

seems to merit the attention of students of Chinese history. To the south-west of Kuling stands a ruined tower, commonly known as the Broken Pagoda, belonging to the Temple of the Heavenly Pond. This pagoda was built during the Sung dynasty (960-1280 A.D.). Its present condition is due largely to its having been plundered by the T'ai Ping rebels. Ancient stone buildings of this type are apparently rare in China, and its architectural style is not that usually associated with pagodas.

The second example exhibits even greater divergences from "typical" Chinese architecture. This is the "Drum Tower," Taipingkung, on the plains north of Kuling. The site of this temple has a history running back beyond the ninth century A.D. The buildings were destroyed during the Mongol dynasty (*circa* 1350), but in later years Taipingkung again became important. During the reign of the Ming Emperor, Chia Ching (1522-66), disputes between the neighbouring provinces were settled here. It is suggested that this fact gave the temple its name, which means "Palace of Supreme Peace." Two towers only remain, one of which is illustrated opposite. They are approximately 40 feet high; each has an exterior staircase, and is loopholed. The apparently alien elements in the architecture of the Drum Tower seem to deserve study.

KISHEN SINGH AND THE INDIAN EXPLORERS

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PANDIT KISHEN SINGH, or Krishna ("A-K" of the Survey Records), the last survivor of the old Indian explorers, died in February 1921, and his death marks the close of a romantic chapter of the Survey of India and of Asiatic exploration. The occasion seems a fitting one to place on record a brief review of his services to geography and to summarize shortly the advance of knowledge gained by him and his contemporaries.

Born in Milam, in district Kumaon, in the early 'forties of last century, he came from a family respected and esteemed and one which has since added more to our knowledge of the geography of Asia than any other. His father, Devi (or Deb) Singh, and his uncle, Bir Singh, both sons of Dhamu, had been responsible for the rescue of Moorcroft and Hearsey, when, under the assumed names of Mayapuri and Hargiri and disguised as fakirs, they visited the Hundes and Gartok in 1812. The two adventurers had been taken prisoners by the Tibetans and detained at Daba Dzong, some 80 miles north-west of Lake Manasarowar, from which plight they were released by the interposition and on the security of Devi and Bir Singh. Two certificates signed by Moorcroft and Hearsey are extant, dated "Northern foot of the Himachal Mountains near Daba

in Chinese Tartary, August 25th 1812," testifying to the worth of their deliverers.

The next record of the family exists in the narrative of the Schlagintweits published after their scientific mission to High Asia in 1854-58. These travellers employed as interpreter Devi Singh's son Mani, who "had once been engaged by the Stracheys during their travels in Tibet," and Nain Singh, a relative of Mani, "a well-disposed and intelligent native." These two men afterwards became the first two "pandits" of the Survey of India.

The idea of employing selected Indians for service across the frontiers of India originated in the mind of Captain T. G. Montgomerie in 1861, towards the close of the Kashmir work. He realized that the regular survey in the mountainous borderland had nearly reached the limits of its possibilities. The murder of Adolphe de Schlagintweit at Kashgar in 1857: the unsettled conditions of the whole of Chinese Turkistan, ending in the outbreak of the Tungan rebellion in 1863: the aloofness and seclusion of Tibet: the fanaticism of the Indus valley tribes and their active hostility to Europeans: the predatory instincts of the robber states of Hunza and Nagar: these considerations impressed Montgomerie with the desirability of seeking other methods for the extension of our geographical knowledge to the regions concerned.

It should be remembered that our transfrontier maps were almost a blank. Even within the border, the survey of certain areas along the Indus had been abandoned. Europeans could not travel in these parts without certainty of detection, and the Government of India forbade such enterprises. Disobedience to these orders occurred in one recorded instance, 1865, when Mr. Johnson made his famous visit to the rebel ruler of Khotan. In view of the success of his journey he received only a gentle rebuke, but the orders were repeated discountenancing such enterprises.

Montgomerie thought that by selecting and training Indians with care, and disguising them if necessary, results of great geographical importance would be attained. On the west, from the Black Mountain area in the south to a point near Bunji in the north, the Indus was unvisited; Gilgit, Chitral, and Chilas were unexplored; Godwin-Austen's plane-table of 1861 showed the "supposed course of the Hunzay river" as flowing due east to west, "but which may have a long branch further north"; Wood's journey to Lake Victoria in 1838 was almost the sole modern source of information concerning the Pamirs. The position assigned by the Russians to Kashgar was at variance with that given by the Schlagintweits, while Montgomerie believed that the position of Yarkand as shown by the latter was 200 miles in error. Khotan had not been visited by any European since Benedict Goëz (1604). Except for the journeys of Bogle, Turner, Manning, and the Abbé Huc, Central Tibet was unknown and entirely unmapped. The position of Lhasa

was almost conjectural ; it was shrouded in mystery and romance. One point only of the Tsanpo had been roughly charted ; the main feeder of the upper Indus was denied by many geographers, and except for a few jottings from the diary of Moorcroft, from the observations of the Stracheys, the Schlagintweits, Major Alexander Cunningham, and Dr. Thomson, Western Tibet also was a land of seclusion and exclusivism.

These problems Montgomerie determined to attack, and thanks to his success the veil was lifted. His proposal received the warm support of Major (afterwards General) J. T. Walker, Superintendent of the Great Trigonometrical Survey. On 8 May 1862 he forwarded a concrete plan to the Government of India asking for Rs.1000 with which to commence the training of explorers. Men were to be carefully selected and engaged on a salary of from Rs.16 to Rs.20 per month, and money was to be advanced with which to buy medicines and merchandise. Their subsequent reward was to depend upon the value of the work accomplished. They were to choose their own disguise, should they prefer to conceal their identity,* and their instructions were to be interpreted broadly and carried out according to the circumstances in which they were placed.

It was Walker who selected the Bhotias of Milam. Nain Singh, "the Pandit," and his cousin Mani Singh (G-M), on the recommendation of Major Smyth of the Education Department, were engaged and sent to Dehra Dun. Trained first by Walker himself and afterwards by Montgomerie, they showed zeal, interest, and aptitude, rapidly learned the use of the sextant and compass, and recognized the most important stars. Towards the end of 1864 the experiment was put into practice. A first attempt to penetrate Tibet from Kumaon was unsuccessful, but the following year a second effort was made *viâ* Nepal. Here, too, difficulties were encountered, and Nain Singh, having parted with his money to a trader who promised to take him into Lhasa, was deserted by the trader and left almost penniless. The two explorers then separated and tried to get through independently. Nain Singh alone was successful. In disguise he reached Tradom on the Tsanpo and joined a caravan making its way from Ladakh to Lhasa. He reached the latter place on 10 January 1866, and after earning a scanty livelihood as a teacher of accounts he eventually returned by the same route to Tradom, whence he regained India by Lake Manasarowar. His cousin failed to penetrate Tibet and returned from Nepal, afterwards making a route traverse to Gartok and back, to recover possession of the articles deposited by Nain Singh with the caravan leader as security for money borrowed.†

* The standing orders of the Emperor of China were to the effect that "no Moghul, Hindustani, Pathan or Feringhi" should be admitted into Tibet.

† General Report of the Survey of India, 1866-67, reprinted in *Records of the Survey of India*, 1915, vol. 8, part i. In Montgomerie's report the two explorers are alluded to as brothers.

The results of this successful journey fastened the attention of the authorities on the possibilities of such enterprises. The southern trade-route had been mapped in some detail. For nearly 600 miles the course of "the great river of Tibet" had been traced, and a valuable report on it had been secured. Strong reasons had been collected for believing it to be the upper course of the Brahmaputra, a fact which was afterwards doubted but subsequently proved. Stories of goldfields had been told both in Lhasa and Gartok, a mass of information regarding places and routes in Tibet, previously entirely unknown, promised a valuable return for further efforts. The journey merited the applause of the geographers of Europe, and Nain Singh, in addition to receiving a reward from the Government of India, was awarded a gold watch by the Royal Geographical Society, a present which was unfortunately stolen from him subsequently by one of his own pupils.

As may be imagined, further proposals by Montgomerie and Walker for an extension of the work were approved by the Government of India. A third pandit, Kalian Singh, G-K,* a brother † of Nain Singh, was entertained, and preparations were made early in 1867 to explore and clear up doubtful points in the headwaters of the Sutlej, to connect the map of this area with the easternmost part of the regular survey of Ladakh completed in 1864, to investigate the controversial question of the existence of the eastern branch of the Indus, and to explore the gold-mining district reported east and north-east of Gartok.

The three pandits on this occasion assumed the guise of Bashahri traders. In some ways this was unfortunate as, unknown to them, during the previous year smallpox had been introduced into Tibet by these people, and strict orders had been issued by the Lhasa authorities against their admission. The party therefore not unnaturally met with great suspicion, and at one time it seemed certain that the enterprise must fail. With great perseverance the pandits kept on and eventually carried out the tasks allotted to them. Thokjalung, the principal gold-field, was visited; both the main upper branches of the Indus for the greater portions of their lengths were mapped; the Sutlej course was traced from Totling to Shipki; 18,000 square miles of country, founded on 850 miles of closed route survey and controlled by latitude observations at seventy-five different points, were reconnoitred and sketched;

* For obvious reasons all explorers during their employment were given pseudonyms. Generally initials alone were used, and these initials were often combined by inverting the order of the first and last letters or of the initials of the man's name; thus K'alian Sing(h) was known as G-K, Kishen Singh or K'rishna, the name under which he was entertained, became A-K, Abdul Subhan N-A, Sarat Chandra Das D-C-S, etc. In the case of a few they merely became known by titles, *i.e.* Nain Singh was always "The Pandit"; Ata Mahomed "The Mullah"; Mirza Shujah "The Mirza," etc.

† Kalian Singh is specifically called a "brother of Nain Singh and a cousin of Kishen Singh" in a document dated 1883.

the position of Gartok as found by the previous expedition was checked.*

Nain Singh required a rest after this journey ; he had been travelling and exploring under severe conditions for three years. It was therefore decided to utilize his services for the training of new explorers. Among those engaged within the next year or two was Kishen Singh, known as Krishna in the earlier documents of the Survey, the son of Devi Singh, a Milamwal and first cousin to Nain Singh.† A-K, as he was known in Tibetan exploration, was destined afterwards to attain almost greater fame than his master, the Pandit. His first exploration in 1869, during which his capabilities were tested, included a route traverse from Kathai Ghat up the Karnali *viâ* Khojarnath, thence to Rakas Tal, from which point he made his way to Milam. ‡

Meanwhile the other pandits were engaged in extending the earlier explorations of Nain Singh. The third pandit, Kalian Singh, G-K, in 1868 made a route traverse from Spiti across unknown Chumurti and Guge, the westernmost districts of Tibet, and, crossing the Indus at Tashigong, reached the holy city of Rudok, a place almost if not quite as secluded as Lhasa itself. Again posing as a Bashahri trader he attempted to reach Lhasa *viâ* the goldfields, but was stopped at Shigatse and sent back. By great good fortune he was released at Tradom and made his way back to India *viâ* Muktinath and through Nepal, effecting a useful connection and check on the first visit of Nain Singh. §

In the same year the first attempt was made to explore the Mount Everest group. The name of the explorer concerned seems to have been lost, but it appears that he penetrated the country north of the mountain and was stopped and sent back by Tibetans on the Tingri Maidan. || In 1871-72 Hari Ram (M-H), struck north from Darjeeling and reached Shigatse ; thence he traversed the Tingri Maidan, crossed the axis of the great range 60 miles west of Mount Everest by the Bhotia

* General Report, Survey of India, 1867-68, reprinted in *Records of the Survey of India*, 1915, vol. 8, part i.

† Nain Singh is sometimes spoken of as the uncle of Kishen Singh, and I am told by some of the present members of the Survey of India that this is a fact. I have consulted as many contemporary documents as possible ; I can find one reference to their relationship as cousins and frequent notices to their fathers Devi Singh and Bir Singh being brothers and the sons of Dhamu. See also note † to page 432. The first reference to Kishen Singh as the nephew of Nain Singh appears since 1900.

‡ No report of this journey was published. The route survey was incorporated in the Survey of India Transfrontier Map No. 9 (Old Series).

§ General Report, Survey of India, 1868-69, reprinted in *Records of the Survey of India*, 1915, vol. 8, part i.

|| The explorer Hari Ram, M-H, sometimes referred to as No. 9, commenced work in 1868, and it is probable that it was he who reached the Tingri Maidan in that year, since his subsequent operations were all in this area. No account of the journey was published, but the results of it were incorporated in the Survey of India Transfrontier Map No. 9 (Old Series).

Kosi defile and reached Katmandu. Turning eastwards he traced the course of the Sun Kosi for some 80 miles, and regained Darjeeling. This exploration was particularly valuable, for it gave a rough indication of the Indo-Tibetan watershed and proved that it lay north of the great peaks. A complete circuit of the Mount Everest group was made and much interesting information was gained of the country from native sources, but the explorer was so hemmed in by mountains that he never was certain that he viewed that giant peak itself.*

Though the Indian explorers of the time became collectively known as "the pandits," it must not be supposed that all were Hindus; nor was Tibet alone the object of their operations. The work accomplished by the Mohammedan explorers in the far North-West was equally valuable but has become less generally known. The same mystery did not shroud those turbulent districts; the same interest from a popular standpoint was not aroused. Nevertheless risks as great as those in Tibet were taken and results of great geographical importance were achieved.

First among these explorers was Mirza Shuja, "the Mirza," who commenced work in 1868. A native of Persia, he had as a lad served under Major Eldred Pottinger during the famous defence of Herat. Pottinger brought him to Kabul, where he was educated in English by Colin Mackenzie. His knowledge of Pushtu and Persian and the training he received in surveying rendered him a very fit person for exploratory work, and on the recommendation of Walker and Montgomerie, the Government "was pleased to sanction his entertainment for employment in the geographical operations in progress on the Kashmir frontier." Actually he was not so employed, and having returned to Kabul on leave, he became for a time tutor to the sons of Sher Ali, the Amir of Afghanistan. In 1868, however, after the temporary dethronement of his patron, he again rejoined the Survey of India, and was despatched on a long journey of exploration through northern Afghanistan and across the Pamirs to Kashgar.† In 1872-73, while on a second expedition, both he and his son-in-law were treacherously murdered while asleep, by their guides, somewhere between Maimana and Bokhara, after reaching the former place safely from Herat.

Perhaps from a geographical point of view, the most interesting of the Mohammedan explorations on the North-West were those of Ata Mahomed, "the Mullah." A well-educated native of Peshawur, versed in Arabic, he was the brother of an Indian sapper murdered in Swat in 1869. His first journey of exploration, 1873-74, from Jalalabad through Dir, Chitral, Mastuj, and by the Baroghil pass to Tashkurghan and

* General Report, Survey of India, 1871-72, reprinted in *Records of the Survey of India*, 1915, vol. 8, part i.

† General Report, Survey of India, 1869-70; *Journal of the Royal Geographical Society*, vol. 41, 1871.

Yarkand,* led to his selection for the investigation of the unknown course of the Indus. In the rôle of a mullah, in 1876 he followed the wild gorges of the Indus, tracing its course up from the plains to Bunji, after which he explored Yasin (General Report, Survey of India, 1876-77). Two years afterwards he assumed the guise of a timber merchant of Swat, penetrated and explored that country, whence he crossed the Palesar pass and traced the Kandia tributary of the Indus to its confluence with the latter river near its great southerly bend, connecting his work to that already accomplished by him (General Report, Survey of India, 1878-79). To this day our maps of this district are almost entirely dependent on his journeys.

One other Mohammedan explorer became famous further afield. Haider Shah, "the Havildar," commenced his survey career in August 1870 with a journey from Peshawur, whence he reached Faizabad by way of Dir and Chitral (General Report, Survey of India, 1870-71). He was again employed in 1872 on a route survey from Kabul to Bokhara,† but as in the case of most explorers, his third and last was his most important contribution to geography. Starting from Kabul in November 1873, he travelled to Faizabad by a new route and thence reached Kulab by Rustak and Samti. From Kulab he journeyed to Yazghulam on the Oxus between Darwaz and Roshan; ‡ thence he returned to Kulab and carried out further important route traverses, returning to Kabul on 28 December 1874. §

It is perhaps unnecessary to detail the journeys of all the explorers during this period. Some were naturally more valuable and successful than others, and covered more interesting ground. Sometimes the explorer travelled as a trader, sometimes as a mullah, or a lama counting his beads—and incidentally his paces—with his rosary as he marched. || At the end of a hundred paces the prayer-wheel was turned, the prayer—and the distance—was recorded. Within the prayer-wheel were secreted records of the pandit's observations; sometimes a small compass was hidden in the top. The explorers invariably carried medicines and drugs, and though none had taken a doctor's degree, in at least one recorded instance the successful treatment of an official's wife enabled the surprised pandit to overcome opposition, to allay suspicion, and to proceed. Sometimes expeditions failed or led to small results; the explorer was robbed or turned back; occasionally he was murdered.

* Report on Trans-Himalayan Exploration during 1873-4-5, drawn up by Captain H. Trotter, R.E., 1876.

† No account of this journey appears to have been published.

‡ This explorer's work narrowly missed a connection with that of Abdul Subhan during the Forsyth Mission (see on).

§ Report on Trans-Himalayan Explorations during 1873-4-5, drawn up by Captain H. Trotter, R.E., 1876.

|| The Tibetan rosary has 108 beads; that of the pandit explorers was made up of 100 beads for obvious reasons.

The period is one of great perseverance as the interior of Asia unfolded her hidden secrets.

From 1870 onwards these journeys were carried on in increasing numbers, and a few of the more notable ones only will now be mentioned.

Kishen Singh's work, which was almost entirely in Chinese Turkistan and Tibet, began in 1869; his journey in that year has been briefly referred to before. In 1871, with a young Tibetan and three assistants, ostensibly engaged in trade, but all trained in reconnaissance survey, he reached Shigatse, whence he journeyed northwards and reached Tengri-nor, the great lake 70 miles north of Lhasa, on 21 January 1872, and made a complete circuit of it. Shortly afterwards the party was attacked by about sixty armed and mounted robbers, who plundered them of nearly everything they possessed. Further exploration to the north was impossible, and it was only with great difficulty that Kishen Singh reached Lhasa. By pledging his instruments he had to return to Gartok, whence he reached India.*

In 1873 the Government of India despatched a mission to Yarkand under the command of Sir Douglas Forsyth. Captain H. Trotter, R.E., in charge of the survey detachment, took with him Nain Singh, Kalian Singh, Kishen Singh, a sub-surveyor Abdul Subhan, and two assistants.† Route traverses, controlled by theodolite and sextant latitudes, were made from Leh across the Lingzithang plains to Yarkand and on to Kashgar, and a variety of astronomical observations were taken at these places. Nain Singh and Kalian Singh remained at Yarkand; Kishen Singh and Abdul Subhan both proceeded to Kashgar, and with Colonel Gordon's party effected route traverses to the Pamirs and back. "The Munshi," being a Mohammedan, accompanied the party to Kala Panja, whence he was despatched to follow the course of the Oxus. He traced the great river for some 60 miles to its right-angle bend near Ishkashim, and then followed it northwards through the totally unknown districts of Shighnan and Roshan to Kala Wamar, near the confluence of the Murghab and Oxus. ‡

Kishen Singh's most valuable work on this mission was accomplished on the return journey. Detached at Yarkand, he made an accurate route traverse *via* Karghalik, Guma, Polur, and the headwaters of the Keriya river to the Pangkong lake and Tankse in Ladakh, where he closed his work on a point already fixed.§ The results of this journey proved the surprising accuracy of the traverse method adopted by Montgomerie;

* General Report, Survey of India, 1873-74; reprinted in *Records of the Survey of India*, 1915, vol. 8, part i.

† Abdul Subhan was not specially engaged as an explorer; but he is sometimes referred to in the records of trans-frontier exploration as "the Munshi."

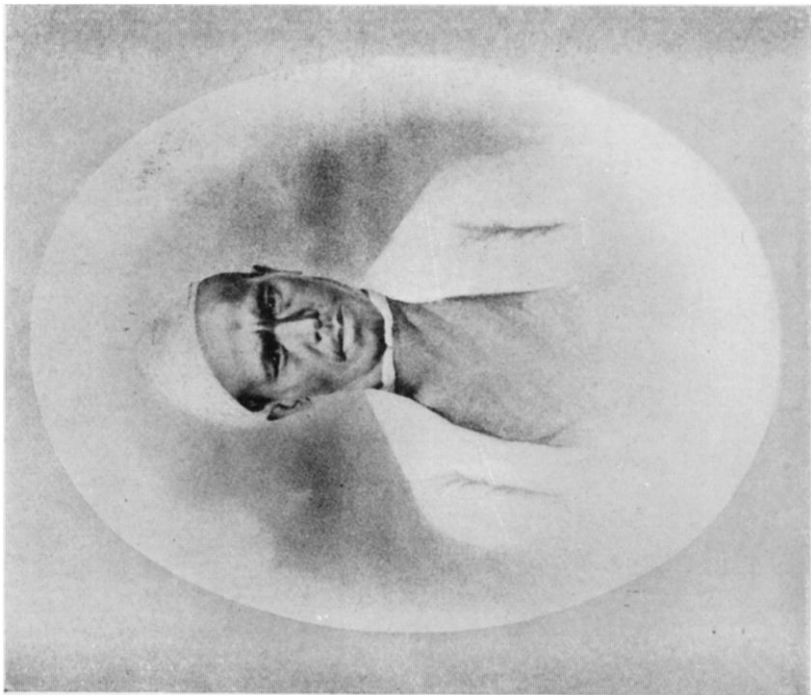
‡ 'Report of a Mission to Yarkand in 1873 under the command of Sir T. D. Forsyth' (Calcutta, 1875), chap. vii.

§ 'Account of Survey Operations in Eastern Turkistan, 1873-74,' by Captain H. Trotter; reprinted in *Records of the Survey of India*, 1915, vol. 8, part i.



KISHEN SINGH, "A-K"

[From 'Records, Survey of India,' vol. 8, Pt. I.]



NAIN SINGH, C.I.E., "PANDIT A"
[From 'Records, Survey of India,' vol. 8, Pt. 2.]



KINTHUP
[From 'Records, Survey of India,' vol. 4]

Khotan at last became correctly plotted, Johnson's position being found to be at fault; and it is noteworthy of Trotter's confidence in Kishen Singh that he accepted his traverse value for the longitude of Yarkand in preference to that obtained by chronometric differences or lunar zenith distances.* Had still more reliance been placed upon the evidence collected by him, the map of the headwaters of the Yurungkash would not have remained incorrect for nearly fifty years.

Abdul Subhan, "the Munshi," was afterwards sent on a further journey of exploration. He completely disappeared, and except for a rough note of 1884 to the effect that he is "understood to be in the services of the Amir of Kabul," I can find no further mention of him in any document.

Previous to the second Yarkand Mission of 1873, Nain Singh had been fully occupied in the training of Indian explorers. He had attained a certain amount of notoriety, and for this reason it was difficult to employ him without raising suspicion. On his return from that mission in 1874, he volunteered for fresh work in Tibet. With some difficulty he crossed the frontier disguised as a lama and succeeded in traversing the whole length of Tibet to Lhasa by the great northern road. Fear of discovery at the holy city led him to curtail his visit. His records were sent back by his assistants *via* Ladakh, and some uneasiness was being felt for his safety when he himself suddenly turned up in Assam, having made his way southwards by the eastern confines of Bhutan.

The results of this journey by the foremost pandit were most valuable, considering the fact that almost the whole observations and survey had to be done in secret. They included 1319 miles of careful route traverse, almost entirely over ground previously unexplored, controlled by 276 latitudes observed with the sextant; 497 hypsometrical observations had been taken for height; north of the Brahmaputra the existence of a vast snowy range had been discovered, while the "river of Tibet" itself had been traced a further 50 miles lower down its course than previously.†

But the journey was too much for the pandit. His health broke down almost completely towards the close of the expedition; exposure and hard work had seriously injured his eyesight. Still under fifty years of age, he became anxious to give up exploration and to retire to his native land. Trotter concludes his report of this journey with these words, "Thus having happily survived the dangers and perils of the road, it is hoped that he may spend the declining years of his life in comfort, and with a due appreciation of the liberality of the British Government."

* That Trotter's confidence was not misplaced is evidenced by the fact that Kishen Singh's traverse value for the longitude of Yarkand was $77^{\circ} 15' 55''$, while the value obtained by Sir F. De Filippi by wireless telegraphy in 1914 was $77^{\circ} 15' 46''$.

† Report on Trans-Himalayan Explorations during 1873-4-5, drawn up by Captain H. Trotter, R.E., 1876; also *Journal of the Royal Geographical Society*, 1877, vol. 47. The former is reprinted in *Records of the Survey of India*, vol. 8, part i

The efforts of his patrons were not disappointed. Nain Singh received a gold watch from the Geographical Society of Paris and the Gold Medal of the Royal Geographical Society. In the proposal for this award, Nain Singh is described as "a man who has added a greater amount of positive knowledge to the map of Asia than any individual of our time." In concurring with the application for the bestowal of a village in Rohilkand with a revenue of Rs. 1000, Lord Salisbury, Secretary of State for India, wrote to the Viceroy as follows :

"The successful travels of the Pandit, crowned as they have been recently by a most remarkable journey from Ladakh by way of Lhasa to Assam, have for many years past attracted attention not only in England but among geographers all over Europe. I concur with your Excellency in the high value you set upon these services, and I have much pleasure in expressing my approval of the manner in which you propose to recompense them."

Nain Singh was afterwards made a C.I.E. as an additional reward for his services to geography.

By the date of Nain Singh's retirement the veil had been lifted from Tibet and the surrounding countries. A glimpse had been obtained of the mysterious lands beneath. The quaint lama-ridden people and their customs became known to the world. The recent history, geography, and political conditions of the semi-independent states of Asia were revealed. The carefully compiled reports of both Montgomery and Trotter were of surpassing interest; and when it is realized that only one of all the old explorers could read or write English, and that they were enlisted on pay at Rs. 16 to 20 a month, some idea of the debt we owe to those patrons of exploration may be gauged.

Problems, however, remained still to be solved, and no break in the continuity of the work occurred on the retirement of the master. Further explorations took place in South-East Tibet and its neighbourhood by Hari Ram (M-H),* Lala (L),† Nem Singh (G-M-N), ‡ Sukh Darshan Singh (G-S-S),§ Sarat Chandra Das (D-C-S).|| On the North-West,

* Two journeys of Hari Ram have already been mentioned. For his third journey in Tibet and Nepal, 1873, see General Report, Survey of India, 1873-74. For his fourth journey, 1885, see Special Report (*per se*), 1887; on this journey Hari Ram crossed the great Himalaya 20 miles west of Mount Everest by the Pangu-la; this pass is that shown on the Everest Expedition map as the Nangbu La. For his fifth journey with his son Ganga Datt (T-G), 1892-93, see Special Report (*per se*), 1895.

† For Lala's explorations in 1875-6-7 see General Report, Survey of India, 1878-79.

‡ For Nem Singh's explorations of the Tsangpo to Gyala Sindong in 1878, see Harman's narrative in the General Report, 1878-79. No account was published of his second journey in 1879-80. For his third journey in Tibet in 1880 see 'Geographical Explorations in Tibet, 1883.'

§ For the explorations of Sukh Darsan Singh see 'Report on Geographical Explorations in Tibet,' by Captain Harman, R.E., 1882. His work was valueless.

|| See Report on Geographical Explorations in Tibet,' by Captain Harman, R.E., 1882. Lama Ugyen Gyatso (U G) accompanied this traveller.

one other explorer deserves mention, Mukhtar Shah (M-S).* The selection and training of men seems now to have been undertaken by Captain Harman, R.E.

We now come to the last of A-K's journeys; that long persevering adventure that set the seal on his labours and won him applause and honour throughout the geographical world. Leaving Darjeeling on 24 April 1878, he travelled to Lhasa and proceeded northwards towards Mongolia.† He met with desperate hardships; was robbed by bandits and deserted by one of his companions who absconded with the transport and everything the robbers had left; in spite of adversity he pushed on and reached Shachow or Tunhwang on the extreme north-west confines of the Chinese province of Kansu (visited in the same year by Prjevalsky's and Count Szechenyi's expeditions ‡), and with his one remaining faithful assistant, Chumbel, he carried out the work allotted to him. In India all trace of him was lost and hope of his return was abandoned. After nearly four years' absence he made his way back by the confines of China and reached India in 1884, to find his only son dead and his home broken up. His own robust health, subjected to so many hardships, had at last broken under the strain; and it was doubted at first whether he would survive.

He too was now forced to abandon further exploration work. While away he had been awarded the First Class Medal of the Geographical Society of Italy, and on his return he was presented with Sanad of Rai Sahadur. On his retirement in 1885 he received from the Government the grant of the village of Itarhi in Sitapur district with a gross rental of Rs. 1850, a reward he has had the great good fortune to enjoy for nearly thirty-six years.

In the summary of his statement of services I find the terse remark "Accurate, truthful, brave, and highly efficient." In 1884 there were tests that could be applied to these qualities of the explorer; I am uncertain who has entered this praise; time has proved however that his judgment was correct. More recent work leads one to believe that A-K surpassed even the great Pandit himself in the extraordinary accuracy of his sextant latitudes and of his traverse work.§ His indomitable

* The report of the explorations of M-S, *viâ* Yasin, Kala Panja in Badakshan and on the Western Pamirs, in 1878-81, was never issued to the public.

† Explorations in Great Tibet and Mongolia, by J. B. N. Hennessey, 1884; reprinted in the *Records of the Survey of India*, 1915, vol. 8, part ii.

‡ The plateaux of Tsaidam, though visited by Mongols—besides Tanguts and Tibetans—form no part of Mongolia proper. The original report states that A-K reached "Saichu in Mongolia."

§ Kishen Singh's traverse to westernmost Kansu joined up very accurately with the work of the Russian Prjevalsky. Near Bartang in the province of Kham, over a distance of 120 miles, Colonel Ryder, the present Surveyor-General of India, found that A-K's work agreed within a mile of his own. In this section of the pandit's travels he had hired himself out as a yak driver. A yak is a slow mover, often wanders from the path, and sometimes grazes as he goes. Colonel Ryder's traverse was run with a measuring-wheel. The coincidence of the two results is remarkable.

determination in the face of the greatest hardships and dangers was fully exemplified during his last expedition.

Only once perhaps in the history of the Indian explorers has such perseverance been equalled, and this appreciation may fitly conclude with a brief account of Kinthup's romantic journey down the Brahmaputra.

Doubt had been thrown from time to time on the identity of the Tsangpo of Tibet and the Brahmaputra of Assam. In 1879 Captain Harman observed the volume of water at the junction of the Dihang and the Brahmaputra. A Chinese lama was trained as an explorer and sent into Tibet. His orders were to follow the great river down its course as far as possible, and then to throw specially marked logs into it. For two years Harman had the rivers in Assam watched for the arrival of the logs; unfortunately he was taken ill and forced to leave India, and the watch was abandoned.

Four years passed. Kinthup, who had been in the service of the lama, returned and sought out the survey authorities. He told his story; how the lama had failed in his trust; how he himself had been sold into slavery; how he had worked for freedom and made his way down the Tsangpo to carry out the work allotted to his false master. He detailed the places he passed down the great river and described it in some detail to a point within some 60 miles of the plains of India. Finally he reported how, being unable to proceed further, he had thrown the logs into the river in the hope that the object of the enterprise had been achieved.*

Many years have passed since Kinthup travelled down the Tsangpo. The Survey of India believed his story; geographers in general were inclined to dismiss it as a romance. Before he died the general accuracy of his report was fully proved, minor defects being easily attributed to the fact that the explorer had to rely entirely upon his memory, since he was wholly illiterate and only spoke his native tongue. Kinthup was sought out by the Surveyor-General and called to Simla, where he received suitable reward for the great services he had rendered over thirty years previously.

WRANGEL ISLAND

THE history of the discovery of Wrangel Island is bound up with ideas of a large continent lying off the north-eastern coasts of Siberia. Rumours of islands in this region were current on the mainland from the seventeenth century. During the first half of the next century, a considerable part of this coast and the group of islands, now known as the Bear Islands, were visited by Russian travellers. It was then thought

* 'Explorations in Sikkim, Bhutan and Tibet,' by H. C. B. Tanner, 1889; reprinted in *Records of the Survey of India*, 1915, vol. 8, part ii.