

of high spurs eastwards offered for the survey of a very imperfectly known portion of the range overlooking the westernmost affluents of the Kara-kāsh river.

Rām Singh then crossed that range to the south by the Kiliān pass (17,910 feet), regularly used by traders to Ladāk but at that season still impracticable for caravans, and ascended the Kara-kāsh valley to its junction with the well-known Kara-koram route.<sup>8</sup> Here he secured Kirghiz guides to the Hindu-tāsh-dawān, which had passed out of use for many years and had not been crossed by any known traveller except the ill-fated Dr. Adolf Schlagintweit in 1862. The passage (17,750 feet) was successfully accomplished in the face of great difficulties, including the descent over a large and much-crevassed glacier on the northern side.<sup>9</sup> It brought the surveyor to the valley of Pusha, previously known only from native reports. In addition to some cultivation lower down, it proved to possess more abundant alpine grazing than is found elsewhere in these high K'un-lun valleys. An ascent to the Ak-tāsh-dawān (15,250 feet) permitted a distant view to be gained of the deep-cut Kara-kāsh valley.

It consists here and for a considerable distance lower down of a succession of narrow gorges quite impassable except in the depth of winter when a route lies up the frozen river. In order to gain Khotan, our appointed meeting place, Rām Singh had to take a difficult route to the north-east passing over a series of high spurs which fall precipitously to the Kara-kāsh river.<sup>10</sup> A number of dangerous crossings of big glacier-fed tributaries, such as the Karāz-daryā and Panāz-daryā, were necessary; but in the end the surveyor's small party arrived safely at the foot of our triangulation station of 1900 on the Ulūghat-dawān.<sup>11</sup> Thence Khotan town was gained by the route previously followed.

I myself had arrived there a few days before, on August 5th, from Kōk-yār. I had surveyed the outermost foothills of the K'un-lun with the oases of Yūl-arik, Ushak-bāshi, Kiliān, Sanju, Puski and Duwa, which lie at the debouchures of the rivers descending from the main range,<sup>12</sup> before I struck the high road by Piālma at the foot of the great gravel glacis.

The heat of the plains still precluded operations at ancient sites in the desert. Hence I was free to set out into the mountains to the south, as soon as the surveyor had had a couple of days' rest, in order to renew and extend our explorations in the Karanghu-tāgh region. Our journey as far as Nissa led necessarily by the same route as followed in 1900 in the inverse direction, a circumstance which lessened regret at the persistent dust haze now hiding all the distant snowy peaks of the main range to the south. No fresh plane-table work was done by the surveyor along this already surveyed route. But I was able to profit by renewed visits to my photo-theodolite stations of 1900 and to record on my panorama reproductions then awaiting publication topographical details within the actual horizon gathered from the hillmen acting as our guides.<sup>13</sup>

Survey work was re-started from above Nissa and pushed up without serious obstruction on the part of the local 'Tāghliks' to the head of the valley where it is closed by high snowy spurs descending straight from the main range.<sup>14</sup> Two glaciers of imposing size are here the main feeders of the Nissa river. On August 19th I ascended the larger one, to an elevation of over 16,000 feet, and ascertained that it had its source on the north-eastern slopes of the triangulated peak 3/52 M, 23,071 feet high, which, as subsequent surveys showed, forms a nodal point at the junction of two main ranges of the K'un-lun.<sup>15</sup> At the same time the survey now

<sup>8</sup> See Sheet No. 9. A. 3, 4.

<sup>9</sup> See Sheet No. 9. B. 4; for some details extracted at Khotan from Rai Rām Singh, cf. *Desert Cathay*, i. p. 174.

<sup>10</sup> Cf. Sheet No. 9. C. 3, 4.

<sup>11</sup> See above, p. 7.

<sup>12</sup> See Sheets Nos. 6. C, D. 2; 9. A-C. 2; *Desert Cathay*, i. pp. 152 sqq.

<sup>13</sup> See *Mountain Panoramas*, Panoramas III-VI

with explanatory notes on pp. 18-26, also *ibid.*, *Introductory Note*, p. vi.

<sup>14</sup> See Sheet No. 9. C, D. 1; *Desert Cathay*, i. pp. 182 sqq., with Figs. 57, 58.

<sup>15</sup> For the ascent on this glacier, called by me the Otrughul Glacier from the chief grazing ground lower down, cf. *Desert Cathay*, i. pp. 188 sqq.; also the panoramic view II and Figs. 59, 60.