad, with permission to publish our traced outlines. The original scale is 5 versts to an inch, here reduced to 10 versts to an inch. The altitudes are given on the map in feet, and are so quoted here. The unshaded areas are the ranges, anticlinal for the most part, of heavy Cretaceous limestones, whose total thickness must be 2,000 or 3,000 feet. The oblique shading represents the valleys, synclinal for the most part, of Cretaceous shales and sandstones. The unshaded area on the upper border of the map is the piedmont plain of mountain waste.

THE FIRUZA BASIN.

On the first day, May 30, we drove from Askhabad to Firuza, a village situated at an altitude of about 2,000 feet, in a picturesque valley-basin that is inclosed from the plains by a local up-faulted front range. Here amid pleasant groves of trees the Russian officers stationed at Askhabad have their summer houses, one of which was courteously placed at our disposal for the night's stop. The monoclinical front range, which rises at Mount Markou to 5,068 feet, as well as the broad anticline of the main range, whose summits exceed 9,000 feet in altitude, are trenched across by deep gorges cut by a stream which rises in the inner Serani synclinal valley. There is a terrace along the valley where it is eroded in the shales, by which an uplift at its headwaters with respect to the plains seems to be indicated, as will be understood from the following facts. At the mouth of the lower gorge (altitude about 1,300 feet), the stream has entrenched itself about 50 feet below the piedmont plain. Within the gorge, whose generally transverse course is modified by pronounced serpentine curves, the lower rock walls repeatedly steepen at their base, and so tend to cause the renewed dissection of the upper walls, whose slopes seem to have been formerly better graded. Seven miles up the stream, at Firuza, we ascended some of the hills, gaining a fine view of the synclinal basin, and noting a dissected terrace or bench, covered with coarse gravels, cobbles, and silt, here 220 feet over the stream. The increase in depth of the present valley floor beneath the earlier valley