

gravels, and now dissected by the revived streams in ravines from 300 to 500 feet deep near the mountain base, but shallowing as the graded slopes descended to the plains. The return along the road from the frontier to Askhabad, some 30 miles, we covered rapidly in carriages.

The net results of the excursion into the Kopet Dagh, in so far as they bear on the work of the expedition, are as follows: A series of changing conditions has prompted the streams to terrace their valleys at several levels. The successive changes in the behavior of the streams indicated by the terraces have probably had some recognizable effect in changing the character of the piedmont deposits; the latter changes may possibly be recognized by borings and may then be correlated with the changes in the mountain valleys. It is very probable that terraces similar to the ones that we saw occur in other parts of the range. If the valleys were examined at intervals of 30 or 40 miles all around the border of the plains on the south and east, it might be possible to connect the dates of the several terraces on the west with the history of the Quaternary Aralo-Caspian Sea, and on the east with the glacial records of the more lofty ranges. Thus successive piedmont deposits could be dated. It is evident, however, that there are many difficulties in the solution of such a problem, and that much time and patience would be required before a solution could be reached. Yet in no other way does it seem possible to decipher the recent history of the piedmont fluvial deposits.

#### THE DESERT PLAINS.

The railroad journey across the desert plains from Askhabad to Samarkand with three days stop at Old Merv, was extremely interesting, even if monotonous. The surface was absolutely plain to the eye, except for the dunes, and the dunes departed from the plain only as wind-waves at sea depart from a calm surface. Although apparently level, the plain has slope enough to give the Tejen, the Murg-ab, and the Amu rapid currents, in which these rivers carry forward a great volume of mountain waste. Mushketof (1891) describes this part of the plain as of fluvial origin. Obruchef does the same, adding that the thickness of the river-laid layers is only several fathoms (1887; 1890, 247). The rivers have great variation of volume. The population of Merv, depending entirely on the Murg-ab for irrigation, had crops abundant enough in 1891 to export some of the surplus to Russia; and in 1892 had but little more than half the ordinary yield (Tarnovski, 1895). We were fortunate enough to see the Tejen and the Murg-ab in flood. The former had overflowed its channel and spread in a thin sheet for miles over the plain. The latter would have spread but for the restraint of dikes at Merv. Some of its waters had escaped further upstream and came to the railroad, wandering across the plain among the dunes, a curious combination of too much and too little water supply. The rivers had been still higher a few weeks before our arrival, and the Tejen bridge had been carried away, as well as some of the track on the plain west of Merv, causing great delay to traffic and especially to freight transport. By the time of our arrival, June 10, a temporary foot-bridge had been built across