

journey. At the beginning, however, it allowed us to move in two parties and thus to increase the extent of the area mapped.<sup>50</sup> The same advantage was taken after reaching Ming-shui,<sup>51</sup> whence the guidance afforded by a fairly clear caravan track permitted Muhammad Yakūb to be detached towards Tāsh-bulak and Hāmi.<sup>52</sup>

Our main party now moved north-westwards, the great snowy mass of the Karlik-tāgh coming into view far away and serving to direct us when in doubt. Serious trouble was, however, still encountered, when making our way through the last barren range, an easternmost extension of the T'ien-shan, owing to want of water and the confusing configuration of its rugged valleys. It was with relief that we descended to the little village of Bai, situated on a wide gravel plateau which receives some subsoil water from the easternmost snows of the Karlik-tāgh and slopes down to the plains of Dzungaria.<sup>53</sup> Careful height observations with mercurial barometer and clinometer taken along the whole of our routes will help to throw fresh light on the morphology of the Pei-shan.

A rapid journey then carried us during the first half of October from Bai westwards to Barkul and Guchen (Ku-ch'êng-tzu) along the northern foot of the eastern T'ien-shan. The route followed permitted a closer survey being made of this portion of the great range than had been possible in 1907 from the south.<sup>54</sup> I also became acquainted with the physical conditions of a region which possesses distinct historical interest and in geographical character differs greatly from the Tārīm basin and the smaller but equally arid basins eastwards; for these valleys and plateaus of Dzungaria, favoured by a somewhat moister climate and offering abundant grazing grounds, have played an important part in the great nomadic migrations affecting the history of Asia, since the times of the Indo-Scythians and Huns.

After leaving Guchen I surveyed, near Jimasa westwards, the site of the ancient capital of this region, the Chin-man or Pei-ting of the Chinese Annals, and then proceeded south to the Turfān depression by the most direct route, difficult in places and hitherto unsurveyed. It led across the Bogdo-ula range, a rugged portion of the T'ien-shan rising to numerous snowy peaks, by a pass of over 12,000 feet and bearing perpetual snow-beds.<sup>55</sup> Lāl Singh, by following with the camels the usual caravan route and crossing further east by the easy Ku-ch'üan pass above Jam-bulak, was able to survey a portion of the range which unfavourable weather conditions had previously hidden from view.<sup>56</sup>

The first days of November saw all our parties safely reunited at Kara-khōja, an important ancient oasis in the centre of the Turfān depression, the heavy baggage having safely arrived from Su-chou and An-hsi in charge of Naik (now Jamadār) Shams Din. Surveyor Muhammad Yakūb had also rejoined me. From Hāmi he had in accordance with my instructions first revisited the oasis of Lapchuk and thence descended to the deep basin south-westwards where the waters of Hāmi terminate in the marshes of Shona-nōr, then completely dry.<sup>57</sup> His surveys there and in adjoining depressions were of interest as revealing mazes of wind-eroded Mesas and other surface features characteristic of all terminal basins, from the Lop desert to the Su-lo-ho drainage area. From here he made his way by a difficult desert route, waterless for some eight marches, to Pichan, the easternmost of the larger Turfān oases.<sup>58</sup>

A combination of geographical and archæological tasks made the Turfān district our base during the autumn and winter of 1914-15. I myself with my devoted Indian helpers, Afrāz-gul and Shams Din, was hard at work from November till the first half of February on excavations and surveys at the numerous ruined sites in the central part of the depression.<sup>59</sup> I also organized a

<sup>50</sup> See Sheet No. 42, A, B, 3, C, 3, 4, D, 4.

<sup>51</sup> Sheet No. 40, A, 1, and for preceding route portions *ibid.* B, 1, 2, C, 2, 3, D, 4.

<sup>52</sup> See Sheet No. 37, A, B, 3, C, D, 4.

<sup>53</sup> See Sheet No. 37, C, 2, 3, D, 4.

<sup>54</sup> See Sheets Nos, 37, A, B, 2; 34, A-D, 1, 2; 31, A-D, 1; 28, C, D, 1, 2.

<sup>55</sup> See Sheet No. 28, B, 1, 2, C, 1.

<sup>56</sup> See Sheet No. 31, A, B, 1, 2.

<sup>57</sup> See Sheet No. 34, A, B, 3.

<sup>58</sup> See Sheet No. 31, A-D, 3.

<sup>59</sup> See Sheet No. 28, C, D, 3; *Third Journey, G. J.*, xlviii, pp. 202 sqq.