

several days' start of the main party it was hoped that we might be able to discover some alternative route by which that line of road might be shortened and difficulties avoided. The delay of the Hadji Turrah Sahib, the Yárkand Envoy, in Constantinople made it necessary for the advanced party to halt at Leh until authentic news should arrive of his departure. Authority to advance was not received until we had been there for more than a fortnight, and we left it finally on the 12th September with orders to join the main party at Sháhídúla on the 20th October.

This unfortunate though unavoidable delay not only deprived us of so much time for prosecuting geographical investigation, but postponed our departure to so late a season that inclement weather proved a serious hindrance to our advance, and a still greater impediment to me in carrying out the programme I had laid down for myself.

As the best arrangement I could make, one Pundit with an assistant was left at Leh to proceed with the head-quarters camp; the other one with a better instructed assistant, capable if necessary of doing independent work, was to accompany our own party, and in the probable event of our separation was to be attached to Captain Biddulph, the assistant being attached to Dr. Stoliczka. Abdul Subhán, the Native Surveyor, or "Múnshi" as he is generally called, was to accompany me as recorder and general assistant, and to be sent out with the plane-table should opportunity occur.

It might have been expected that the presence of such a large party would have facilitated arrangements for carrying on work; but the exact contrary was the case, as the demands on the limited resources of the country were so great that it was found impossible to send out any detached parties, the Native Surveyors were therefore obliged to accompany the main camps, to march when they marched, and halt when they halted; and as the marches are arranged for the convenience of travellers and not of Pundits, some of them were found uncommonly stiff and difficult to get through before dark. As the Pundits were in pairs a great part of the way and thus able to divide the work, the ground was got over with a fair amount of accuracy: and checked and corrected by the latitude observations taken both by themselves and myself on the outward and return journeys, the routes are certainly laid down with an amount of accuracy not hitherto attained.

I should explain that in making my plans I was guided by the peculiar nature of the survey work generally done by these natives. This consists of a traverse survey, the angles of which are measured with a prismatic compass and the distances determined by the number of Pundits' paces. These paces have a slightly different unit of length, which is generally determined at the close of operations by comparing the total amount of northing or southing as shewn by the traverse, with the true corresponding distance as determined by the difference of latitude between the starting and closing points. The Pundits are all able to take latitude observations with a sextant and are instructed to do so wherever opportunity occurs. It is obvious that the accuracy of the survey depends upon their being able to keep up a continuous measure of the road; any break in it would ruin the work. Hence the necessity, if possible, of their working in couples, so that they may relieve each other in the pacing, especially where, as in the present case, they were obliged to accompany the large camps and could not select their own halting places. The days were getting short, and if darkness once overtook a man before he had concluded his work, there was every probability of his whole survey being spoiled.

Having thus arranged for the two main lines of road to be laid down with considerable accuracy, I was free to devote myself to what I considered a very important matter, *viz.*, the fixing accurately the correct positions of certain points on the line of march. I wished to do this either by triangulation in continuation of the Great Trigonometrical Survey system of triangles, or by running with the small theodolite a very careful traverse of the road. With the Munshi's help I trusted to be able to carry this traverse up to Sháhídúla, a point whose position it was very important to determine with accuracy. I also hoped occasionally to place myself in position on the plane-table by means of certain trigonometrical points which were fixed years ago by the Survey Department in advance of the accurate detailed survey. Many of these points are in the main Kárákorum and Kuen Luen ranges; some of them in the heart of the *terra incognita*