

which Lāl Singh believed to be identical with Pk.1/75 E near Bāsh-kurghān, fixed by him more than a year earlier at the eastern end of his K'un-lun triangulation.<sup>63</sup> Thus the hoped-for junction between this and the Kuruk-tāgh section of triangulation seemed achieved.<sup>64</sup>

By December 24th, 1915, he started from this point on the northern edge of the Lop desert basin north-eastwards in order to search for a series of salt springs shown on the Russian Asiatic Trans-frontier map of 40 versts to the inch, in the unexplored eastern portion of the Kuruk-tāgh, on the basis of information collected by Colonel Kozloff in 1893 from native hunters. Abdurrahīm's expert guidance enabled Lāl Singh to reach their line on wholly unsurveyed ground.<sup>65</sup> Not satisfied with this he pushed his way to the north-east across unknown ground devoid of even the scantiest vegetation, until the complete exhaustion of the fuel store, needed for melting his ice, forced him to turn again to the north-west from beyond longitude 91°. <sup>66</sup> After a number of marches to the north he picked up an old desert track once used by hunters of wild camels from Hāmi, before certain salt springs had dried up, and followed it down to the salt marsh that forms the deepest part of the Turfān basin. He then carefully surveyed this terminal marsh moving along the southern shore and taking observations at different points with the mercurial barometer.<sup>67</sup> These have made it possible to determine its depression below sea-level with greater accuracy than before as close to 1000 feet at the deepest point.

On his return from this long desert expedition which for the hardships faced can scarcely have been surpassed even in the annals of the Survey of India, Lāl Singh allowed himself but a few days' rest at our Kara-khōja base, and by February 4th set out afresh for the Kuruk-tāgh. The main task I had in view was the extension of the triangulation from the Singer base westwards to the foot of the T'ien-shan near Korla. In addition as much as possible of hitherto unsurveyed ground in the western part of the Kuruk-tāgh was to be visited. Hence Lāl Singh's route to Singer led this time through the south-western end of the Turfān basin to the gorge of Su-bāshi and from the station of Ūjme-dong near its top to the south-east.<sup>68</sup>

The severest cold had now passed; also the Kuruk-tāgh to the west of Singer proved less arid. But the dust-haze raised by the incipient season of sand-storms and in parts the very rugged configuration of the hill ranges proved very serious obstacles to triangulation. Hence Lāl Singh's work which from Azghan-bulak on the Singer-Tikenlik route to where he regained his own track of 1907 near the Eljigan-dawān lay over wholly unsurveyed ground,<sup>69</sup> was not completed till our reunion at Korla in the beginning of April.

On February 6, 1915, I sent off Afrāz-gul Khan from Kara-khōja to the Lop desert for supplementary surveys in the easternmost portion of the once occupied Lou-lan region and along the dried-up ancient sea-bed to the east and south of it. I myself, after dispatching my large convoy of antiquities to Kāshgar and making a detailed survey of the important site of Yār-khoto, the earliest capital of Turfān, set out for the Kuruk-tāgh due southwards by February 16th. Muhammad Yakūb was left behind to complete the one-inch survey of the central portion of the district.

<sup>63</sup> See the intersected peak marked with height of 13170 feet, in Sheet No. 30. D. 2.

<sup>64</sup> In Major K. Mason's notes (see below Appendix A), on the triangulation executed by R. B. Lāl Singh, para. 2, a full explanation has been given of the reasons, derived from a re-examination of the computation of the work both in the K'un-lun and Kuruk-tāgh sections, which make it highly probable that the identification of the point Pk. 1/75 E was faulty. There an account will also be found of the circumstances which previous to that re-examination had led to some of Lāl Singh's triangulated stations and points, particularly in the northern or Kuruk-tāgh section, being shown in the published sheets, Nos. 25, 29, with values adjusted on the assumption of that distant connection between the Āstin-bulak

base and Pk. 1/75 E being right.

The coordinates of stations and points in both sections, as correctly derived from the observations independent of that connection, are shown in the *List of Latitudes, Longitudes, etc.*, of Appendix A. There the values, wrongly adjusted owing to the supposed connection, are also given to aid identification of the points on the published map sheets.

<sup>65</sup> For the line of these springs from Yetim-bulak northward, but rarely visited by hunters of wild camels from Deghar and Singer, see Sheet No. 32. A. 1-3.

<sup>66</sup> See Sheet No. 32. A. 1, B. 1, 2, C. 1.

<sup>67</sup> See Sheet No. 28. C, D. 3.

<sup>68</sup> See Sheets Nos. 28. A. 3, 4; 29. A, B. 1, 2.

<sup>69</sup> See Sheets Nos. 29. A, B. 2; 25. A. 1, B-D. 2