

longitude further west than the latest maps had shown it.<sup>36</sup> As the scale of our plane-table sheets was not sufficiently large to record all topographical details of interest from an archæological or geographical point of view, I supplemented them by numerous sketches. The additional materials thus secured were afterwards embodied in a half-inch map of the westernmost *Limes* which in turn served for the 'Detailed Map of the Ancient Chinese Limes west of Tun-huang' reproduced in *Serindia*.<sup>37</sup>

Subsequently weeks of most fruitful archæological labour were spent by me in exploring a great hoard of ancient manuscripts and art relics discovered at the 'Caves of the Thousand Buddhas' south of Tun-huang. During this time no fresh topographical work was possible as the surveyor's impaired health demanded consideration. But when on June 24th I left An-hsi, after depositing my archæological spoils, etc., at the district headquarters, some months became available for geographical work in the western and central Nan-shan.

First an extensive ruined site was surveyed near Ch'iao-tzu between the two outermost hill ranges of the former. Then we turned into the mountains due south and mapped the high snowy chain separating the headwaters of the T'a-shih river from the elevated plateaus of Tsaidam.<sup>38</sup> Passing along the northern slopes of that chain and crossing the Su-lo-ho near the hill oasis of Ch'ang-ma, we made our way by unsurveyed routes to the famous defile of Chia-yü-kuan near Su-chou.<sup>39</sup> There we struck the highway which since the earliest historical times has been the main line of communication between China and Central Asia.

Great efforts were needed to secure needful transport and official help at Su-chou for explorations southwards in the Central Nan-shan. But by July 28th we were able to set out and after crossing the Riehthofen Range reached the high plateau, nearly 13,500 feet above sea-level, separating the valley of the Hung-shui-pa river from the wide uplands at the headwaters of the Kan-chou river.<sup>40</sup> No guidance was obtainable beyond the small gold-mining camp here encountered, nor were any humans again sighted for nearly a month. Fortunately the well-defined character of the four great ranges in which the Central Nan-shan rises towards the uplands of the Koko-nör and Khara-nör region and the open character of the great valleys between them facilitated systematic survey work.

By marches aggregating over 400 miles we managed during August to cross and survey the three northernmost ranges, all rising to snowy peaks of 18,000 feet or more, between the approximate longitudes of 98° and 100°, together with a portion of the outer spurs of the Riehthofen Range further east towards Kan-chou. In the course of these surveys, all rivers descending to the oases from Su-chou to Kan-chou, as well as the Su-lo-ho, were traced to their snow-fed headwaters. Wherever possible we travelled by routes and passes different from those taken by the Russian explorers, MM. Potanin, Obrucheff and Col. Kozloff, who had first visited parts of this mountain region.

Excellent stations for the plane-table and for photographic panoramas could be climbed above the passes, over 15,000 feet in height, by which we crossed the To-lai-shan and Alexander III ranges.<sup>41</sup> The magnificent glacier-clad range which divides the headwaters of the Su-lo-ho from

<sup>36</sup> For Nan-hu and the route to it, see Sheets Nos. 38. B. 4; 39. A. 1; for its geographical and historical aspects cf. *Serindia*, Chap. xv. sec. i-v.

The topographical results of the exploration of the *Limes* line and the adjoining areas west of Tun-huang are shown by Sheets Nos. 38. A, B. 4; 35. C, D. 4. Detailed observations on the configuration of the ground traversed by the *Limes*, on the ancient beds of the Su-lo-ho, on the water levels in its riverine marshes, etc., are recorded and discussed in Chapters XVII-XIX of *Serindia* which deal with the exploration of these Limes sections. For a general account of the work here and the trying conditions in which it was effected, see *Desert Cathay*, ii. pp. 92-158.

<sup>37</sup> See *Serindia*, iii. Plan 33, on the scale of 3 miles to 1 inch.

<sup>38</sup> See Sheet No. 40. A. 4 for Ch'iao-tzu, and No. 39. D. 1; 41. A. 1 for the high open valleys at the head of the T'a-shih R. drainage; *Desert Cathay*, ii. pp. 242 sqq.

<sup>39</sup> See Sheets Nos. 41. A-D. 1; 43. A. 1; *Desert Cathay*, ii. pp. 265 sqq.

<sup>40</sup> See Sheet No. 43. B. 2, 3; *Desert Cathay*, ii. pp. 296 sqq. Fig. 235.

<sup>41</sup> See Sheet No. 43. A. 2, 3; *Desert Cathay*, ii. pp. 311 sqq. with Panorama x taken above the Huo-ning-to pass on the To-lai-shan Range.