Geography & History

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The Mountains of Central Tibet

The central plateau, or Chang Tang, that comprises 70 per cent of Tibet is bleak, bare, windswept, cold and inhospitable; it is also the world's highest and most extensive tableland. Nowhere does the altitude fall below 14,000ft whilst, in the north, much of the country lies above 15,000ft. Temperatures may vary by 70°F in a day, and in winter fall to minus 40°F; for 200 days in the year the average temperature is below freezing.

To the north, the 1500-mile range of the Kunlun forms a barrier between the Chang Tang and the deserts of Central Asia, whilst to the east there is an imperceptible watershed along the line of the Lhasa–Golmud road that separates the headwaters of the great rivers of China and SE Asia from the internal drainage of the plateau itself. To the south, the Gangdise and Nyainqentanglha ranges form a broad rampart between the plateau and the trench of the Indus and Tsangpo rivers, whilst to the west the plateau gradually merges into the tangled mass of peaks that make up the West Kunlun, the Pamir, the Karakoram, and the Western Himalaya. The main valleys and ranges run east and west.

There are many brackish lakes, the majority being south of the road that runs between Nacchu in the east to Rudok in the west. Permafrost results in marshy areas, and drainage is internal with rivers coming from glaciers and ending in swamps and lakes, except on the south side of the Gangdise and Nyainqentanglha ranges. Here rivers flow into the Indus or Tsangpo and their tributaries. The soil is so poor that only nomadic life can be supported and there are few centres of population. There are about 500,000 nomads with many millions of sheep, goats and horses. Camels are found in the north, with sheep and goats in the western areas. Yaks graze all over the plateau with a predominance in the east. Livestock feed for up to nine months in the year on the dead 'vegetable' left over from the short and unpredictable growing season. Fierce and frequent hailstorms destroy crops, and the lives of the inhabitants are ruled by the climate. The domestication of the yak is central to their survival and a nomadic pastoral life is normal, with each group having designated areas of summer pasture and a winter base, often a simple dwelling. Relatively short distances separate these two regions to preserve the health of livestock.[1]

The yak is perfectly adapted to the hypoxic stress of high altitude, unlike man who, despite living on the plateau for 20,000 years, can still become intolerant to chronic oxygen lack and, as a result, suffer from chronic mountain sickness or Monge's Disease (first described by Carlos Monge in 1926 in native dwellers of the South American altiplano). In some parts of

Western Tibet this condition is known as *tutek* and, to survive, individuals suffering from it need to descend to a lower altitude. High-altitude dwellers may also develop pulmonary oedema, and acute mountain sickness is known as *la-drak* ('the poison of the pass').

Open cast gold mines that provided gold leaf for the roofs and ornaments of the Potala in Lhasa and Tashilumpo in Shigatse are found in Western Tibet at Thok Jalong and further north. Coal and chromite mines are scattered across the plateau, whilst quartz of high quality is mined up to 20,000ft in the Tanggula range of Central Tibet.

Some knowledge of the Chang Tang comes from early European travellers of the 17th and 18th century, notably from Jesuit priests in search of Christian colonies; but the greatest impetus came as a result of the expansion of Russia from Europe to Central Asia and the Pacific in the late 19th century. The possibility of a southward expansion into Tibet and then to the northern slopes of the Himalaya, with possible destabilisation of the many varied races of India, meant that an understanding of the border areas of Tibet and their inhabitants was essential to the government of India. Much of the early exploration of Tibet was carried out with this in mind. The 'pundits', in particular Nain Singh and Kishen Singh, and a number of European travellers managed to make long journeys on the plateau. By the beginning of the 20th century a great many of the main ranges and some of the peaks had been identified, though their heights are still being revised. A list of some early travellers in Tibet is given at the end of this article. Their nomenclature has given rise to considerable difficulty, since Mongolian, Tibetan, Chinese, and European names have all been used over the centuries. The first 'modern' map of Tibet was published by the Royal Geographical Society in 1906.

C G Rawling, in a report on Tibet in 1905,[2, 3] considered the possibility of the invasion of India from Tibet by a force based north of the Kunlun Shan. He concluded that this would be impossible without the construction of a railway, as the death rate of pack animals on the plateau would otherwise be too high. The main obstacles to constructing a railway were the intense cold, the scarcity of fuel and fresh water, and the absence of local labour. Moreover, the Tibetan plateau would present a far greater obstacle to an invading force than the Himalaya which has many high but relatively easy passes. More recently, the Chinese, too, have considered building a railway from Golmud to Lhasa but permafrost was their main constraint. As a result, high-altitude studies on man were carried out some years ago by the Chinese on the Tanggula pass and based on the high-altitude institute at Sining in Qinghai Province, and in Beijing.

A very considerable amount of scientific information about Tibet is now available. Geological information may be obtained from two monographs published by the Royal Society: *The Geological Evolution of Tibet*[4] is an account of a geological traverse of Tibet from Kathmandu to Golmud in 1985-86. A photographic record linked to a map of the traverse is also

available in the archives of the Royal Geographical Society.[5] This work was carried out in co-operation with the Chinese Academy of Sciences. *The Tectonic Evolution of the Himalayas*[6] is another Royal Society monograph. A paper by Nigel Harris in the 1991 *Alpine Journal* reviews the geological exploration of Tibet.[7] The Chinese Academy of Sciences has published a two-volume work about Tibet, based on a symposium held in Beijing in 1980.[8] This covers a multitude of subjects, from high-altitude medicine to meteorology. In addition, a map showing all the peaks of Xinjiang–Chinghai (Tibet) was compiled by the Chinese Mountaineering Association and published by the China Cartographic Publishing House in 1989,[9] and the gazetteer *Mountains of Central Asia* was published in 1987 by the Royal Geographical Society and the Mount Everest Foundation.[10]

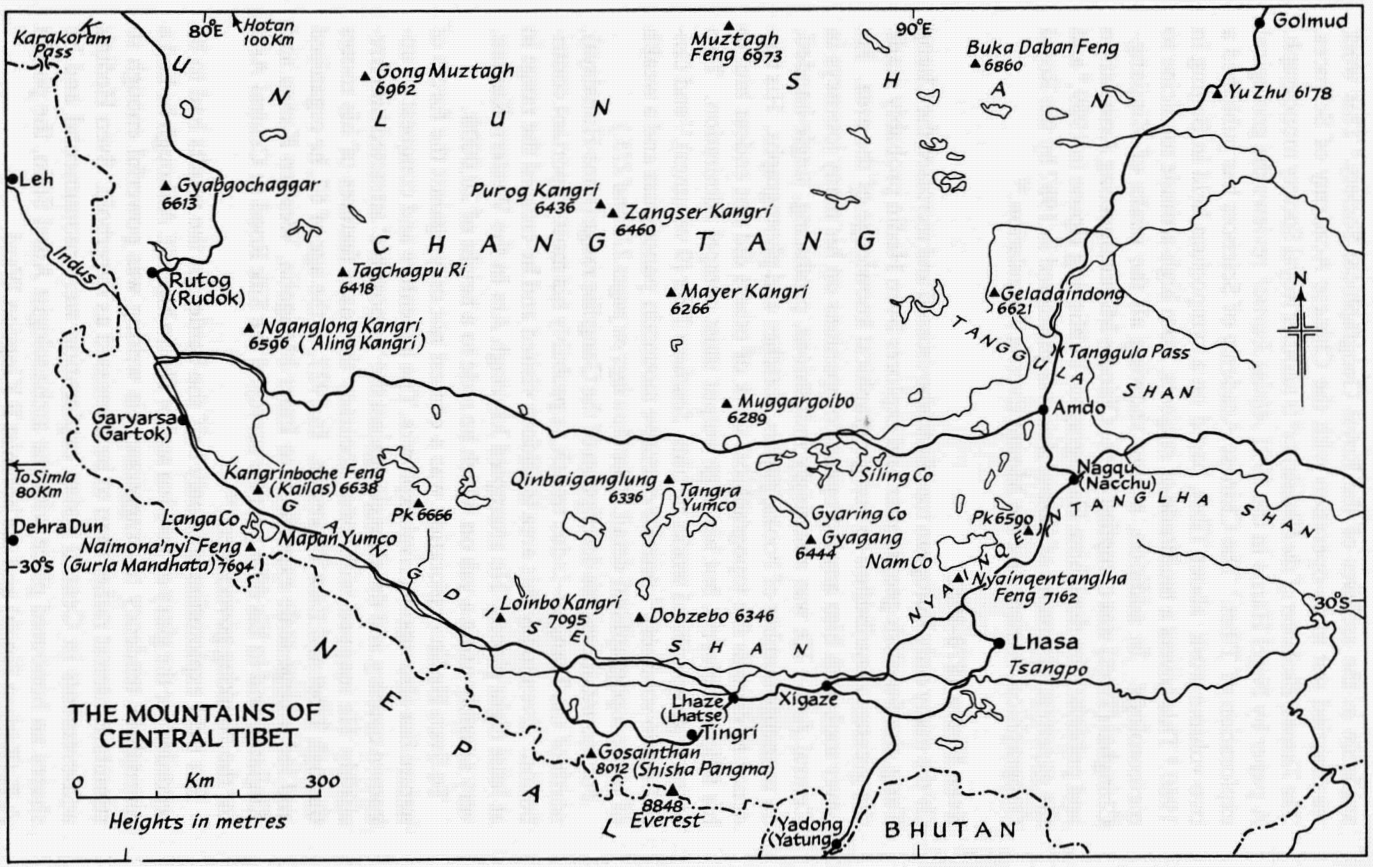
Sven Hedin 1870-1952

Of the many early European travellers who crossed and recrossed the Chang Tang, the Swedish geographer and explorer Sven Hedin probably made the greatest contribution to our geographical knowledge of the area. He never took with him any European companions on his many journeys in Central Asia. He was amazingly industrious, producing, single-handed, an immense number of books, papers, sketches and photographs. His tendency to dismiss the topographical work of others did not endear him to his fellow explorers, but his huge output must compel admiration. Two massive geographical works by him, *Southern Tibet* (9 volumes),[11] and *Central Asia* (6 volumes),[12] provide extensive mountain panoramas and a wealth of other topographical detail. (*See drawings on pages 214 and 215.*)

For mountaineers, his description of the Gangdise range (trans-Himalaya), north of the Tsangpo–Indus trench, is probably his most important contribution. Even today this area is seldom visited and he crossed the range in at least eight places. He attempted Muztagh Ata in the Western Kunlun, very sensibly using a yak on which he rode to a height of 20,000ft.

To Sven Hedin exploration was a contest not only against the forces of nature but also against rival explorers. The adventure and conquest of unknown country and the struggle against the 'impossible' attracted him irresistibly. He mapped with great accuracy the main features of his routes through Tibet and East Turkestan. In 1927, at the age of 62, he organised and led a large-scale expedition to Inner Mongolia, Western Kansu and Xinjiang, and in his 69th year he surveyed the Silk Road in Central Asia for the Nanking government.[13]

But field exploration was only half the battle, for the results had to be recorded for the glory of Sweden and of Hedin himself. Although he had a journalist's tendency to exaggerate, his writing was powerful enough to stimulate interest rather than to be dismissed as hyperbole. Sven Hedin's achievements in Central Asian exploration were monumental and he shares an honoured place with the archaeologist Aurel Stein, the pundit A-K (Kishen Singh) and the botanist F Kingdon Ward.


Karakoram Pass
80°E
Hotan 100 Km
Muztagh Feng 6973
90°E
Golmud
Buka Daban Feng 6860
Gong Muztagh 6962
KUNLUN SHAN
Yu Zhu 6178
Leh
Gyabgochaggar 6613
Purog Kangri 6436
Zangser Kangri 6460
CHANG TANG
Indus
Rutog (Rudok)
Tagchagpu Ri 6418
Mayer Kangri 6266
Geladaindong 6621
TANGGULA SHAN
Tanggula Pass
Nganglong Kangri 6596 (Aling Kangri)
N
Muggargoibo 6289
Amdo
Garyarsa (Gartok)
To Simla 80 Km
Kangrinboche Feng (Kailas) 6638
Qinbaiganglung 6336
Tangra Yumco
Siling Co
Nagqu (Nacchu)
Dehra Dun
Langa Co
Pk 6666
Gyaring Co
Pk 6590
TANGLHA SHAN
Mapan Yumco
Gyagang 6444
Nam Co
Naimona'nyi Feng (Gurla Mandhata) 7694
30°S
NYAINQENTANGLHA SHAN
Nyainqentanglha Feng 7162
Loinbo Kangri 7095
Dobzebo 6346
30°S
Lhasa
Tsangpo
Xigaze
Lhaze (Lhatse)
Tingri
THE MOUNTAINS OF CENTRAL TIBET
Gosainthan 8012 (Shisha Pangma)
0 Km 300
8848 Everest
Heights in metres
Yadong (Yatung)
BHUTAN

For the purpose of this article the mountains of the Chang Tang are divided as follows:

1 Kailas (Kangrinboche), 6656m, Gurla Mandhata (Nemonanyi), 7694m, Kubi Gangri group. This group of peaks is associated with the origins of the Tsangpo, Indus, Sutlej and Karnali rivers.
2 Gangdise, Nyainqentanglha ranges and their NE extension. Ailing Kangri ((Nganglong Kangri) group, 6450m.
3 Tanggula range.
4 Groups of peaks north of the Nacchu–Rudok road.

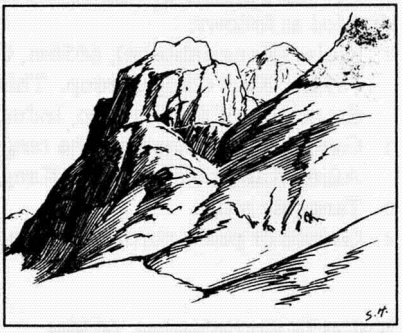
Kailas (Kangrinboche), 6656m

Mountains play an important role in Tibetan culture and Kailas is the most sacred peak in Tibet. It is situated in the western part of the Gangdise range north of the Tsangpo–Indus trench and has a characteristic and instantly recognisable cone shape, with well marked horizontal rock strata alternating with bands of ice that give it the appearance of a ladder. Hugh Ruttledge, who visited the area in 1926,[14] saw a possible route on its NE ridge. Kailas is a solitary peak, and Buddhists consider it to be Mount Mera, the centre of the universe, and the ladder down which the gods descend from heaven to earth to drink the waters of the sacred lake Manasarowar.

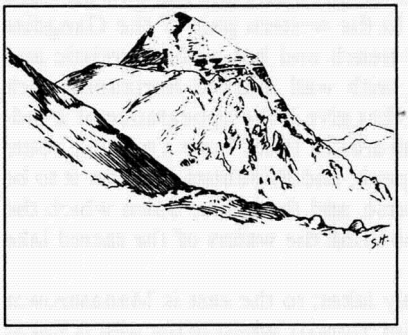
To the south of Kailas are two holy lakes; to the east is Manasarowar (Tso Rinpoche) or 'sacred lake' (Mapam Yumco); whilst to the west is Rakas Tal (Lang Nga Tso) Langa Co. They are divided by a strip of land three miles wide. Further south is a massive higher peak, Gurla Mandhata, whilst to the east of Gurla is the Kubi Kangri group. Lake Manasarowar is about 50ft higher than Rakas Tal; Ruttledge walked along the spit of land between the two lakes. He commented that the channel joining them had flowed only three times in the last 10 years.[15] He also carried out a *parikarma* or clockwise circumnavigation of Kailas, a distance of 28 miles, and met a Tibetan who had performed this feat once a day for 12 consecutive days, thus acquiring sufficient merit to last him for a lifetime.

The first Europeans to set eyes on Kailas were two Jesuit missionaries Ippolito Desideri and Manuel Freyre who, in 1715, passed the mountain *en route* for Lhasa from Kashmir and Ladakh. Desideri describes 'a mountain of excessive height and great circumference always enveloped in cloud, covered with snow and ice and most horrible, barren, steep and bitterly cold'. He further records: 'The Tibetans walk devotedly around the base of the mountain which takes several days and they believe this will bring them great indulgences.'

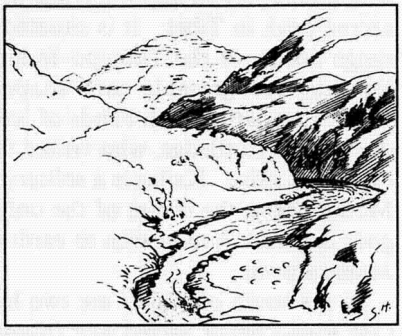
THE KAILAS FROM N



THE KAILAS FROM S.W.



THE KAILAS FROM N.E.



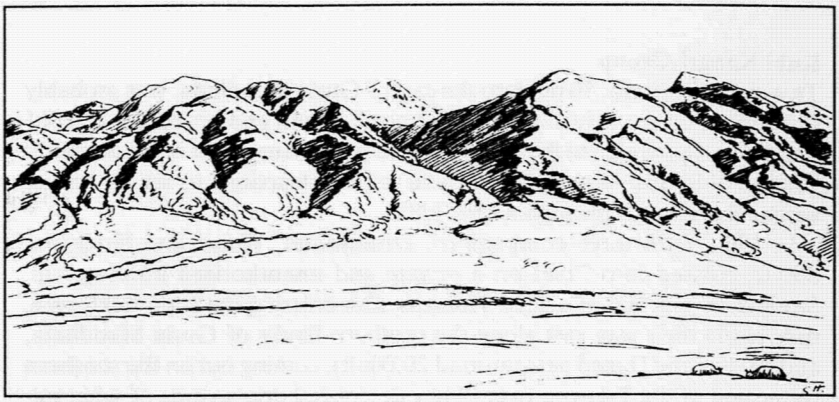
THE KAILAS FROM S.E.

In 1812 William Moorcroft became the first British traveller to cross into Tibet. Accompanied by Captain H J Hearsey, he crossed the Niti pass, visited the two holy lakes and reached Gartok, the capital of Western Tibet. The main objective of this and later journeys in Ladakh was to collect mountain ponies and to investigate the commercial possibilities of Western Tibet. Other important journeys in this region were made by Henry Strachey in 1846, by his younger brother Richard Strachey and J E Winterbottom in 1848 and by HU Smith and A S Harrison in 1863.

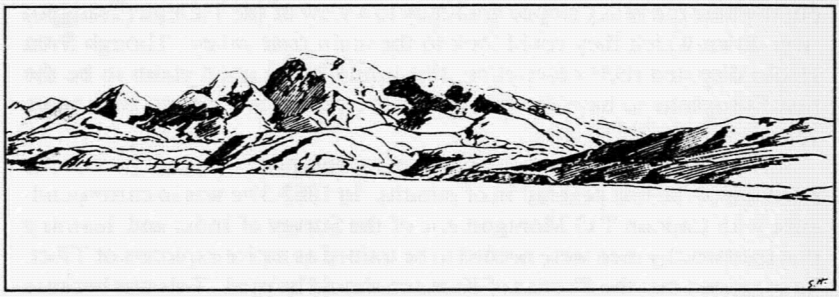
After the Younghusband Mission to Lhasa in 1904, Captain C G Rawling, with Captains E A Ryder and H Wood and Lieut F M Bailey, surveyed west along the Tsangpo valley to Gartok, a centre of trade, and lakes Rakas Tal and Manasarowar.

Sven Hedin circumnavigated Kailas in 1906 and made sketches of this peak and Gurla Mandhata.[16] He also described the Kubi Kangri group for the first time. The first ascent of Kailas is reputed to have been made, but no details are available.

In 1938 two Swiss geologists, A Heim and A Gansser visited the region and found evidence of sea floor rocks (ophiolites) that proved Tibet had once been the floor of an ancient sea, Tethys.[17]



THE GURLA-MANDHATA FROM CAMP 218, SOUTHERN SHORE OF MANASAROVAR.



GURLA-MANDHATA FROM CAMP 228, WESTERN SHORE OF RAKAS-TAL.

Gurla Mandhata (Naimona'nyi Feng), 7694m

In 1878 E C Ryall, writing in the General Report of the Survey of India, remarked that 'Gurla Mandhata, which is 3500ft higher than Kailas, is held in comparatiavely little religious esteem among Buddhists and Hindus. Owing to its immense bulk and height, 3000ft above any peak within a radius of 40 miles, it is perhaps the most impressive sight in the whole Himalaya – the celebrated mountain Nanga Parbat alone exempted.' Situated 30 miles south of the two holy lakes, Gurla is a dominant mountain. The name is of Indian origin, emanating from the Bhotias of Milam to the effect that this peak is the transformation of the body of a Raja of Benares called Mandhata who died many thousands of years ago whilst on a pilgrimage to Lake Manasarowar. (This information comes from 'Explorations in Western Tibet, by the Trans-Himalayan parties of the Indian trigonometrical survey' in *Proceedings of the RGS No 7*, 444-452, 1879.)

The first attempt on the summit was made by T G Longstaff and the Brocherel brothers in 1905.[18] The route chosen was on the W face but, after surviving a 900ft fall in an avalanche and bivouacking at 23,000ft, the party were prevented by bad snow from reaching the summit. Another attempt is thought to have been made by Tichy in 1936, but the first ascent was by a Sino-Japanese party in 1985. Eight climbers reached the summit.[19]

Kubi Kangri Group

This group of peaks, 30 miles to the east of Gurla Mandhata, was probably first visited by the British traveller Edmund Smyth and his party. In 1861 Smyth was appointed to the newly-created post of Inspector of the Kumaon Circle Public Instruction Department with instructions to set up Indian vernacular schools throughout the hills.

In 1864, with three companions, Drummond, Weber and Hodgson, Smyth crossed into Tibet on a private and unauthorised hunting trip. Stopped by a group of armed Tibetans after crossing the Lipu Lekh pass, they made their way east along the southern flanks of Gurla Mandhata, and crossed the Dakeo pass (around 20,000ft), coming out on the southern watershed of the Tsangpo river. They descended into an area of wide valleys and grassy flats with all the streams trending east, and went down to a point where the valley sloped gradually to a view of the Tsampu (Tsangpo) river down which they could look to the main river valley. Though Sven Hedin disputed their description, this group had a good claim to be the first Europeans to have discovered the source of the Tsangpo river some years before Hedin's claim.

Smyth is better remembered as the man who played a large part in the selection of the first generation of pundits. In 1862-3 he was in correspondence with Captain T G Montgomerie of the Survey of India and, learning that trustworthy men were needed to be trained as native explorers of Tibet, he suggested that the Bhotias of Kumaon should be used. This was because of their knowledge of Tibetan, and because they continually crossed the border with Tibet to trade. He was asked to select two men and he chose Nain Singh Rawat, then employed as a schoolmaster (pundit) at the government school at Milan in Johar, and his cousin, Manee or Maun Singh (G–M). They were trained at the great Trigonometrical Survey Office at Dehra Dun and Nain Singh (No 1 and 'chief pundit') became the first of the legendary secret explorers of Tibet.

In the next few years Smyth sent other recruits from the Rawat family to Montgomerie. Kalim Singh (G–K) or the 'third pundit', was Nain Singh's second cousin, whilst Kishen Singh (A–K, Krishna) became the greatest of the pundit explorers. He was apparently the son of Bir Singh who helped Moorcroft and Hearsey in 1812.[20]

Hedin visited the Kubi Kangri region in 1907 and identified, sketched and mapped the main peaks. He claimed that they were the true source of the Tsangpo river, a view disputed by Longstaff and others, though the Tsangpo does rise in that area. Hedin described the peaks from a point on a glacier moraine some miles away to the north. Looking south and going from east to west, he noted a tetrahedral-shaped mountain, Ngoma Dingding, and a further summit, Absi. Between these was the Ngoma Dingding glacier, whilst west of Absi was the Absu glacier. Further west lay the Mukchung–Simo group with two hanging glaciers, whilst further west again was the Langtachen massif, with two dome-shaped summits, and the Langtachen glacier.

Further west again are the summits of the Gave Ting and Dong Dong groups. The peak of Chemayung Dung Pu lies west again and separated from the Ganglung group by the Dakeo (Tabsi, Tadhu) pass of Smyth. The Gang Lung group continues to Gurla Mandhata, 30 miles away. Hedin gave no height for these peaks but a recent Chinese map suggests that they are around 6000m. As far as is known there have been no mountaineering parties in this potentially fascinating area.[21]

Gangdise Range: Kailas Range,[22] Trans-Himalaya (Sven Hedin)[21]
This is a labyrinth of ranges running along the N side of the Tsangpo river and separating it from the Chang Tang. It is about 250 miles long and up to 50 miles wide. At its eastern end it is continuous with the Nyainqentanglha group which runs north and east, but separated by the Khalamba pass.

The Gangdise was first visited by the pundit Nain Singh in 1867, when he crossed the western end by the Jukt La on his way to investigate the gold fields of Thok Jalong. European travellers of the 19th century crossed at each extremity but the first to make a detailed study was Sven Hedin who crossed the range in eight places. The maps that he drew are essentially route maps joined together rather than a comprehensive survey. In addition, he made many sketches of the main peaks, glaciers and valleys. The highest peak appears to be Lungpo Kangri, and Hedin described many other peaks that are a little lower.

Lungpo Kangri is towards the centre of the Gangdise and consists of a central massif, Yallak Mallak, an eastern group, Lungpo Kangri, and a western group, Cho Gang Ri.

Further west is the Surla range, which has a peak, Yeki Gangri; whilst further north and on the edge of the Chang Tang is Shakangscham. Hedin gave the height of this group as 23,688ft. Chomouchang, further south near the Tsangpo river, is another fine mountain.

Other peaks, Kanchung Kangri, Shentsa peak and Gyakharma, were named by Hedin and he stated that from the Nganglaring Tso, a lake to the north and west of the main Gangdise range, he could see 63 snow peaks. Finally Targo Kangri, in the NE part of the Gangdise, is another interesting peak.[21] There have been few mountaineering parties in this area.

Nyainqentanglha Range
This range is about 50 miles long and runs north-east from the eastern end of the Gangdise, from which it is separated by the Khalamba pass, crossed by the pundit Nain Singh. It separates the Chang Tang from the smaller tributaries of the Kyichu river on which Lhasa lies. The Kyichu is a main and important tributary of the Tsangpo which it joins south of Lhasa. At the north-eastern end of the Nyainqentanglha range is the Tumen La (Largen La), a shallow grass col crossed by a dirt road, and the pass separates the main range from a further group running north-east, in which H Hayden placed a peak, Lug Khu Dung Tsen (21,543ft).

In 1985, while taking part in the Royal Society Geotraverse of Tibet, I saw a high peak, possibly P.6590m, in this region. The Largen La was crossed by members of our party, the north side of the main range was inspected and both the south and north banks of the Nam Tso (Tengri Nor) visited.

The range has four major peaks placed in its central portion, with the Goring La, a glacier pass, at its southern end. The Nam Co, one of the largest of the lakes of the southern Chang Tang, lies on its northern side. This lake was first circumnavigated by the pundit A–K (Kishen Singh) in 1872. Two years later, in 1874, Nain Singh travelled along the north side and identified two smaller lakes to the west, Dangra Tso and Kyaring Tso.

The first Europeans to visit the Nam Tso were Gabriel Bonvalot and Prince Henri d'Orléans in 1890, whilst Dutreuil de Rhins and Fernand Grenard were detained by Tibetans at the eastern end of the lake. W W Rockhill reached Namru to the north and east of the Nam Tso in July 1891, whilst Hamilton Bower and Ata Ram, his surveyor, succeeded in getting to the Kyaring lake to the west of the Nam Tso, also in 1891.

G R Littledale crossed the Goring La, the first European to do so, in 1895 and described a peak that he named Charemaru (24,153ft). From Lhasa, Ryder in 1905 fixed a peak (P.217) at 23,258ft, the highest in the range.

Hayden, in 1922, during a geological survey of the south and east part of the Chang Tang, triangulated four main peaks. From south to north they were P.21,694ft, Lanpro-Pho (21,694ft), Nyainqentanglha (23,258ft, presumably P.217 of Ryder) and Tangh Am Cho (20,360ft). Hayden was employed by the Tibetan Government and spent several months in the region with an Alpine guide, Cosson, and a surveyor, Gujjer Singh, who had been attached to the Everest 1921 Reconnaissance expedition. Unfortunately both Hayden and Cosson were killed on the Finsteraarhorn in 1924.[23]

The main peak of the range, Nanchen Tangla (7162m) was climbed by a Japanese party from Tohuku University in 1986.

Ailing Kangri, 6598m (Nganglong Kangri)

The pundit Nain Singh first described these peaks in July 1894. He had left Leh and passed 15 miles north of Rudok and travelled east for more than 800 miles over a new line of country separated from the Tsangpo by a line of peaks, which were probably the Gangdise range.

Ailing Gangri was photographed as a distinct group by Rawling and Hargreaves on their exploration of Western Tibet in 1905, and the peak is relatively close to Rudok.

Tanggula Range[24]

This range runs east and west in the eastern part of Central Tibet and is a prominent feature. It separates the main sources of the Yangtse Kiang river to the north from the Salween to the south.

It may be divided into two sections by the Lhasa–Golmud road which crosses the range. To the west there are two large groups divided by the Migriggyangzam Tso.

The western group comprises four main peaks: Purog Kangri (6482m), Norla Kangri (6138m), Soglam Kangri (6003m) and Meje Kanggain (6242m). The group between the lake and the main road has the highest peak, Geladaindong (6621m), climbed by a Japanese party,[25] and the other peaks are: Garkangri (6513m), Garkyagdeugang (6065m), Tanggula Shan (6205m), Sedopu Kangri (6516m), and Pagsukanggain (6022m).

East of the road are Denggar (5881m), Punse Ri (5900m), Danmaju Nyi (5892m).

The Tanggula range is the boundary between the Tibetan autonomous region (Xinjiang) and Chinghai Province to the north and east.

Groups of peaks on the Chang Tang, north of the Nacchu (Naggu)–Rutog (Rudok) road

This is a vast area with many scattered groups of peaks and these are best identified by reference to the Chinese map *The Peaks of Xinjiang–Chinghai* published by the Chinese Mountaineering Association in 1989, which shows the peaks of the Tibet plateau. The most up-to-date names of peaks are also to be found on this map.

One of the highest peaks is Tagchaqpu Ri (6418m) in West Tibet, and there are a number of other groups. These include Zangser Kangri (6460m) which was climbed in 1990 by a Tibetan–Japanese party,[26] and Purug Kangri (6058m).

Gomo Ri (6058m), Dareyog (6282m) and Margan Ri (6018m) are another group in Central Tibet, together with Muggar Goibo (6289m), Yiri Puzhag (6035m), Muggai Kangqung (6224m), Kangri Bolhug (6152m) and Gyari Den (5645m) in the same region.

Some early travellers in Tibet

A De Andrade and M Marques[27]	1624
E Cacella and J Cabral[27]	1626
J Grüber and A d'Orville[27]	1661
I Desideri[28]	1714-21
O Della Penna and San Anatolia[29]	1729
Samuel Van de Putte[29]	1728-30
C Belligatti[29]	1741
G Bogle[30]	1774
S Turner[31]	1783
T Manning[30]	1811
E Huc and J Gabet[32]	1846
Nain Singh[33]	1865-75

Kalian Singh[33]	1868
Kishen Singh[33]	1872-82
Sarat Chandra Das[34]	1879-82
N M Prejevalsky[35]	1879-80
Lama U G[33]	1883
A D Carey and A Dalgleish[36, 37]	1885-87
Gabriel Bonvalot, and Henri d'Orléans[38]	1889-91
Dutreuil de Rhins and Fernand Grenard[39]	1891
Hamilton Bower and W G Thorold[40]	1891-92
W W Rockhill[41]	1891-92
G R Littledale[42]	1895-96
Sven Hedin[11, 12, 21]	1894-1908
M S Wellby and N Malcolm[43]	1896
H H P Deasy and A Pike[44]	1896
P Kozloff[45]	1899

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