

JOURNEY OF CAREY AND DALGLEISH
IN
CHINESE TURKISTAN & NORTHERN TIBET

(MR. DALGLEISH'S ITINERARY);

AND

GENERAL PREJEVALSKY

ON THE OROGRAPHY OF NORTHERN TIBET.

WITH

INTRODUCTORY REMARKS

By Mr. E. DELMAR MORGAN.

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Map, p. 86.

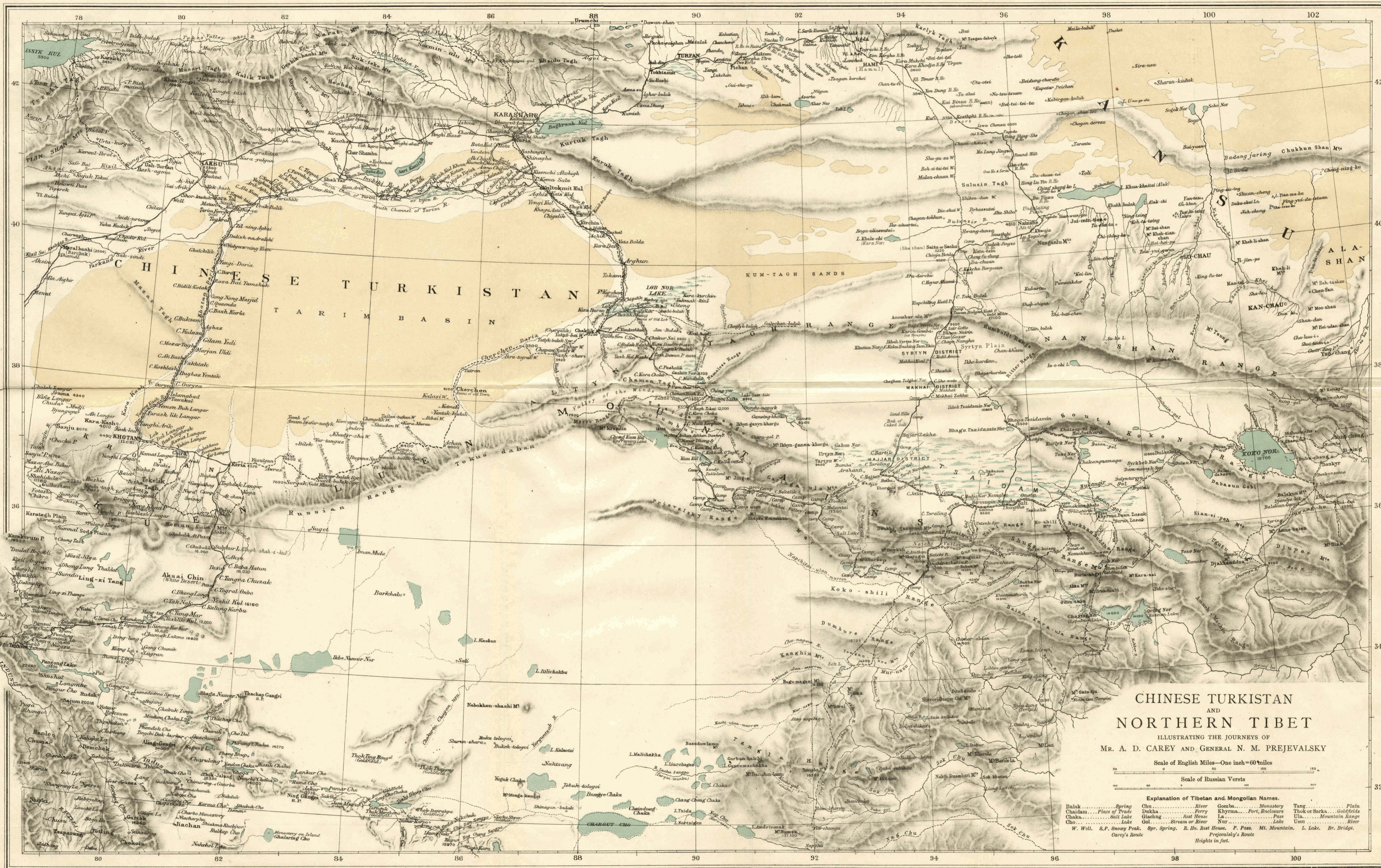
INTRODUCTORY REMARKS.

BY E. DELMAR MORGAN.

THE following translation of the late General Prejevalsky's seventh chapter of his last work and the tabulated itinerary of Mr. Dalgleish (the companion of Carey) relate to a country of which our knowledge is as yet meagre and imperfect. While all that part of Central Asia generally known as Western Turkistan, comprising the region extending from the slopes of the Pamirs westward to the shores of the Aral and the Caspian, has been visited and explored within the last ten or twenty years by many travellers, the tract lying to the east of it—that is to say Eastern Turkistan, the basin of the Tarim, Lob-nor with its swamps and deserts, and Northern Tibet—has been visited by few. The remoteness of these regions, their inaccessibility, the great trials and privations which must be endured by those who would penetrate into them, the formidable physical obstacles to be overcome, the predatory instincts of the few scattered tribes inhabiting the mountainous parts, and lastly, Chinese-Tibetan exclusiveness, have all deterred explorers and travellers from penetrating thither.

Since the publication of the English version of Prejevalsky's first book, there have been but six expeditions in the same direction; of these, three organised by the Russian Geographical Society were led by Prejevalsky himself, one was undertaken by Pundit A. K. for the Government of India, a fifth by the Austrian Count Szechényi, while that by Messrs. Carey and Dalgleish completes the list. None of these travellers except A. K. succeeded in reaching Lhasa, the goal they had set themselves to attain, and this city remains at the present day more difficult of access than it was in the last century, when Manning, the friend of Charles Lamb, gave us the first account of its wonders.

But however unsuccessful in their main object these expeditions



CHINESE TURKISTAN AND NORTHERN TIBET

ILLUSTRATING THE JOURNEYS OF
MR. A. D. CAREY AND GENERAL N. M. PREJEVSKY

Scale of English Miles—One inch=60 miles
Scale of Russian Versts

- Explanation of Tibetan and Mongolian Names.**
- Bulak Spring
 - Chu River
 - Chaidam Plain
 - Dukha Place of Trade
 - Chaka Salt Lake
 - Gol Stream or River
 - W. Wall. S.P. Snowy Peak. Spr. Spring. R. Ho. Rest House. P. Pass. Mt. Mountain. L. Lake. Br. Bridge.
 - Gomba Monastery
 - Khyrna Port, Enclosure
 - La Pass
 - Nir Lake
 - Tang Plain
 - Thok or Sarka Goldfields
 - Ula Mountain Range
 - Usu Lake

may have been, in a geographical point of view they have at all events not been unfruitful. Those of Prejevalsky in particular have filled many blanks in our maps, and, extending our knowledge over remote regions, have reduced still further the terra incognita of Central Asia.

To him, indeed, we owe the rediscovery of Lob-nor and the tracing of the Tarim to its final discharge in that waterspread. He was the first of modern travellers to visit the sources of the great Yellow River of China, and delineate with some approach to accuracy the mountainous system of the Kuen Luen where this mighty range forms the outer barrier of Northern Tibet.

I propose in the following pages giving a brief outline of his last journey as far as the point where we take it up in detail. In the autumn of 1883 his expedition, composed of twenty-one men all told, mustered at Urga, and starting thence on the 8/20 November, made their way across the Gobi by the track which he had before followed several times. For nearly a month they advanced by slow marches across the wide belt of steppe and desert which, in the meridian of 105° E. long., intervenes between Siberia and Western China. The weather was fine, as it usually is in Mongolia in the autumn, and as they went south the temperature became warmer, frost and snow being left behind. Nor did they experience the violent winds which in spring and summer are so remarkable a feature of the desert of Gobi; on the other hand, they had ample opportunities of beholding those gorgeous atmospheric phenomena at sunset observed all over the eastern hemisphere towards the close of 1883, and attributable, it is generally believed, to the volcanic eruption of Krakatoa.

Having crossed that tract of shifting sand desert known as the Galpin Gobi, lying immediately beyond the Hurku hills and forming as it were a prelude to the yet more desolate region of Alashan, they encamped on the 3/15 January, 1884, in the vicinity of the town of Din-Yuan-ing, the residence of the Prince of Alashan. Here they were among old acquaintance, for Prejevalsky had in 1871 and 1873 received hospitality from this prince, and on his third journey he had twice visited the place. On this, his fifth visit, he records the presence of a European—a German, Grezel by name, the agent of an English company—who was engaged in buying wool, chiefly camel's hair, for export viâ Tientsin, and rhubarb obtained at Sining. Here, then, in this out-of-the-way corner of the world, has European commercial enterprise gained a footing, the merchant following closely upon the footsteps of the explorer. It is interesting too to learn that the country of Alashan, which had suffered greatly from the Dungan Muhammadan insurrection, now shows signs of recovering. The formerly deserted mountains, in which wild beasts multiplied, and where forests untouched by woodman's axe grew luxuriantly, had felt the effects of a long period of peace. The deer and the antelope, scared by the sportsman's gun, no longer yielded an

easy prey, and the luxuriant forest growth was rapidly being cleared by the industrious Chinese colonist.

Having employed a week in refitting, in buying fresh camels and provisions, the expedition set out once more by their old tried route through Southern Alashan to the borders of Kan-su. On their left rose the lofty wall-like Alashan range, on their right was the plain gradually sloping from the foot of the mountains, and for some distance at all events tolerably well covered with grass, a fact attributable by the Mongols to an unusually plentiful rainfall during the preceding summer. At Shanghin-dalai, memorable for their having nearly lost their way here in June 1873, they halted for one day, adding a new bird to their collection—named, after Monsieur Kozlof, one of Prejevalsky's companions, *Accentor Koslowi*.

Leaving the high road to Lan-chau on their left, they revisited the spring of Baian-bulak, where they had hoped to have obtained astronomical observations, but were disappointed owing to the bad weather—thick clouds of dust, suspended in the air for days together, completely obscuring the sky. The path from Baian-bulak crosses a southern arm of the Tingeri shifting sands, winding over ridge and furrow. Fortunately, however, it was winter, and the frozen subsoil gave a secure footing to the camels. The wells here are dug through loess deposits to a depth of 100 to 180 feet; and it is related that when digging one of them the workmen came upon a hearth, built in the Mongol fashion of three stones, and ashes below it, buried under at least 130 feet of soil. This discovery so frightened the well-diggers that they abandoned their work; had they continued it positive evidence might have been forthcoming of the remarkable effect of the levelling process constantly at work here—for in these dry wind-swept countries the sandy marly deposits, whilst they obliterate every vestige of human labour, preserve it intact for future generations, just as the monuments now being exhumed in Upper Egypt are found to have lost none of their sharp outlines, though several thousand years have probably elapsed since they were first erected.

The southern limit of Alashan is the Nan-shan, the easternmost part of the Kuen Luen, that mighty system which, under various names and through 20 degrees of longitude, forms a bulwark to the highlands of Tibet. The exploration of the Nan-shan range was a chief feature of Prejevalsky's third expedition (1879–80), but we will now follow our traveller to the sources of the Hwang-ho, whither he proceeded after crossing the Burkhan Buddha range.

This river rises in the eastern slope of the Baian-kara-ula range, where it is known as the Altyn-gol, under which name it flows about 100 miles towards the north-east, receiving a number of small tributaries; it then crosses an extensive marshy tract upwards of 100 miles in circumference, fed by springs, and called by Mongols "Odon-tala,"

and by Chinese "Sing-su-hai," the former name signifying "Starry steppe," the latter "Starry sea"—names suggested by the numerous springs which here force their way to the surface, and appear, when seen from a height, like stars on the horizon. These springs unite their waters with the Altyn-gol, which then flows 30 miles to Lake Tsaring- (or Charing-) nor, and ten miles further on enters a second lake, Nioring- (or Oring-) nor (see supplementary note) whence it issues under the Mongol name of Khatun-gol, or Empress river (the Tangutans call it Ma-chu), and turns south and afterwards east along the southern foot of the lofty Amneh-Machin mountains. Having thus flowed upwards of 230 miles, and having been joined by a number of affluents, the Khatun-gol makes a wide elbow, turning towards the north-west, and again to the north-east to the Chinese frontier at Sining-fu, where it enters China Proper, and where for the first time, 800 miles from its sources, this river takes its Chinese name of Hwang-ho, or Yellow River, from the yellow colour of its loess-impregnated waters.

The above statement is derived from Chinese books; * let us see how Prejevalsky speaks of the same region. His expedition reached the eastern border of Odontala, known also by its Tangutan name of "Garmattin," or "Starry steppe," and found it to be tussocky marsh land, dotted with lakelets bearing evidence of having once formed the bed of an inland sea. The elevation was found to be 14,000 feet, a number of detached hills and groups of hills rising some 700 or 800 feet higher, those on the south being probably offshoots of the Baian-karula, which divides the basin of the Hwang-ho from that of the Di-chu or Upper Yang-tsze-kiang, while those on the north, rarely 500 feet above the plain, form a crescent-shaped ridge of hills known as "Akta," about 30 miles long. Near these a detached mountain, "Urundushi," rears its head 16,500 feet above sea-level. The plateau itself extends southward as far as the descent into the alpine region of the Di-chu; eastward it embraces the lakes just spoken of; while on the west it probably rises a little, dividing the sources of the Hwang-ho from the rivers of Tsaidam. The springs and brooks of Odontala unite in two principal streams, meeting in 34° 55' N. lat. and 96° 52' E. long., to form the Salomà, a name given by the Mongols to the head stream of the Hwang-ho. It is exactly here, at the meeting of the waters, that there stands a lofty hill, 700 to 800 feet above the plain, forming the angle of a ridge extending eastward to Lake Charing. On its summit an "obo" or cairn has been erected, and here yearly sacrifices are offered to the tutelary spirits of the "great" river. For this purpose an official of high rank leaves Sining with a numerous retinue of Mongol princes, or their representatives. A large concourse of Mongols and Tibetans

* In 1280 Khublai Khan despatched one of his high officers to explore the sources of the Hwang-ho. See Bretschneider's 'Mediæval Researches from Eastern Asiatic Sources,' vol. ii. p. 209.

meet them, and all together they ascend the hill. Arrived at the "obo" a prayer, written on yellow paper and signed by the Emperor of China himself, is read aloud, invoking the aid of the deities that there may be an abundance of water to satisfy the needs of millions of Chinese. Sacrifices are then offered up, the slaughtered animals, all pure white, being afterwards distributed among those present, who feast upon them.

The great lakes at the sources of the Yellow River are correctly laid down on d'Anville's atlas of China, precisely in the position assigned to them by Prejevalsky, who has merely rediscovered them and added topographical details, changing their names from "Charing" and "Oring" to "Russian" and "Expedition" lakes. Fed by the springs of Odontala—which reach them, as already said, by the Salomà river and two large streams from the north—these lakes have each a circumference of about 85 miles; their form is ellipsoidal, the longer axis of the one being from east to west, while that of the other is from north to south. Their water is perfectly sweet, the temperature varying at the end of July from 50° to 63° Fahr. Their importance to China must be enormous, regulating as they do the water supply of its northern plains. Though abundantly supplied with water, it is remarkable that, according to Prejevalsky's observations, these lakes, like many others of Inner Asia, are undergoing a constant process of diminution, traces of former shore marks having been seen at some height above the present level, while the lakelets along the shores give evidence of having been formerly united in a waterspread much larger than the present one.

The Yellow River enters Lake Charing or Expedition from the west, and issuing from its south-eastern extremity, cleaves a passage through the intervening isthmus of high land to Oring or Russian lake. From the north-east end of this latter it flows eastward as the Ma-chu of the Tibetans; then describing a wide bend, though probably less wide than that represented on maps, in order to avoid the snowy Amneh-Machin range, it bursts through the opposing chains of the Kuen Luen on its way towards China Proper. Between Lake Oring and the mouth of the Churmyn* the Hwang-ho falls 4000 feet in 270 miles, probably forming rapids and cataracts in this unexplored part of its course.

It was near here that Prejevalsky had his first hostile encounter with one of those predatory tribes the terror of peaceful caravans in this region.† The attack, though delivered at night, failed, and the discomfited Tangutans retired with the loss of several killed and wounded.

To commemorate his victory over a force vastly superior in numbers

* The mouth of the Churmyn was reached by Prejevalsky during his third expedition while exploring the Upper Hwang-ho. This was in fact his farthest point, for though his Cossacks reconnoitred 40 versts farther up the Hwang-ho, which here flows in a deep cañon 1600 feet below the level of the plateau, they could find no ford by which this river might be crossed, and the mountainous nature of the country to the south presented formidable obstacles to an advance.

† Cf. 'Report on the Explorations of A. K.,' p. 38.

to his own, and armed with guns and other offensive weapons, Prejevalsky named the river debouching into Lake Oring from the south, "Robbers' river"; he then pushed on to the Di-chu (Upper Yang-tze-kiang), and struck it at the mouth of its tributary the Kong-chiung-chu, 270 miles below the spot where he had crossed it in 1879 when following the pilgrims' road towards Lhasa. He found it here a deep and rapid river enclosed in mountains, about 120 yards wide, with water of a dirty yellow colour, and a temperature at the end of June averaging between 48° and 55° Fahr. Immediately after rain it rises three to four feet. Its general direction is from W.N.W. to E.S.E., and its channel is exceedingly tortuous. Seven days' march higher up, where the Napchitai-ulan-murren flows into it, the Di-chu divides into seven channels, and is fordable at low water. This ford, known by the name of Chamar-abdan, is the only one in this part of the river; the level of the Di-chu at the mouth of the Kong-chiung-chu is 13,100 feet above the sea, but at Chamar Abdan, where the caravan track crosses it, the height is 14,600 feet, a difference in level of 1500 feet in about 270 miles, exclusive of windings, or 5·5 feet per mile. 330 miles lower, at Batang, where this river is known as the Kin-sha-kiang, its height is 8150 feet, a fall of nearly 5000 feet, or 15·15 feet per mile excluding the windings.

Except at the fords the Di-chu can only be crossed in boats—these are of the most primitive construction—merely yak skins stretched over a clumsy wooden framework. Men and small animals, such as sheep, may be ferried across in this way, while horses and yaks generally swim. With camels it would be hopeless to attempt the passage, for, even if they succeeded in reaching the opposite bank, they would be unfit for travel in the mountainous country beyond. Prejevalsky, therefore, decided on turning back and exploring more fully than he had yet done the watershed lying between the Di-chu and the sources of the Hwang-ho (see supplementary note, p. 86).

He found the valleys 13,000 to 13,500 feet, and the passes ranging up to 16,000 feet. The climate is humid and chilly, continual rain, varied by hail, snow and thunderstorms converting mountain and valley into a succession of impassable swamps. Very different is the region bordering on Tsaidam, where the excess of humidity is absorbed by the dry dust-laden winds of the plains, and where lakes and rivers disappear, leaving behind them layers of salt often several feet thick.

With his return to Tsaidam began what Prejevalsky terms the second period of his expedition. He had explored the north-eastern angle of Tibet, and now turned north-west in order to reconnoitre a road said by the Mongols to have been formerly used by merchants from Sining to Lob-nor. This led along the southern border of Tsaidam, at the foot of mountains buttressing the high lands of Tibet.

Tsaidam,* a depression forming in ages past the bed of a great lake,

* The Saithang of A. K.'s report and map.

and now lying 9000 feet above sea-level, extends from east to west for 270 miles, and from north to south for 70 miles, while for administrative purposes it comprises a much wider extent of country. The whole of this expanse is a *salina*, or salt swamp, receiving the drainage of the streams from the bordering ranges. Most of these disappear in the ground on issuing from the mountains, but three of the more important, the Baian-gol,* the Naidjin-gol (the Naichi of Dalgleish's itinerary), and the Utu-murren (Dalgleish's Otto-Mairin-gol), flow for a considerable distance into the salina, and according to the latest native information, unite their waters there in one large lake—Dabasun-nor, which increases and diminishes in size according to the season of the year, while in winter its salinity prevents its freezing.

Such scanty vegetation as Tsaidam possesses is due to the subterranean water forcing itself to the surface and nourishing tamarisk and other allied plants along a belt some ten to twelve miles wide at the foot of the mountains; beyond this are bare impassable salt-marshes.

Darwin, in his 'Journal of the Voyage of the *Beagle*,'† finds a remarkable similarity between the salt lakes in Siberia and Patagonia; the comparison might also hold good for the region in question, though Prejevalsky does not mention crustacea, such as those Darwin describes crawling among the crystals of sulphate of soda or lime.

Hiring a Mongol guide Prejevalsky set out for the Naidjin-gol, which he reached after nine days' march through a country dreary in the extreme—a brown expanse of plain, only occasionally relieved by vegetation, and varied by tracts of pure white salt, nearly all the springs being brackish. The tracks are well beaten, but the number of side paths leading to the nomad encampments make it impossible to keep in the right road without a guide. No inhabitants could be seen, they having lately fled for fear of robbers, who usually select the autumn for their depredations. The soil here was clay as hard as stone.

From the Naidjin-gol where Prejevalsky observed the migrations of birds, he continued his journey to the Utu-murren and thence to Gass, where he established a depot before starting on his winter excursion, his chief object being the elucidation of the orography of Northern Tibet, for having in his recent journeys crossed several ranges of mountains farther east—e. g. the Nan-shan, the Burkhan-Buddha, the Shuga, the Baian-kara-ula, the Koko-shili, the Dumbure, and the Tang-la—and found them to run approximately in an east and west direction, Prejevalsky was now anxious to trace their westerly continuations, and define, if possible, their connection with the Kuen-Luen.

In the chapter now translated he has sketched in outline the topographical features of the country, leaving to future explorers to fill in the details and to continue his work till we have a complete relief map of

* According to Mr. Rockhill, the Yohuré-gol, 'Proc. R.G.S.,' 1889, p. 731.—M.

† Cf. 'A Naturalist's Voyage,' &c., ed. 1888, p. 88.

Northern Tibet. Much uncertainty still prevails as to the physical features of this country. For several hundreds of miles the courses of its principal rivers are yet unexplored, large lakes yet unvisited, and we learn from Prejevalsky and Dalgleish of grand snowy mountain ranges, where we had formerly supposed a vast undulating plateau.* The discovery and survey of the high Valley of the Winds, and the various questions connected with it, are not the least interesting parts of Prejevalsky's narrative, while his description of the clay hills among which he found himself south of Unfreezing Lake recalls to mind very similar features in the Rocky Mountains described in the Reports of the United States exploring expeditions by Powell and Clarence King (of their reports).

The itinerary of Mr. Dalgleish, the companion of Carey, relates to much of the same country as that traversed by Prejevalsky, and although his diary is merely a daily record of what he saw and heard, it is, nevertheless, a valuable contribution towards our knowledge of those regions visited by so few Englishmen. Mr. Dalgleish joined Mr. Carey as paid assistant, but his services appear to have been beyond any money value, for besides having charge of the general management of the expedition and interpreting, he contributed the route survey and astronomical observations for the map accompanying these pages. His services are handsomely acknowledged by Mr. Carey in the paper printed in our 'Proceedings,'† and in referring to them again we have only to express our deep regret that an untimely death at the hands of robbers on the Kara-korum Pass should have cut short the career of one who was in every way so well fitted to lend assistance in any scheme for the exploration of the Trans-Himalayan territory.

I have divided his itinerary into five sections, corresponding with the breaks made in the journey and the nature of the country traversed. Section I. takes us from Leh, his starting point, to Khotan in Chinese Turkistan, a distance of 508½ geographical miles (585 English statute miles). The route which had been previously surveyed by Pundit Kiahen Singh, under the orders of Captain (now Colonel) H. Trotter (Cf. Route XIV. in 'Report of Forsyth's Mission to Yarkand'), leads past the northern end of Pangong Lake and crosses the Marsinik,‡ or Lunkar-la Pass, into the Changchenmo valley. Leaving this valley shortly after the Shahidulla road turns off to the left, it ascends to the plateau by a small pass (the Salmu Kongka); descending again into the valley and crossing the Changchenmo stream. Another ascent leads up the Lanak-la Pass, and the route now lies in independent Tibet. Three marches farther bring the traveller in view of the large salt lake of

* Cf. 'Explorations in Great Tibet and Mongolia, by A. K.,' p. 14.

† See 'Proceedings R.G.S.,' 1887, p. 752.

‡ 18,990 feet according to Johnson. See his journey to Ichi, Khotan. 'Journal R.G.S.,' vol. xxxvii. p. 24.

Mang-tso, and five miles beyond is the fresh-water lake of Tashlik-kul, nearly 17,000 feet above sea-level. Hence a series of ascents and descents have to be made before the well-situated camp of Tak-nak or Dak-nak is reached and some needful repose is obtained for man and beast, both somewhat exhausted after the severe strain of marching at these great altitudes over red clayey ground softened by snow.

About 23 miles beyond Tak-nak the brackish lake Yeshil-kul is reached, and the head of the Keria river. Here lies the boundary of Khotan territory and the watershed of the trunk range of the Kuen Luen, whose peaks stand out grand and snowy on the west. So far the country is uninhabited, and it is only at Ghubolik, two marches further, also 17,000 feet high, that the first traces of human beings are seen in the stone huts erected here by the miners who come from Khotan to obtain sulphur excavated in large quantities from the ground near Ulugh-shah in the Ghubolik plain. Twelve miles from Ghubolik the descent begins, at first down a steep and stony ravine, then by a second ravine following the Polu stream to the small village of the same name. This most difficult part of the journey is quite impracticable for baggage animals. The track descends 9000 feet in 28 miles, and in places lies along a narrow gorge obstructed by huge boulders. Prejevalsky attempted the ascent of this gorge from Polu for several miles, but gave it up in despair, and Messrs. Carey and Dalgleish only succeeded in descending by unloading their ponies and carrying their baggage over the worst parts.

This route, however, was not always in so bad a state. According to Prejevalsky, it underwent repairs in 1877, when Niaz Beg, Governor of Khotan, prepared to escape this way into India upon the downfall of his master, the late Amir of Kashgar, and it is hinted that the Chinese had intentionally blocked the passage. When once the difficulties in the gorge of the Kurab or river of Polu are surmounted, the route over the series of high plateaus crossed here and there by low ridges presents great advantages to the traveller who is not pressed for time, and in summer may be traversed without once entering the limits of perpetual snow,* the snowstorms experienced by Messrs. Carey and Dalgleish in August having been quite unusual. Having dismissed their pony caravan at Polu they descended to Keria, an oasis in the Khotan district, where they made a nine days' halt. They were now in a well-cultivated country, where corn, fruit, and vegetables were plentiful and good.

The first European to visit Keria in modern times was Mr. Johnson, civil assistant in the great trigonometrical survey of India.† He paid a hurried visit there from Khotan in 1864, shortly after the Muhammadan population had massacred the Chinese in all those parts. He speaks of the gold of Keria (or Kiria) and of its commerce with Kabul and Kashmir. Prejevalsky estimates the inhabitants of Keria at 3000 families, morally

* Cf. 'Report of a Mission to Yarkand,' p. 248.

† Cf. 'Journal R. G. S.,' vol. xxxvii., pp. 1-47.

degraded by their gold traffic, and terribly diseased. He found Russian manufactured goods offered for sale in the bazaar, and a new town springing up 12 miles lower down the Keria-daria, where there was an oasis capable of supporting 5000 to 6000 families. Six stages (101½ miles) west of Keria is Khotan, reached by an excellent road passing halfway the large village of Chira.

The history of Khotan, dating back to the early centuries of our era, has been written by at least two authors, Rémusat and Klaproth. Its district has always been famed for jade (green, white, and black), musk, and silk, and these continue at the present day to be the principal articles of its commerce. When the Arabs, under the brave Kuteibe, in the early part of the eighth century advanced into Eastern Turkistan, they never went so far east as Khotan, and in Marco Polo's time it was subject to the great Khan. Johnson saw the place under the rule of an independent khan, who was trying, by flogging and other brutalities, to reform the morals of its inhabitants. This potentate was murdered by order of the Amir, Yakub Khan of Kashgaria, whose short-lived rule was replaced by the Chinese. The Khotanis,* however, estimated by Prejevalsky at 300,000, are apparently as dissatisfied now with Chinese rule and as ready to become Russian subjects as they were in Johnson's time anxious to place themselves under the British Government.

Despotism and barbarism have seen their day in Central Asia, and whether it come from the north or the south, civilisation will confer priceless blessings on the unfortunate inhabitants of Eastern Turkistan. For the present, isolated from Russia on the one side and from British India on the other by huge mountain ranges, the Khotanis are fain to submit to China, though separated from her by wide expanses of desert and burning sands.

From Khotan northwards Mr. Dalglish's itinerary (Section II.) takes us over new ground, where he and Carey, preceded only a few days before by Prejevalsky, travelled along the Khotan-daria to the Tarim, and along this last-named river to Korla and Lob-nor. Their route, which had been mentioned in Forsyth's Report (Route XXIII.) lay at first down the Yurung-kaah (white jade) to its confluence with the Kara-kash (black jade), and from their fork at Kosh-lush down the Khotan-daria. Stretches of cultivated land, with a few settlements—the largest of these is Tawakal (Prejevalsky's Tavek-Kehl)—border the Yurung-kash for the first forty miles after leaving Khotan; beyond this there are no inhabitants, except an occasional shepherd, and vegetation is confined to a belt of shrubbery, jungle grass, and poplar trees. The road winds along either bank, and is excellent; grass and fuel are abundant, this being in fact a highway of commerce between Aksu and Khotan. In autumn and winter caravans of merchandise pass along it, but in summer the heat is overpowering, and the number of flies and

* Prejevalsky calls them "Machinians" in his last work.

insects make it intolerable for man and beast. Even the wild animals which haunt the belt of jungles seek refuge in the desert at this season from their tormentors. The course of the Khotan-daria, as already said, is due north 170 miles to the Tarim, with a fall of $4\frac{1}{2}$ feet per mile; water, however, is very scarce in its channel, except in summer, when the snows melt and rain falls in the Kuen Luen near its sources. For the first 35 miles from Kosh-lush to the Mazar-tagh range, the stream is 40 to 70 feet wide and about 6 inches deep, the land subject to inundation extending for a mile or more on either side. Beyond the Mazar-tagh this stream continually diminishes, and at length altogether disappears some 90 miles before reaching the Tarim.

We learn from Prejevalsky that the large lake, "Yeshil-kul," represented on former maps to the west of the Upper Khotan-daria, has no existence at the present day, the environs of the river being nothing but sand wastes, hiding cities and oases deep down below the yellow surface. Sand, the enemy of man and vegetation in this region, effaces every vestige of flourishing cities, steadily encroaches on the oases, gradually desiccating wide tracts, and proving to man how small are his powers of contending with Nature. The area between Khotan, Ak-su and Lob-nor once contained 23 towns and 360 villages, of which not a trace is left, and it is said you might formerly pass along the roofs of the houses from Kucha to Lob-nor, where hardly a human habitation is to be seen. To this day the inhabitants of the few remaining oases sally forth in winter to seek for hidden treasure, tying bright-coloured rags to the ends of poles which they set up on the higher ground to enable them to find their way back.

The discovery of the Mazar-tagh range, so named after the shrine or shrines* perched on its summit, with its two red and white parallel ridges, standing about 500 feet above the sandy plain, is a geographical novelty, for it does not appear on existing maps. Prjevalsky says the southernmost of the two ridges is of red clay interstratified with gypsum, the northernmost of white alabaster, and that flints are obtained here and taken to Khotan for sale. This barren range of hills extends in a west by north direction to Maralbashi, where it dies away in the plains. Seventeen miles below Mazar-tagh the Khotan-daria loses itself, and its desiccated bed affords excellent marching ground for the caravan as far as the Tarim, the ferry across which is reached in eighteen stages from Khotan. Here Messrs. Carey and Dalgleish rested in order to procure supplies from Karatal on the Aksu road. Prejevalsky went on direct to Aksu, whence he returned to Russia via the Bedel pass over the Tian Shan.

The further route of Messrs. Carey and Dalgleish down the Tarim

* From Mazar, a shrine. Dalgleish only speaks of one, Prejevalsky says there are two—an old and a new one; the latter erected by the late Yakub Kkan, whose work has been destroyed by the Chinese.

to Shah yar, thence to Kucha on the high road to Turfan and Hami, back to Shah yar, then to Korla, Karashahr and Lob-nor, has been treated of elsewhere, and may therefore be omitted from these papers.

I will now make a few remarks on the region described in the accompanying translation. Its topographical features give an idea of the physical characteristics, but more detailed scientific observations are necessary before we can do more than speculate on the structure of the underlying rocks, and explain the agencies and conditions which have helped to produce them. The few facts brought to our notice relate to the climate, drainage, and vegetation, the elevation and general aridity of this tract.

A wide expanse of territory, unaffected by the south-west monsoon, extends from the Kerian Mountains on the west to those bordering Kan-su on the east. Between these limits lies a mountainous mass of great elevation diversified by plateaus, plains, and valleys, large salt lakes and swamps. In addition to these are curiously shaped hills or mounds, from 300 to 500 feet high, covered with loess interstratified with harder beds, having dome-shaped summits, sides often vertical, and occasionally terraced or buttressed, bare of vegetation, and taking various shapes, such as castles, bridges, galleries, &c.

In the arid region of the western portion of the United States there are certain tracts of country which have received the name of *Mauvoises terres* or Bad Lands, having features very similar to those I have just mentioned. We learn from the reports of the U.S. geological survey explorations that it is a labour of no inconsiderable magnitude to penetrate or cross such a district. The Tibetan "Bad Lands" are equally impassable; Prejevalsky was obliged to retrace his steps when he found himself among them, while Messrs. Carey and Dalgleish were also unable to advance. To the southward there is apparently a great extent of snowy mountains. "A perfect sea of mountains," remarks Dalgleish, was disclosed to view in this direction (cf. p. 36), while to the north is Prejevalsky's longitudinal Valley of the Winds and his great salt "Un-freezing" Lake (Dalgleish's Chong-Kum-Kul). Lateral valleys with sides more or less perpendicular cut through the bordering ridges.

Continuing our comparison we find Northern Tibet, with its base-level of 12,000 to 13,000 feet, much higher than Colorado, where the maximum elevation of the ranges is little over 9000 feet. Nor has the former region any great river with tributaries flowing through deep cañons, which are so distinctive a feature of the latter. Tibet between 34° and 40° of north latitude has but few permanent streams, the drainage disappearing through the porous soil. Where shallow rivers are formed these quickly disappear on leaving the foot of the mountains, while the wet weather torrents are dry during the greater part of the year. Erosion here is mainly dependent on winds, those active aerial agencies which disintegrate and crumble the hardest rocks, producing

effects noticeable on every cliff and crag, and at the same time raising clouds of fine dust which obscure earth and sky. This fine dust or loess is deposited again on the surface, serving to round the outlines of hills and level the inequalities of plain and valley. The whole country presents a singularly desolate aspect, except during the short season of rains, and at spots where moisture is supplied by underground springs.

The peaks, tables, and valleys have an easterly and westerly direction, forming a succession of steps north of Tibet. In the absence of any precise knowledge of the geology of this country, we may assume that the limestone and schists were formed under the sea, and were spread horizontally to a great thickness over a broad expanse. With the upheaval of the crust of the earth these strata gradually emerged and rose to form ridges and masses of mountains where folds or wrinkles took place. The absence of rivers preserves the continuity of the whole mass, for the district being comparatively rainless, no clouds collect to form mountains, and it is only as exceptions and at wide intervals that a few groups of peaks, such as Jing-ri, Shapka Monomakh, and Kremlin, stand forth like solitary giants keeping watch over these solitudes. Had there been a greater precipitation of moisture there would have resulted a different class of topographical features. Instead of plains and plateaus we should have had rivers and ravines; instead of elevated valleys with dry watercourses there would have been deep valleys bounded by hills and slopes, and nature would have assumed a different aspect.

JOURNEY OF CAREY AND DALGLEISH
IN
CHINESE TURKISTAN AND NORTHERN TIBET
IN 1885-7.*

MR. DALGLEISH'S ITINERARY.

CONDENSED AND TABULATED BY E. DELMAR MORGAN.

The following tabulated itinerary is divided into five sections, according to the breaks made by the travellers in their journey, viz.:—
Section 1—from Leh to Khotan; Section 2, from Khotan to Korla and Karashahr; Section 3, from Korla to Chaklik, including excursion to Lakes Kara-buran and Lob-nor; Section 4, from Chaklik into Northern Tibet, including visit to Hoiduthara, and return to Sha-chau; Section 5, Sha-chau to Aksu, including visit to Urumtsi.

Alternative spellings of names of places are placed in brackets.

* Vide 'Proceedings R.G.S.,' 1887, p. 752.

SECTION I.

Date.	From	To	Elevation. feet.	Distance. miles.	Remarks.
1885, Aug. 1	Leh	Rumbirpur .. (1st stage)	..	12½	Easy march along Indus valley. Road here and there indifferent; 5 miles of pathways in northerly direction, through cultivation, to village and monastery of Chimra, then 1½ mile east to village of Sakti. Steep ascent to Zingral, where road forks to Chang-la and Kay-la passes. After crossing the former, gradually descend 4 miles to Tsultak. Down valley for 7½ miles. Over shoulder of hill to Tanksee valley. Large stream running from south.
"	Rumbirpur ..	Sakti .. ..	..	14	
"	Sakti	Durgu (3rd stage)	17,600 (height of pass)	20	
"	Durgu	Tanksee (4th stage)	..	6	Cross by wooden bridge; easy road; large village; good camping ground. Eight days' delay here owing to bad condition of ponies.
"	Tanksee	Mughili (Mughlib*)	..	9	A very small village; cultivation scanty; valley a grassy swamp for 3 miles.
"	Mughili (Mughlib)	Chagra (5th stage)	..	13½	Pass small villages Lunkong and Pobrung. At 8th mile the Pangong lake is passed. Grass and wood plentiful. Road fairly good; gentle ascent all the way.
"	Chagra	Lungkar (6th stage)	..	6	Steep ascent for first half-mile; afterwards gradual ascent to camp. Ovis ammon and wild asses seen.
"	Lungkar (Lunkur)	Lungkar (7th stage)	18,400 (height of pass)	9½	Marsinik (Lungkar-la) pass. Gradual ascent and good road to 400 yards of top of pass; last part steep and stony; descent into broad valley. Camp Rindi passed at 17,500 feet. Good camping ground. Ruins of Tartar house.
"	Pomlung	Pomlung (8th stage)	..	7	For 50 yards road overhangs cliff; stony gorge or cleft 60 yards. Descent to Changchenmo valley. Fuel and grass plentiful.
"	Pamzal	Pamzal (9th stage)	..	8½	Stream running north past Gogra joins Changchenmo valley.
"	Halt at Kyam	Kyam (10th stage)	..	..	Shahidulla route, via Lingzi Tang, passed at the 4½th mile.

* Cf. Capt. Biddulph's route from Leh to Shahidulla by the Changchenmo Valley (Forsyth's Report, section 9, route iii).

Date.	From	To	Elevation. feet.	Distance. miles.	Remarks.
1885, Aug. 19	Kyam	Camp Zalung (11th stage)	..	13	Road leaves Changchenmo valley; gradual ascent of Salmu Kongka or small pass; enters plateau with grass, wood, and water; descent through narrow valley into broad valley running nearly east and west; at 7th mile strike Changchenmo stream. Camping ground fairly good, but grass scarce. Gradual ascent nearly all the march. Road excellent. Antelope, wild asses, and traces of yak seen.
" 20	Zalung ..	Camp Lanak (12th stage)	..	12	Up broad valley to foot of pass; cross bed of Changchenmo stream. Excellent road; fair camping ground; more antelope seen.
" 21	Lanak ..	Camp Democho (13th stage)	..	13	Gentle ascent to head of Lanak-la pass. At 5th mile a grassy swamp crossed. Good camping wood, water, and a little grass.
" 22	Democho ..	Topomóru camp (14th stage)	..	10	ground; grass, wood, and water rather scanty. Route now lies in independent Tibet. Continue down ravine skirting low hills. At 3rd mile enter broad plain, and continue along it for 7 miles to camp, crossing stream just before Topomórn. Low undulating hills on north side of plain, but on south side a dark bold range of mountains capped with snow. Road excellent, with very gradual descent nearly all the march. Camping ground good; more large game seen, including one wild yak.
" 23	Topomóru ..	Kumdong camp (15th stage)	..	11	Continue along level plain, crossing two small streams at 2nd and 5 $\frac{1}{2}$ th mile. Road excellent all the way, camping ground good; fuel, grass, and water plentiful.
" 24	Kumdong ..	Simmo-kur- kur camp. (16th stage)	..	6 $\frac{1}{2}$	On leaving Kumdong, road turns S.E. for $\frac{1}{2}$ mile and crosses small stream, then N.E. by E. for 1 mile, passing on the left the salt-water lake of Sumji Ling Tso, about 1 $\frac{3}{4}$ mile in length and $\frac{3}{4}$ mile broad. Another 2 miles of gentle rise and fall at foot of low hills brings the large salt lake of Mang-tsa in view. 3 miles further is Simmo-kur-kur, whence there is a full view of west end of Mang-tsa lake. Shortness of the march necessitated by uncertainty of finding water within the next six miles.
" 25	Simmo-kur- kur.	Tashlik- (Tashliak) kul (17th stage)	*16,620	12 $\frac{1}{2}$	Continue along valley for 2 $\frac{1}{2}$ miles in an easterly direction with gentle rise and fall, then ascend for 1 mile N.E. by E. over brow of hill. Descending, the road turns to E.N.E. for $\frac{1}{2}$ miles, nearing the edge of Mang-tsa lake. After leaving lake at the 7 $\frac{1}{4}$ th mile, the valley opens out, and 5 miles farther of gradual ascent in a N.E. direction lead to camp abreast of Tashlik-kul lake. This lake is much smaller than the Mang-tsa, but its water is sweet. Road excellent all the way. Good camping ground. Wild asses and antelope seen.
" 26	Tashlik-kul	Tung-mar camp (18th stage)	About 17,000	9 $\frac{1}{2}$	Leaving S.W. end of Tashlik-kul lake continue up valley N.E. by E. for 2 $\frac{1}{2}$ miles, then turn N.N.E. into narrow valley with gradual ascent for 3 $\frac{1}{2}$ miles, at 6th mile gradual descent for $\frac{1}{2}$ mile N.N.E., crossing stream and ridge of hills. Ascent and descent

* All heights marked thus * from Pundit Kishen Singh's observations.

Date.	From	To	Elevation. feet.	Distance. miles.	Remarks.
1885.					
Aug. 27	Tung-mar ..	Tak-nak (Dak-nak) camp (19th stage)	..	22	rather steep into very narrow valley, which runs into open plain N.E. by E. for 1½ mile from foot of descent. The meaning of "Tung-mar" is "red earth." Road excellent, good camping ground. Continue along plain for 1½ mile N.E. by E., then turn gently N.N.E. for 1½ mile and cross stream, again N.E. by N., rounding hill. Gradual ascent for 7½ miles E.N.E. to top of pass, where the course changes to E. by N. for 4 miles over high hilly country, with gradual ascent to top of second pass. From head of pass gradual descent for 3 miles E. by N. to foot of pass.
"	The travellers were overtaken by a snowstorm on the previous night, and had to pass in the open. In the morning they succeeded in finding the road, which is neither marked by track nor sign. 3½ miles' march brought them to camp, Tak-nak, nicely situated on bank of stream, with fuel and grass plentiful, at the west end of a long and extensive plain. A march of 3 miles farther was all they could accomplish, as it was necessary to give both man and beast a rest. Good camping ground; road excellent all the way, but soft from the snow.				
"	Camp	Kalung Karbu camp (20th stage)	..	14½	Continue along plain for 11 miles E. by N., then cross stream and turn gently to E.N.E., recrossing stream at 14½ mile. Name of camping place suggested by Tartar guide. Road excellent, and nearly level all the way, but the red clay soil continues soft from melting snow. Wild yaks seen.
"	Kalung Karbu	Dhong Lung camp (21st stage)	..	14	Continue along plain for 3 miles E.N.E., then turn gently N.E. by E. for 1½ mile. From here road lies in a N.E. direction for 7 miles along west end of Yeshul-kul salt lake. Leaving lake, gradual ascent in a northerly direction, and 2½ miles farther to camp; fuel and grass plentiful, water very scarce.
"	Dhong Lung	Togral Onbo camp (22nd stage)	..	7½	Ascent over hilly country for 6 miles north to top of small pass, then gradual descent in the same direction for 1½ mile, and camp. Road good, fuel and grass plentiful. Sighted a long extensive lake in a S.E. direction, probably the source of some river.
Sept. 1	Togral Onbo	Tangra Chuzak camp (23rd stage)	..	16½	On leaving camp, cross stream and ascend valley gradually for 2½ miles N. E. by N. Continue along valley in same direction for 4½ miles to head of pass, ascending gradually at the last mile. From top of pass descend and ascend gradually for 1 mile N. by E. over high hilly country, and 3 miles N.N.E. on fairly level ground to large plain with snowclad mountains and glaciers on the west side, and undulating hills on the east. 6 miles farther along plain N.N.E. is camp. From pass several streams are crossed, which fall into lake, and flow out again in a fair-sized stream. Road very good all the way, but owing to flooded state of plain, red clay soil yielded a foot to the baggage

Date.	From	To	Elevation.	Distance.	Remarks.
1885.			feet.	miles.	
Sept. 2	Tangra Chuzak.	Iksu camp (24th stage)	..	17	animals. Good camping ground; large herds of antelope. The pass forms the boundary between Tibet and Chinese Turkistan (Kashgaria). The Kuen Luen stands out in solemn grandeur with its snow-capped peaks. Continue along plain in a northerly direction for 1 mile, then turn N.E. for 1½ mile, and cross stream. Then turn to N.E. for 3 miles, skirting No. 2 lake. At the 5½th mile cross stream running from lake. Here the road leaves the plain, and becomes stony for the next 7 miles, with very gradual descent and a few slight ascents over undulating hills to camp. The range of snowy mountains still conspicuous on the west; to the east low undulating hills.
" 3	Iksu	Baba Hatun (25th stage)	*16,020	4	Ford small stream, and cross shoulder of hill 1 mile N.E., rejoin large stream from lake river to camp; ruins of old frontier fort on precipitous rock overhanging the river. Good sport with antelope and yak.
" 4	Owing to a mistake in the map to illustrate Kishen Singh's route, the travellers were obliged to return to camp, and search for the pass. This they soon found.				
" 5	Camp	Aksu camp (26th stage)	..	12	Leaving Baba-hatun, road lies in a N.W. by N. direction for 3 miles with gradual ascent into ravine leading to the Kizil-dawan pass. Steep climb of 1 mile leads to the top of pass. Road good but stony, with gradual descent for 3 miles down winding ravine with stream; 5 miles further, in a N.W. and N.W. by N. direction, on small plain between two streams, is camp Aksu. Good camping ground, grass scarce.
" 6	Aksu	Ghubolik camp (27th stage)	*16,960	20	Leaving camp, cross small stream from S.W. and follow in a nearly N.N.W. direction for 4½ miles, when you leave stream and turn N.W. by W. for 3 miles of gentle ascent to top of easy pass. Gradual descent of 4 miles down ravine W. by N. half N., then enter broad undulating plain, much honeycombed. 5½ miles further is Ghubolik, well situated near Ulugh-shah-i-kul lake with sulphur-mines in neighbourhood, and stone huts built by the miners. Good camping ground; fuel, grass, and water plentiful.
" 7	Rested at Ghubolik.				
" 8 to 12	Ghubolik	Polu	*8,430	42	Leaving Ghubolik, cross shoulder of hill 2½ miles from camp N.W. by N. and enter large plain; for 1¼ mile road still runs in the same direction, then turns N.N.W. for 2 miles. Gradual ascent along plain for 6½ miles N. by W., then enter ravine in N. and N.N.E. direction for 1½ mile to top of pass. Hence descend abruptly down ravine for 5½ miles N. ¼ E. Road very stony and very difficult for baggage animals.

Date.	From	To	Elevation.	Distance.	Remarks.
1885.			feet.	miles.	Enter second ravine where road joins Polu stream in a northerly direction, and after marching 2 miles encamp. Grass and fuel scarce. Leaving camp enter narrow gorge, where road lies over huge boulders and becomes impracticable for baggage animals. Several steep ascents and descents over high ridges. Tartars carrying the loads, then returning and leading the ponies. In two days only marched 8 miles. Road very stony, continues down narrow gorge, crossing and recrossing Polu stream, and is all but impracticable for baggage animals. After 6 miles of this difficult marching road improves and green patches of cultivation come in sight. 2 miles farther is the small village of Ala Jai, excavated in the side of the sand-hill. A pleasant ride of 4½ miles in a N. and N.W. direction to Polu, a village of about 60 houses, well situated at the foot of low undulating sand-hills.
Sept. 14 to 18	The travellers remained for four days at Polu, and were visited by the Chinese officials. Here they dismissed their pony caravan, and made arrangements with the villagers to convey their baggage to Keria.				
„ 19	Polu	Camp on Keria river.	†8200	16½	Road descends gorge for 2 miles N.N.E., and crosses stream, then winds along the side of undulating hills with gentle ascents and descents in a N.N.W. direction for 9 miles. Good camping ground, with a little fuel and grass. Water difficult to get, owing to the precipitous banks of river about 200 feet high.
„ 20	Camp	Bughaz camp	..	15	Leaving camp, continue in a N. direction for 1½ mile alongside of low sandy hills. Here the river finds its level as it leaves the hills and enters plain. 2½ miles farther still, in a N. direction, cross the Keria canal, and turn to N. by E. for 5 miles up to rest-house, Toghna-langar. 5 miles farther N. by W. is the large village of Bughaz, with about 200 houses and cultivation. Road excellent all the way.
„ 21	Bughaz ..	Keria	†4700	12	From Bughaz road runs N.E. by N. for 7 miles along barren plain. 5 miles farther is the town of Keria.
Oct. 1	Keria	Halt at Keria for nine days. Yar-langar	..	22½	Cultivation of Keria extends for 8 miles; from this point reeds and grass jungle to Yar Langar, a very small village with scanty cultivation. Open country and excellent road.
„ 2	Yar-langar	Domákú ..	..	11½	5 miles from Yar-langar is the village of Karakia (Kara-kyr), with about twenty houses and extensive cultivation; 6½ miles farther is Domákú, a village of several houses and extensive cultivation. Open country, with excellent road.
„ 3	Domákú ..	Chira	†4500	18½	8½ miles from Domákú is the village and bazar of Gulakma, with fair cultivation; 10 miles farther is the large village and bazar of Chira.

† Prejevalsky's observations.

Date.	From	To	Elevation. feet.	Distance. miles.	Remarks.
1885. Oct. 4	Chira	Bash Toghrak	..	18½	3½ miles from Chira. leave cultivation and enter sandy desert. At 6th mile pass one solitary house and small patch of cultivation. At 8th mile pass small Langar. Country unlevel, with numbers of small trees. At 13¾th mile pass another small Langar. From here the country becomes a sandy desert to Bash Toghrak. No cultivation; water drawn from well brackish; no supplies to be had.
"	Bash Toghrak	Lob .. ..	..	15½	Journey across desert. Two Langars at 5th and 8th mile. Enter on cultivation at 14th mile, close to the village of Dol. Road excellent.
"	Lob The travellers rested at Khotan till the 15th October.	Khotan city	+4400	15	Journey through cultivation; road excellent all the way. Pass Char Shamba bazaar, 7¼ miles from Khotan, and cross Yurung Kash river about a mile from the city.
	Distance from Leh to Khotan by route travelled, via Polu and Keria			508½	
SECTION II.					
"	Khotan ..	Yanghi-arik (1st stage)	..	10	Road runs N. through cultivation for 2 miles. At the end of 2nd mile leave cultivation and enter on very good pasture land for 7 miles in a N.W. by N. direction. 1 mile farther is small village of Yanghi-arik, with good cultivation. Road excellent all the way, except at the crossing of a canal.
"	Yanghi-arik	Tarashlik- langar (2nd stage)	..	11½	Road winds along left bank of the Yurung Kash river in a N.N.E. direction, over a flat uncultivated country up to Langar, which consists of one solitary house and mosque. Good pasturage; road excellent; good camping ground.
"	Tarashlik ..	Yemen Buk (3rd stage)	..	11	Road continues to wind along left bank of the river in a N.N.E. direction over flat uncultivated country for 9¼ miles. From here it turns abruptly to the east for 1¼ mile through thick jungle. Road excellent all the way.
"	Yemen Buk	Islamabad .. (4th stage)	..	10	Continue along left bank of river in a N.E. by N. direction over flat uncultivated country, with jungle and good pasturage, to the small village of Islamabad, which has a nice patch of very good cultivation. On the other side of the river is the large village of Tawakal, with about 200 houses and a long strip of cultivation.
"	Islamabad ..	Ouryea .. (5th stage)	..	10½	On leaving Islamabad part with cultivation, but not all signs of habitation, as you very often come upon shepherds with their flocks. The road winds along the left bank of the river in a N.N.E. direction, through shrubbery and long grass jungle. Road excellent. Good camping ground.
"	Ouryea ..	Bugaz Yentak (6th stage)	..	12½	The road still follows left bank of river in a N. by E. direction over flat country, and a few gentle rises and falls over sand-hillocks. A great deal of shrub and long grass jungle.

† Prejevalsky's observation.

Date.	From	To	Elevation.	Distance.	Remarks.
1885. Oct. 22	Bugaz Yentak	Fakhtak .. (7th stage)	feet. ..	miles. 10½	Two miles from camp N. by E. is camp Koshlush, and 1 mile farther the ford over the Karakash river, which joins the Yurung Kash river a little lower down. From the junction the river is called the Khotan river. The road winds along left bank of Khotan river in a N. by E. direction over flat country, with a few gentle rises and falls over sandy hillocks. Large patches of shrub and grass jungle. Good camping ground; road excellent all the way.
" 23	Fakhtak ..	Marjan Uldi (8th stage)	..	12½	At 3 miles from camp pass camp Ak Bash. Road still follows the river in a N.N.E. direction over flat country, with one or two gentle rises and falls over sandy hillocks. Long strips of shrubbery and grass jungle. Good camping ground; road excellent.
" 24	Marjan Uldi	Gilam Yedi (9th stage)	..	10	Four miles from camp pass camp Mazar Tagh. There is a shrine here perched on the top of a double range of hills, which begin at the camp and run nearly N.W. towards Maral Bashi. The hills are 500 feet above the plain, and by some freak of nature the southern range is red in colour and the northern white. The road still follows the river in a N. by E. direction over flat country, through long strips of shrubbery and jungle. Good camping ground; road excellent; water scarce.
" 25	Gilam Yedi	Aghaz (10th stage)	..	9	Road still winds along left bank of river in a northerly direction for 7 miles, then turns gently to N.W. over flat country, through a long strip of shrubbery and jungle to camp. Good camping ground; water very scarce. The river is very low at this season, and loses itself in the sand. Road excellent.
" 26	Aghaz	Bash Kurla (11th stage)	..	14	Road along bed of Khotan river, which has run itself dry, in a N. by W. direction to camp. Good camping ground; water scarce; road excellent.
" 27	Bash Kurla	Gongnong Masjid (12th stage)	..	10½	Along bed of river in a N. by W. direction to camp. Pass camp Quaendu 6½ miles from camp. Thick shrubbery and long grass jungle on both sides of river. Good camping ground on small island. Water scarce; road excellent.
" 28	Gongnong Masjid.	Rosa Bai Tamshuk (13th stage)	..	10½	Along bed of river in a northerly direction. Pass camp Bidili Kotak 6 miles. Thick shrubbery and long grass on both sides of river. Good camping ground; water scarce; road excellent.
" 29	Rosa Bai Tamshuk.	Bora (14th stage)	..	10	Along bed of river in a northerly direction. Thick shrubbery and long grass jungle. Water scarce; road excellent.
" 30	Bora	Ghalohilik .. (15th stage)	..	16	Along bed of river in a northerly direction to camp. Country still open with low sandy hillocks; thick shrubbery and long jungle. At the 7½th mile the river has changed its channel, cutting through jungle on the left bank. Good camping ground. Water plentiful; road excellent.

Date.	From	To	Elevation.	Distance.	Remarks.
1885. Oct. 31	Ghalchilik ..	Dalish-na- Aralchi (16th stage)	feet. ..	miles. 16	Along bed of river in a nearly N.N.E. direction. Thick shrubby and long grass on both sides. At 6½ miles pass camp Yalguz-ning-kum, where the new channel joins the old. Good camping ground; water scarce; road excellent.
Nov. 1	Dalish-na- Aralchi.	Zil-ning Aghzi (17th stage)	..	9½	Along bed of river in a N. by E. direction. Thick shrubby and jungle. Good camping ground; water fairly plentiful in pool by left bank of river; road excellent.
" 2	Zil-ning Aghzi.	Tarim ferry (18th stage)	+3, 100 (confluence of Ak-su and Yarkand-daria.)	13½	On leaving camp road leaves the Khotan river and turns gently in a N.W. direction, through jungle for 6½ miles to Toghrak, and for 5½ miles farther in the same direction, chiefly over sandy desert, with gentle rise and fall over sand-hillocks. At the 11½th mile the road turns to the north through shrubby, and on nearing the Tarim river turns to N.E. Good camping ground on the left bank of the Tarim; road good, but heavy for the animals owing to the soft yielding sand. No water to be had throughout the march. The Khotan river, averaging ¾ of a mile in width, flows into the Tarim further east. The Yarkand and Ak-su rivers unite 2½ miles west from the ferry. In summer the ferry is often at the junction.
" 3 & 4	The travellers rested at the ferry to procure supplies from Karatal, 27 miles from ferry on the Ak-su road.				
" 5	Tarim ferry ..	Aghir-ya .. (19th stage)	..	8½	Road (more correctly pathway) winds along the Tarim in a N.E. direction through thick thorny jungle. Several shepherds' huts and a water-mill passed. At 5½ miles a small lake called Sissik-kul. Good camping ground; grass, fuel, and water plentiful; road good and level all the way. The country is flat and open for many miles, with thick shrubby and grass jungle.
" 6	Aghir-ya ..	Urak Balik (20th stage)	..	14½	Follow left bank of Tarim for 1½ mile to camp Aghir-ya, with solitary mosque for travellers. 1 mile farther N. by E., the road leaves the river slightly, and remains so to camp. At 6½ miles Akchul Masjid, a solitary mosque with well, is passed, also intended for travellers. At 9½ miles pass Camp Tawak Kaldi; 5 miles farther N.E. by E., through plantation and grass jungle, is camp Urak Balik on the Tarim. Good camping ground; road excellent, but dusty. Passed several shepherds tending flocks.
" 7	Urak Balik ..	Arik Aghzi (21st stage)	..	15	Road winds along left bank of Tarim in a N.E. by E. direction. At 5½ miles pass Ala-kum camp, where are several shepherds' huts; at 7½ miles pass road to Kuehar, running north; about half a mile farther cross Kuehar stream. This stream dries up in winter and early spring. At the 9th mile cross small stream; 6 miles farther is Arik aghzi, on bank of branch stream of Tarim. Road excellent, through plantations and long strips of prairie.

† Prejevalsky's observation.

Date.	From	To	Elevation.	Distance.	Remarks.
1885. Nov. 8	Arik Aghzi	Sarikh Kush (22nd stage)	feet. ..	miles. 9	Road close to left bank of Tarim in a N.E. by E. direction. At 3rd mile pass Pachanlik, a shepherds' camp, and at 5th mile Yarishlik. Here lies the boundary between the Ak-su and Shah-yar grazing lands. At 6th mile, about 1 mile north of road, is Yulghun or Ermin Kul lake; 3 miles farther is Sarikh Kush. Good camping ground on bank of Tarim. Road excellent, through shrubbery and long reed jungle.
" 9	Sarikh Kush	Kok Chul .. (23rd stage)	..	12½	Road leaves river at Sarikh Kush, and runs in a N.E. direction to camp. At the 2½nd mile pass a small lake; at 4½th, shepherds' huts at Suri, and cross Achal stream; at 5th mile strike northern channel of Tarim river (nearly dry), and follow its banks to Kok-Chul, crossing it at the 10th mile. Road excellent, through thick reedy jungle and patches of shrubbery. Good camping ground on bank of river.
" 10	Kok Chul ..	Tawak Jai .. (24th stage)	..	11	Road runs N.E. to camp. At 2nd mile northern channel of Tarim recedes more to the north. At 3½rd mile pass Po-dong camp, and 7½ miles Titar or Tittar Akin. Good road, and camping ground on bank of branch stream from Tarim.
" 11	Tawak Jai ..	Tippak .. (25th stage)	..	8½	Road runs N.E. by N. to camp. At 3rd mile cross low ridge of sandy hillocks into desert, with a little scattered brushwood to end of 4th mile.
" 12	Tippak ..	Shah Yar .. (26th stage)	..	18½	Road runs in a N.E. by N. direction the first 10½ miles, over sandy desert nearly the whole way, leaving the northern channel of the Tarim at Tippak, which now turns off to the south. At the 11th mile the road turns to the S.E., through rice-fields, to the small bazaar of Shah Yar. 2½ miles from bazaar cross Chimin canal. Road excellent. Shah Yar is a large village, with extensive cultivation, chiefly rice, and has a population of 2000 inhabitants.
" 13	Rested at Shah Yar.			18	Road takes a northerly direction. At the 3rd mile cross the Shah Yar river by wooden bridge 100 feet in length, called Shamal Kubruk. Road runs partly through cultivation and jungle, with patches of sandy desert, and is very good all the way. Char Shamba is a small village, but has extensive cultivation, chiefly rice, and a number of houses scattered over the country.
" 14	Shah Yar ..	Char Shamba bazaar (27th stage)	..	11	Road, which is excellent, runs in a northerly direction through extensive rice-fields to the suburb of the city. Kuchar is well situated near the foot of the mountains, and has a population of 15,000 inhabitants, Mahomedans, Tunganis, and Chinese. A large mountain stream flows past the east side of the city, and runs south.
" 15	Char Shamba bazaar	Kuecha (or Kuchar) city (28th stage)	..		Chinese authorities, and trying to obtain permission to proceed to Lob-nor. Having succeeded in this, they retraced their journey along the Tarim.
" 16 & 17					

Date.	From	To	Elevation. feet.	Distance. miles.	Remarks.
1885. Nov. 18	Kucha ..	Char Shamba.			
" 19	Char Shamba	Shah Yar.			
" 20	Rested at Shah	Yar to get supplies.			
" 21	Shah Yar ..	Kum Arik (3rd stage)	..	20	Road runs in an E.S.E. direction. At 7th mile ford branch stream from Khan Dau, a small village with rice cultivation. At 8th mile ford branch stream from Shah Yar river, and recess it on reaching Kum Arik, a small scattered village, with rice and wheat cultivation. Road excellent; passes through jungle in several places.
" 22	Kum Arik ..	Kok Chul .. (4th stage)	..	11	Road takes a S.E. by E. direction. Pass several shepherds' camps on the march, and at the 8th mile cross branch stream from the Shah Yar river. Good camping ground on the left bank of the Tarim's north channel. Road excellent.
" 23	Kok Chul ..	Kháda Dung (5th stage)	..	10½	Road winds along the left bank of the Tarim's north channel in an easterly direction. At 3rd mile pass Acha-nam's shrine, and at 4½th mile pass another holy shrine called Arawata. At 7¼th mile cross boundary line between grazing lands of Shah Yar and Kuchar shepherds. Road excellent, through thick shrubbery and grass jungle.
" 24	Kháda Dung	Chak Asti .. (6th stage)	..	11	Road winds along the left bank of the Tarim's north channel in an easterly direction up to the 8th mile, when it gradually leaves the river, owing to extensive swamps. Road excellent.
" 25	Chak Asti ..	Shupurlik .. (7th stage)	..	10	Road runs in an easterly direction, skirting extensive swamps and small streams from the Tarim's north channel. Road excellent, partly through shrubbery and prairie land. A little east of Shupurlik is the boundary line for the Kuchar and Bugar shepherds.
" 26	Shupurlik ..	Trying to find road to Tarim's northern channel. partly frozen over.			A little east of Shupurlik is the boundary line for the Kuchar and Bugar shepherds. Obligated to come back to last night's camp owing to extensive swamps only
" 27	Shupurlik ..	Bash Kul Khan (8th stage)	..	10	No road but one of own making in north-easterly direction to camp, skirting extensive swamps. Road for several miles soft and heavy, crossing sandy desert.
" 28	Bash Kul Khan	Dung Kolan (9th stage)	..	7	Marched in an easterly direction for 3 miles, chiefly through desert, which at some previous time must have been a jungle, from the immense quantities of roots and branches of trees that are lying about. At the 4th mile turned in a southerly direction, entering at the fifth mile long reedy jungle and skirting the swamps, and crossing and recrossing branch stream from Tarim's north channel by rustic bridges. The second was so dilapidated that it was necessary to repair it before taking the animals over. At the 6th mile, owing to lakes and swamps, had to turn once more in an easterly direction. At the 7th mile again find ourselves on the wrong side of the branch stream, and without a bridge this time.

Date.	From	To	Elevation.	Distance.	Remarks.
1885. Nov. 29	Dung Khotan	Jigda Tigiash (10th stage)	feet. ..	miles. 9	Forced stream safely, then turned south for the first half mile, striking another large stream from Tarim's north channel. Followed the left bank of the stream in an E. by S. direction up to camp. Road through dense reedy jungle, with extensive swamps and sheets of water only partly frozen.
"	Jigda Tigiash	Abdul Shukar (11th stage)	..	9	Road runs in a N.E. by E. direction for 3½ miles through dense reed jungle. Here branch stream No. 1 joins large branch stream. Rustic bridge, requiring repairs, over No. 1 stream. From here the road runs in an E.S.E. direction to camp through grass jungle and two patches of shrubbery. Road winds along left bank of stream all the way. At 4th mile there is a gentle rise, and the swampy ground disappears entirely.
Dec. 1	Abdul Shukar	Kum Jainak (12th stage)	..	14	For the first ¾ miles road runs E.S.E. near bank of stream, which now joins the parent river. For the next 7¼ miles the road runs E.N.E., winding along the left bank of Tarim's north channel. 2 miles farther, in E.S.E. direction, is camp Kum Jainak, on bank of north channel. Road runs through grass jungle and patches of forest and shrubbery, where the ground is very soft and yielding.
"	Kum Jainak	Salima.. .. (13th stage)	..	11	Road runs in an E.S.E. direction, winding along left bank of Tarim's north channel and through long strips of forest and shrubbery and small patches of grass jungle. Road soft and heavy in places. A little outside jungle lies a vast extent of sandy desert. We are now in Kuria district.
"	Salima.. ..	Agro Kul .. (14th stage)	..	10	Road runs N.E. by E. along Tarim's north channel and through long strips of forest and shrubbery and small patches of grass jungle. Shah Yar river about 8 miles to the north.
"	Agro Kul ..	Chong Kema (15th stage)	..	9	Road zigzags a great deal, making an E.N.E. course. At ¾ miles pass Jigda Bashlam, one solitary shepherd's hut. Tarim's north channel becomes narrow, only 15 yards wide, and frozen right across. Kuria shepherds tending their flocks on bank. Road good.
"	Chong Kema	Aghacha Kum (16th stage)	..	10	Course E. by N. Road good, but trying in many places, owing to the thick shrubbery and dense jungle it passes through. Tarim's north channel now turns to the E. and E.S.E. The mountains to the north come in view.
"	Aghacha Kum	Unbesh Arik	..	5	Camp on bank of Tarim's north channel, only 2 miles below that of previous day. A tiger killed one of the donkeys of the caravan.
"	Unbesh Arik	Kema Sala .. (17th stage)	..	7½	Marched in a N.E. direction, and encamped on right bank of Shah Yar, now called Inohiki river. Road good, through shrubbery and grass jungle.
"	Kema Sala	Kultokmit Kul	..	10½	Short trip in S.E. direction to junction of north and south channels of Tarim. The north channel is called Ugen, the south Tarim. Road good, through grass and reed

Date.	From	To	Elevation.	Distance.	Remarks.
1885.			feet.	miles.	
Dec. 9	Rested at Kultokmit-Kul		..	..	jungle with belt of sandy desert from 4th to 6th mile. Encamped in the small village of Kultokmit-Kul on the right bank of the Ugen, the frontier of the Lob district.
" 10	Returned to Kema Sala.		..	..	Crossed the Ugen on the ice.
" 11	Kema Sala ..	Kuenchi ..	..	7	The south or main channel of the Tarim is 300 yards wide at the junction. Lob-hor road runs east from here.
" 12	Kuenchi ..	Shinagha ..	..	13	Crossed the Inchiki or Shah Yar river <i>en route</i> for Kuria. Road excellent, runs N.N.W. to camp through strips of shrubbery and forest; crossed also Kuria river over the ice.
" 13	Shinagha ..	Kuria City ..	..	9	Road excellent, in a N.W. direction through forest, then N. by W. $\frac{1}{2}$ W. through sandy desert with a little shrubbery to small village of Shinagha.
" 16	Distance from Khotan to Kuria by Tarim rivers, and by Kultokmit and Shinagha ..	..	..	537 $\frac{1}{2}$	Road enters sandy desert; at 3rd mile passes small village of Bashingiz and again enters desert, which continues up to 8th mile, where cultivation of Kuria begins.
" 17	Kuria ..	Shorshuk ..	..	15 $\frac{1}{2}$	
" 17	Shorshuk ..	Karashahr city.	..	12	On leaving Kuria cross Kuria river by wooden bridge and enter the bazaar and Yanghi Shahr, where the Chinese and Tunganis have found a place of shelter. At 3rd mile ascend gently and enter the mountains and pass through narrow defile to the 6 $\frac{1}{2}$ th mile, where there is an old fort built by the late Atalik Ghazi. From here enter valley which opens out about 1 $\frac{1}{2}$ mile from fort into a large barren plain. At 8 $\frac{1}{2}$ th mile pass Ak Tagh Langar. Shorshuk lies in a N.E. by N. direction from Kuria in the centre of a desert with only a few rest houses and serais. Road good, but in many places heavy owing to yielding sands.
" 18 to 26	Distance from Kuria to Karashahr ..		..	27 $\frac{1}{2}$	Road runs N.E. the first 6 miles through desert to Dhungzil Langar. A little beyond are the ruins of the old city of Karashahr. At 7 $\frac{1}{2}$ th mile pass Kalka Mazar, a little to the left of road. From Dhungzil road runs N. by E. to Karashahr, and the extensive level plain watered by the Karashahr river becomes a prairie, and is the home of a large body of Kalmaks. Before entering the city crossed the Karashahr river, now frozen.
Feb. 8, 1886	Kuria ..	Bots ..	..	13	Before entering the city crossed the Karashahr river, now frozen. Christmas among Turks and Tartars, returned to Kuria city, and remained there till winter

SECTION III.

Road runs W. by S. through cultivation to the village of Bots, on left bank of Kuria river, and near where this river flows into the large lake of Bots-Kul.

Date.	From	To	Elevation.	Distance.	Remarks.
1886.			feet.	miles.	
Feb. 9	Bota	Yandem ..	..	8½	Road very good in a S.W. direction through barren wastes with patches of grazing land.
" 10	Yandem ..	Akchigh ..	..	9	Road runs S. for the first 5 miles, then turns S.E. through patches of old forest with soft sandy soil.
" 11	Akchigh ..	Kuenchi Mazar.	..	6½	Road runs E.S.E. through strips of forest with large patches of grazing land. There are two houses and masjid here, with the mazar a little to the north of the road on a sandy hill, visited by a large number of people from Kurla throughout the year.
" 12	Kuenchi Mazar.	Asmo Chikar	..	9½	Road runs E.S.E., turning and twisting a great deal through long strips of forest and shrubbery, with fine patches of grazing land near the banks of the river. A few miles away is a belt of sandy waste with a little brushwood.
" 13	Asmo Chikar	Kuozak Kuenda.	..	10	Road runs E.S.E., crossing and recrossing the river on the ice through strips of old forest with patches of grazing land and brushwood.
" 14	Kuozak Kuenda.	Kuenchi Ak-chigh.	..	5½	Made an easterly course and joined the high road to Lob-nor, half a mile from Kuenchi. Road runs through strips of old forest with patches of grazing land and brushwood. Camp on the right bank of the Kurla river.
" 15	Kuenchi	Kema Sala	..	7	On the banks of the Inchiki river.
" 16	Kema Sala	Kultokmit Kul	..	10½	On the banks of the Ugen river.
" 17	Remained at Kultokmit Kul, where the commissariat supplies, 43 donkey-loads of grain, rice, and flour, were received.				
" 18	Marched slowly along banks of the Tarim with the chief beg of the Lob-nor district to his home in Kirchin. Remained his guest till the 24th.*				
" 19	Kultokmit Kul*	Kais Kul or Akhtarma.	..	11¼	Small village of reed huts. Half a mile from Kultokmit Kul the Ugen river joins the Tarim. At 6th mile pass the small village of Aghiz. Road excellent, in an E.S.E. direction, near the left bank of the Tarim, through reeds and grass.
" 20	Kais Kul	Ulugh Kul	..	13½	Small village of reed huts. Road good, runs in an E.S.E. direction over sandy waste and patches of grass and reed jungle, and a little shrubbery. At 6th mile pass Yenghi Kul village. The Tarim now flows to the south of the road, and S.W. of Ulugh Kul it splits in two.
" 21	Ulugh Kul ..	Kirchin (or Kara-Kul).	..	13¼	Small village of reed huts; residence of the chief beg of Lob-nor district. Road good, runs E. by S. for 3 miles, near to Kargha-asta village, then S.E. to Kirchin. At 7¼th mile pass Kogully village, and cross upper channel of the Tarim; at 8½ miles pass the small village of Chigalik. From this point the road runs through marshy land, now fortunately frozen over. A road running N.E. from Kirchin goes to Turfan.
" 24	Kirchin ..	Makat.. ..	..	10½	Small village of reed huts, now deserted. Road good; runs in an E.S.E. direction. 3 miles from Kirchin the lower channel of the Kirchin comes close to the road for about 3 miles, then turns S.E. The road passes through a deal of sandy waste.

* I have assigned dates for the following three marches to Kirchin, not given in the original, and assumed that the travellers arrived there on the 21st.

Date.	From	To	Elevation.	Distance.	Remarks.
1886. Feb. 25	Makat..	Achik ..	feet. ..	miles. 15	Small village of twenty-five reed huts ; residence of second beg of Lob. Road good, in an E. direction, with patches of grazing land for 10 miles, to the very small village of Boskal. 5 miles further, in an E.S.E. direction, is Achik.
" 26	Achik ..	Karadai ..	..	9½	Small village of twelve reed huts. Road good ; runs in a S.E. by E. direction through patches of grazing land and sandy waste. At 6th mile pass Yata Bolda, a very small village. From Achik the road runs parallel with the upper channel of the Tarim.
" 27	Karadai ..	Arghun (or Aralghan).	..	13½	Camp on left bank of the Tarim's lower channel. Road good, in a S.E. by S. direction parallel with the Tarim's upper channel, and through patches of grazing lands, old forests, and sandy wastes. Cross the Tarim's lower channel at Arghun. A mile east both channels unite again.
" 28	Arghun ..	Tokam ..	..	10½	Camp on right bank of Tarim. Road good ; runs in a southerly direction through patches of grazing lands and sandy wastes and belts of old forests and shrubbery. The road touches the river at two bends.
March 1	Tokam ..	Kurghan ..	..	13	Camp on right bank of Tarim. Small mud fort built by the late Amir Yakub Beg. This is the frontier of the Kara-Koshin district. The fort is now deserted. Road good ; runs in a S. by E. direction through patches of grazing lands and sandy wastes. From here there are two roads into Kara-Koshin—one running in a S.E. direction, via Chigalik, to Abdal, the Lob-nor, and Kara-Buran lakes ; the other in a S.S.W. direction, via Lob, to Chaklik.
" 2	Kurghan ..	Lob ..	..	10½	Small village of reed huts on the right bank of the Charchand river, and in the centre of a number of small lakes fed by a branch stream from the Tarim, which leaves the parent river at Chigalik. Road through sandy waste for the first half march, and then through swamps to Lob. At 2 miles from Lob cross stream from Tarim. The soil is very saline here. Lob lies S.W. by S. from Kurghan.
" 3-6*	Lob ..	Chaklik ..	3250	22	Village of about seventy mud houses, with nearly 500 inhabitants. Road runs in a S. by W. ½ W. direction through swamps for 5 miles, then enters on a barren saline soil, and crosses the Chaklik stream (which is very brackish) at the 8th mile. From here the road lies S. by W. to Chaklik over a barren saline waste, the first signs of vegetation appearing about 5 miles from Chaklik. A road running S.W. by W. ½ W. from Chaklik goes to Charchand. Chaklik is the only place of any note in the Lob district, of which it is the granary. Its inhabitants are a simple-minded people, isolated from the world. There is extensive cultivation, irrigated by canals cut from a stream that comes from a fine range of mountains 12 miles to the south of Chaklik. This mountain stream

* According to the diary, Chaklik was reached on the 6th March, but following the stages of the itinerary, it should have been gained on the 3rd of that month ; the difference has probably to be distributed over two or three of the longer marches.

Date.	From	To	Elevation. feet.	Distance.		Remarks.
				feet.	miles.	
1886.						
March 17	Distance from Kuria travelled Chaklik ..	Chaklik by route .. Camp Tuzlik Dhung, Kara Buran lake.	..	221½ 19½		flows hard by Chaklik, and eventually becomes absorbed in the sand, before reaching the Kara-buran water-spread. Road lies in a N. by E. direction for the first 10½ miles along the road to Lob village. From here the road turns off in a N.E. by E. direction for 9 miles to Tuzlik Dhung. 3½ miles from camp enter on southern edge of lake, which is now only partly under water. There is no wood or grass here, and the water is very brackish. On right bank of Tarim. Road runs nearly N.E. by E. along the southern edge of the lake for 10 miles. At Su Aralghan the lake is only 1¼ mile wide, and about 4 miles from Yayok comes to an end, that is to say, the Tarim (now a mixture of nearly all the waters of Eastern Turkistan as far east as Karashahr) narrows to about 50 yards, and meanders slowly towards the Lob-nor lake. The road runs along a barren saline plain, which has every appearance of having been the bed of an extensive sheet of water. Reedy grass and scrub fringe the river bank; the water is slightly brackish. On the north side of the river there is nothing but a howling sandy waste. A small village of twenty-five reed huts on the right bank of the Tarim. Road lies E. by N. ½ N. along a saline plain. On nearing Abdal there is a small patch of reedy grass and shrub, and the water is only very slightly brackish here. About 12 miles farther, in an E. by N. direction, is the head of Lob-nor lake. From here also is a road running S.E. by E. for about 50 miles, then turning to the south, and known to the Lob people as the Karashahr-Kalmak road to Lhassa. Return march towards Chaklik. Looking westerly from camp there is a fine view of the Kara Buran lake. Its length is a good 20 miles, and 11 miles from north to south in its widest part when the river is in flood. The remainder of the winter was spent at Chaklik, and on the 29th April the travellers started for their Tibetan journey.
" 18	Camp Tuzlik	Camp Yayok or Yorok.	..	14		
" 19	Camp Yayok	Camp Abdal	..	10		
" 20	Abdal ..	..	..	..
	Started from Abdal, and returned to Chaklik on the 21st, having travelled on excursion to lakes Kara Buran and Lob-nor .. .. .	.. .. .	..	89		
April 29	Chaklik ..	Camp ..	..	3		SECTION IV. Encamped outside cultivation, 3 miles east of Chaklik, on large plain, with shrubbery, grass, and water. To the south of the road the stony hard wilderness stretches up to the foot of the mountains for 12 miles.

Date.	From	To	Elevation.	Distance.	Remarks.
1886. April 30	Camp	Yandash Kak	feet. ..	miles. 13	On desert plain. Continue in an easterly direction. Road good. No grass, and brackish water only to be had by digging wells 5 and 6 feet deep. The hills are about 4 miles to the south of camp. General direction travelled E. by S.
May 1	Yandash Kak	Camp Sai ..	..	19	On left bank of mountain stream. Along desert in an easterly direction to camp at foot of the mountains. Road good, but stony for several miles; wood and water plentiful; no grass. General direction travelled E. $\frac{1}{2}$ N.
"	Sai	Chukar Sai..	6900 ft. 3 miles S.E. from camp.	9	On high sandy land at foot of mountains. Cross stream. Road runs in an E. by S. direction, with a gradual but steady ascent to camp. Scrub plentiful; no water or grass. Spring of water 3 miles S.E. from camp.
"	Chukar Sai..	Bulak Bashi	8200	8 $\frac{1}{2}$	Camp in gorge. Road, which is excellent, runs in an easterly direction and gently turns S.E. by S. with gradual ascent to end of 5th mile. From here the road lies S.E. by S. from the high sandy land 500 feet into gorge, with stream which runs in a northerly direction for about 11 miles, and then loses itself in the sand. From foot of descent the road is stony, with gradual ascent, zigzagging in a general S.S.E. course to camp. Wood (shrubs) and water plentiful; no grass.
"	Bulak Bashi	Camp Saipuk Bulak.	10,700 pass Kum Dawan	4 $\frac{1}{2}$	In narrow valley. On leaving, camp road continues up gorge S.E. by S. for 1 $\frac{1}{4}$ mile to foot of Kum Dawan Pass. The pass, which is 2 miles in length, with rather abrupt ascent and descent, is very heavy on baggage animals, as the sandy soil is very soft and yielding. From top of pass the road descends into a continuation of the gorge, which now opens out a little, and from foot of pass runs S.E. to camp. Scrub wood plentiful, no grass, and the Bulak or spring had run dry.
"	Saipuk Bulak	Camp in gorge at foot of Tash-dawan Pass.	..	10 $\frac{1}{2}$	Road good, up narrow valley for 5 $\frac{1}{2}$ miles S.E. by E. From here, it turns to the S.S.W. and becomes stony about 2 miles from camp, where the valley closes in and becomes once more a gorge. Brushwood, grass, and water plentiful. Spent several hours in making road up pass.
"	Camp ..	Camp Tash Kul Bashi	13,000 Tash Dawan Pass.	4 $\frac{1}{2}$	Crossed Tash Dawan Pass; ascent and descent very steep, 1 mile long in a S. W. direction. From south side of pass very stony road runs through gorge S.S.W. for 1 $\frac{1}{2}$ mile, then S. W. by W. to camp. Brushwood, grass, and water plentiful. From top of pass, had a grand view of Altun Range. (Of. Postscript and 'Proceedings' R.G.S., 1889, p. 375.)
"	Camp	Camp Pashalik	..	15 $\frac{1}{2}$	On left bank of stream in small valley. On leaving camp the road, which is stony, descends gradually through gorge for 2 miles in a S.S.W. direction for the first mile,

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Date.	From	To	Elevation.	Distance.	Remarks.
1886.			feet.	miles.	then turns gently to the S.E. From end of 2nd mile the road, which is good, turns sharply to the east and enters narrow ravine, with steady ascent for 1½ mile, where it enters small valley, and still runs in an easterly direction for another 2¼ miles, with gentle ascent to end of valley. From here (the 5¾th mile) the track again enters a small narrow ravine and descends in a S.E. by E. direction from 1¼st mile into a small valley. At the end of this (7th mile) cross small stream (dry) and turn to S.S.W. for ½ a mile, then S.E. by S. for ¾ mile, and strike the Pashalik stream (crossed at Camp Sai on May 2nd (see ante). The road from here is excellent, and turns S. by W. and S. by E. for ¾ of a mile, then S.E. by S. with gentle ascent following and crossing Pashalik stream twice to camp. Half a mile from camp crossed the Illwa Chiman stream running in from the E. and joining the Pashalik stream. Grass, wood, and water plentiful.
May 8	Pashalik ..	Camp Kara Cuoko.	..	10½	In grassy valley on left bank of Illwa stream. On leaving camp road runs S.E. following Pashalik stream, meandering through small valley with patches of grass for 2½ miles. From here road leaves stream and valley and turns to the E.S.E. along narrow plain, and at the 5½th mile strikes across Illwa stream in an E.S.E. direction through valley to camp. The hills skirting both valleys are low and sandy coloured, rising higher and higher, and becoming bolder and darker in the distance. Road excellent, with gradual rise. Grass and water abundant, wood scarce; argols of wild yak and ass plentiful.
" 9	Kara Choko	Mandalik ..	..	16	On S. side of plateau. On leaving camp the road runs in an E.S.E. direction along valley for the first mile, then gradually leaves valley and stream and ascends gently through little villages in an E. by S. direction to camp, skirting the foot of mountains on the S. Road very good, becomes a little stony a few miles from camp. No water or grass, brushwood plentiful.
" 10	Mandalik ..	Camp Uzen Shor.	..	19½	On S. side of plateau. Continue along plain in an easterly direction, skirting foot of mountains. Road good, but stony in places, with slight descent all the march. Grass, wood, and water plentiful, water however is brackish owing to the saline soil.
" 11	Uzen Shor ..	Camp Obiman Bash-Kul.	..	18½	On extensive plateau 5 miles S.E. by E. of the southern side of the Altun Range. On leaving camp road turns S. by E. for 1 mile to foot of mountains to skirt swamp. From here road lies in an E.N.E. direction, skirting foot of mountains for 5¼ miles and passing southern edge of small salt-water lake. From here gradual ascent to the S.E. and enter ravine for 1¼ mile, then gorge for 2¼ miles, into valley ¾ of a mile S.E. and

Date.	From	To	Elevation. feet.	Distance. miles.	Remarks.
1886.					
May 12	Chiman Bash Kul.	Camp Bagh Takai.	..	23 $\frac{3}{4}$	1 $\frac{1}{2}$ mile E.N.E. From here the road turns in a south-easterly direction, and 5 miles from camp leave mountains and enter upon plateau at 7 $\frac{3}{4}$ miles from Chiman Bash Kul strike the route of the Karashahr Kalmaks to Tibet (<i>ante</i> , p. 81), and after following it for 2 $\frac{3}{4}$ miles it turns off due S. Footprints of wild camel seen.
"	Expedition camps several days at Bagh Takai to rest men and beasts.				On Chiman plain, well sheltered by an offshoot of hills, thrown off, as it were, and standing all alone by a large stream that rises in the Altun range, three or four marches E.S.E. from Charchand, and meanders slowly towards the Chiman range. A most glorious camp is this. Grass, water, and wood in abundance, with plenty of shikar. Road excellent, in a S.W. direction along Chiman plain to camp, with gradual rise of 500 feet.
" 19	Bagh Takai	Kara Choka	..	5	On Chiman plain and on right bank of stream. Road excellent, runs S. by W. to camp. Wood, grass, and water in abundance. On leaving Bagh Takai ford large stream Karasai-daria, flowing in from S.W. by W., and 2 miles from Kara-choka strike another stream flowing from the south.
" 20	Encamped at Kara Choka.				In valley and on left bank of stream. On leaving camp follow stream right up to Mulli Korgan. 7 miles south from Kara Choka reach foot of mountains, and enter ravine, still going south, for 2 $\frac{1}{2}$ miles further. From here road turns gently to E.S.E., and opens out into valley on reaching camp. Road excellent, with a very gradual ascent all the way. Wood, grass, and water plentiful. Weather cloudy, with strong westerly wind.
" 21	Kara Choka	Mulli Korgan	..	12 $\frac{1}{4}$	
" 22	Mulli Korgan	Camped to rest	baggage animals.		Ford several small channels of stream flowing from S.E. Leave it, and cross valley in S.
" 23	"	Camp north side of Amban Ashkan pass.	13,125	11	by E. direction for 1 $\frac{1}{2}$ mile, then turn to S.W. by S. to camp at foot of pass. Road excellent, with gradual ascent of 10 miles. Vegetation scanty; brushwood, however, plentiful, and water from melting snow.
" 24	Camp	Camp Manar Dhong.	13,300	9	At mouth of ravine on south side of Chiman range. From camp at north side of the pass the road enters ravine, a steady ascent of 4 miles S.S.W. to top of pass (14,000 feet), then a descent into another ravine in a S. by E. $\frac{1}{2}$ E. direction to camp. From Manar Dhong, looking south, a large plain presents itself before us, and in a westerly direction, 11 miles distant, a very large and magnificent sheet of water, Chong-Kum-Kul lake, stretching for many miles to the east. The south side of the range is dark in hue, bold and rugged.

Date.	From	To	Elevation.	Distance.	Remarks.
1886. May 25	Camp	Camp Kum- Kul lake.	feet. ..	miles. 12 $\frac{3}{4}$	On right bank of Kum-kul-daria, near foot of the mountains. Leaving camp, a gentle descent, S.E. by S. $\frac{1}{2}$ S. and S.E., for 2 $\frac{3}{4}$ miles, rounding south side of Chiman range. From here road, which is excellent, with gradual rise, lies along plain E.S.E. to camp, following the right bank of the river for 7 $\frac{3}{4}$ miles. The river opposite camp is 150 yards wide, and several feet deep, but when in flood, about a month later, it is over a $\frac{1}{2}$ of a mile in width. Grass scarce, brushwood plentiful. Many antelopes seen.
.. 26	Camp	Camp Kokkan o' Tagh.	..	10 $\frac{1}{4}$	On right bank of Kum-Kul-daria. Continue along plain, following the right bank of the river in an E. by S. $\frac{1}{2}$ S. direction to camp. Road excellent, with gentle rise. Wild ass and antelope in great numbers. Brushwood and argols plentiful.
.. 27	Camp	Camp Kalla Ottlak.	..	15 $\frac{1}{2}$	On plain 1 mile from river. Road excellent, following the river, which now forms a lake called Kum Kul, in a S.E. by E. direction to camp. 5 $\frac{1}{2}$ miles from Kalla Ottlak is the head of the lake, and from here again follow the river, a mile from the road, swampy ground, fed by springs, intervening. Grass and brushwood plentiful.
.. 28	Crossed the river in a S.W. direction ..		..	1 $\frac{1}{4}$	Camped for several days to improve the condition of the baggage animals. Camp at the foot of a range of sand-hills. Herds of wild ass and antelope grazing within sight of camp.
June 5	Camp	Camp at foot of sand-hills.	..	9 $\frac{1}{2}$	Road good; runs along foot of the sand-hills, twisting and turning, and skirting the swamp in an easterly direction. Brushwood plentiful, grass scarce. Water from springs oozing from the sand. From camp, looking south (over the sand-hills and along a plain), another range of mountains comes in sight, probably an offshoot from the mighty Kuen Luen.
.. 6	Camp	Camp at foot of sand-hills, near large stream.	..	10	On leaving camp, road runs along foot of sand-hills in a S.S.W. direction for 4 $\frac{3}{4}$ miles, when you sight a large stream running in from S.E. From here the road turns S.E. by S., following right bank of stream to camp. From the 5th mile the ground is broken and cut up, causing rises and falls. Brushwood plentiful; grass scarce; water from stream.
.. 7	Camp	Camp in large plain on left bank of very small stream, nearly dry.	..	8	At foot of small strip of hills. Continue along foot of sand-hills, following right bank of large stream for 1 mile S.E. to junction of two streams flowing in from S.W. and S.E. by S., forming the large stream. Following the latter for 1 mile, ford it in a S. by E. direction, over soft yielding sand for 1 mile, 5 miles further over plain S.E. by S. $\frac{1}{2}$ S. Grass getting scarcer, no woods; argols of wild animals as yet fairly plentiful.
.. 8	Remained in camp owing to bad weather.				

Date.	From	To	Elevation.	Distance.	Remarks.
1886. June 9	Camp	Camp in valley at foot of hills and on bank of small stream, nearly dry.	feet. ..	miles. 12	Marched along plain S.S.E. for 1 mile, then crossed sand-hills in S.E. direction for 3 $\frac{1}{2}$ miles, and entered small valley; marched along it for 7 $\frac{1}{2}$ miles S.E. $\frac{1}{2}$ E. Road soft and yielding all the way. The hard breathing is very perceptible here, heightened by the strong scent of the brushwood, now in flower.
.. 10	Camp	Camp in valley	..	9	Continued up valley, with gradual ascent in a S. by E. $\frac{1}{2}$ E. direction, following stream to camp, and crossing it twice on the march. The road is good, but made soft by wet weather. Brushwood and grass fairly plentiful.
.. 11	Camp	Camp in glen	..	9 $\frac{1}{2}$	Up valley in a S.E. direction for 3 miles, then turned sharply to S.W. for 2 $\frac{3}{4}$ miles; cross valley and stream, and entering glen, which turns to W. and W.N.W. for 1 mile, to head of easy pass over ridge. From camp to pass the road is good, but very soft, with steady ascent. From top of pass road runs along the face of the hills, then enters ravine, with a steady descent, in a westerly direction for 2 $\frac{1}{2}$ miles to camp, which is nicely situated among the hills.
.. 12	Camp	Camp at foot of mountains.	..	10 $\frac{1}{2}$	On leaving camp forded large stream, 2 feet deep, W.S.W. $\frac{1}{2}$ mile, turning to W. along foot of hills for $\frac{3}{4}$ mile, then abruptly entering glen and ascending steadily for 1 $\frac{1}{4}$ mile S.W. by S. $\frac{1}{2}$ S. towards the mountains. Here we made a bad shot at crossing the range, and instead of going S.S.W., turned off in a S.E. direction 1 $\frac{3}{4}$ miles, and crossed the ridge safely. Once over, marched along face of the hills for 1 mile W. by S. $\frac{1}{2}$ S., then entered broad valley and crossed it S.W. $\frac{1}{2}$ W. for 3 $\frac{1}{4}$ miles; but seeing that we could not cross to-day another part of the range that has unexpectedly appeared in sight, turned to S. $\frac{1}{2}$ W. for 2 miles, and encamped near stream at foot of mountains. No wood; grass fairly plentiful, but short. Road good, but very soft.
.. 13	Camp	Camp at foot of mountains.	..	8 $\frac{3}{4}$	Followed north side of mountains along valley in an E. by S. direction to camp. From the 3 $\frac{1}{2}$ rd mile the valley becomes very undulating and the ground very soft from melting snow. Forced to turn eastward owing to an apparently impenetrable wall appearing in front of us, a perfect sea of mountains, towering higher and higher, with many snowy peaks stretching away to the south. No wood; grass fairly plentiful, but very short.
.. 14	Camp	Camp near left bank of main stream in valley.	..	10 $\frac{1}{2}$	Along undulating valley or sand-hills, divided by narrow glens, for 7 $\frac{1}{4}$ miles E. by S. $\frac{1}{2}$ S., when finding the rise and fall becoming constant, and very fatiguing to the animals, descended gently towards main stream N.E. for 1 mile to more level ground, barren in the extreme; then turned E. by N. for 2 $\frac{1}{4}$ miles to camp. No wood or grass, nor even argols.

Date.	From	To	Elevation. feet.	Distance. miles.	Remarks.
1886. June 15	Camp	Camp near right bank of main stream in valley.	..	11	Crossed main stream, and followed its right bank along undulating valley in an easterly direction to camp. No wood, grass, or argols. Burnt the ridge pole of tent to make a cup of tea. The part of the range on south side of valley ends S. $\frac{1}{2}$ W. from camp, and opens a view of a magnificent range of snow-clad mountains 18,000 feet high, and running E. by N. 12 miles distant. This part of the world is very arid and barren, and as our animals cannot go on much longer without wood or grass, we are forced, much against our will, to cross the hills on the north side of us again, in the hope of finding grass and argols, if not brushwood.
"	16 Camp	Camp in ravine.	..	14 $\frac{1}{2}$	Started in a N. by E. $\frac{1}{2}$ E. direction across valley for 1 $\frac{1}{2}$ miles with very gradual ascent to foot of mountains, where we entered ravine and ascended steadily in same direction for 2 miles, then descended into another narrow ravine and again ascended steadily 1 mile N. by W. $\frac{1}{2}$ W. reaching the top of the last ridge; a steep descent N.N.E. takes us clear of the range into a valley still arid and barren. Marching across this valley for 1 mile N.N.E. saw that the best road through the mountains in front of us lay further to the W., and turned N.W. by N. for 5 $\frac{1}{2}$ miles, reaching the foot of the mountains again and entering glen with stream, still going N.W. by N. for 2 miles when the glen becomes a narrow, stony ravine with steady descent. 1 mile further N.N.W. and N. recrossed stream and encamped on a fairly level spot on the face of the hill a little above stream. The change of scenery is complete. From the sandy coloured mountains, arid and barren, you meet with hills of a darker hue, and, though more stony, yet carpeted with a grateful verdure. Grass, brushwood, and argols plentiful.
"	17 Camp	Camp in glen	..	5 $\frac{1}{2}$	On leaving camp the ravine opens again; following and crossing the stream once we made a short march with steady descent over good road in a N. by E. direction. Grass and argols plentiful. Torrent swollen with melting snow.
"	18 Remained a day in camp to recruit strength of animals,				which were in bad condition.
"	19 Camp	Camp at foot of valley.	..	5	The glen opens out into a grassy valley. Road good, but a good deal cut up by melting snow. Direction N.E. by N. $\frac{1}{2}$ N., with gentle descent to camp close to low ridge of hills. Grass and argols plentiful. Brushwood scarce. Cooking with damp fuel most trying.
"	20 Rested to give the animals the benefit of the good pasturage.				
"	21 Camp	Camp on right bank of stream.	..	10 $\frac{1}{2}$	Crossed low ridge of hills N.E. by E. $\frac{1}{2}$ E. 1 $\frac{1}{2}$ mile with descent into grassy valley, marching in an easterly direction to the 7th mile, then entered the hills again E. by S. and 1 mile from camp turned E. by N., crossing stream. Road good, grass, brushwood,

Date.	From	To	Elevation.	Distance.	Remarks.
1886.			feet.	miles.	and argols fairly plentiful. The southern side of the Chiman range is now in full view again. The sand-hills that sprang up at Kum-Kul end abreast of camp. We marched for about 25 miles from camp in a N.W. direction, along the plain, the ground rising slightly, and the streams all flowing in an easterly direction. The plain becomes a valley from Kum-Kul.
June 22	Camp	Camp in valley near right bank of main stream.	..	10	Continued along valley skirting the hills in an easterly direction to camp. Road excellent all the way. Grass and brushwood fairly plentiful.
.. 23	Camp	Camp at foot of hills on right bank of main stream.	..	10½	Marched along the same valley E. by S. ¼ S. to the 6th mile. Here valley closes in and the road, after descending for 1 mile E. by N., turns to E.S.E. over undulating and broken ground, thickly studded with fine scrub and brushwood. The soil now changes its character; instead of a dark firm earth it is now a brick-coloured gravel supporting a sand-grass which is fairly plentiful.
.. 24	Camp	Camp Bokalik in valley on right bank of main stream.	..	3½	The valley again opens out, and after marching along it for nearly 4 miles encamped to give the animals the benefit of the good grazing. Thorny scrub and brushwood very plentiful. Crossed a stream running from the south. 25 or 30 miles up it gold is found in its bed. There is a good straight road with fuel and grass fairly plentiful from Kum-Kul to Bokalik, frequented every year by Turks from Khotan, who pass viâ Keria and Charchand, and also from Chaklik to work in the gold fields. They arrive about the beginning of July and work till the middle of August, when the cold obliges them to return home again. Their stores and outfit are transported on donkeys.
.. 25	Camp	Camp in valley on right bank of main stream.	..	13½	Along valley in an E. by S. direction to the 10th mile, then crossed a large mountain stream with brick-coloured water, flowing into the main stream from the south, turned east for 3 miles and encamped. Grass scarce, brushwood plentiful. The mountains are becoming sand-coloured again, a sure sign of scanty vegetation.
.. 26	Camp	Camp in valley near main stream.	..	6	Followed valley in an E. by S. ¼ S. direction to camp along right bank of main stream. Excellent camping ground, with fine belt of scrub, brushwood, and grass for over a mile on right bank of stream.
.. 27	Camp	Camp in valley near main stream.	..	10	Followed main stream in valley in a nearly E. by S. direction to camp. A fine strip of grass and shrub.

Date.	From	To	Elevation. feet.	Distance. miles.	Remarks.
1886. June 28	Camp	Camp in valley at junction of streams.	..	11½	Continued along valley in an E. ½ S. direction to 9th mile. Then came to a large stream with brick-coloured water 3 feet deep flowing in from S.W., with a very deep channel and high banks, and followed it in a N.E. direction for 2½ miles to junction with main stream, successfully crossed it with all the caravan. No grass; brushwood plentiful.
"	Camp	Camp Bulantai.	..	9	In valley on right bank of main stream, direction E.S.E. for 2½ miles to round bend of river. Road soft and sandy, and over broken ground. Had to turn S. by E. for one mile, then E. by S. for 4½ miles to avoid the deep gullies. Found that the stream cuts through the Chiman range in a northerly direction. Came down to river bank 1 mile N. by W. and encamped in a nice patch of grass and shrubs to give the animals the benefit of the good grazing, and to decide upon the future course. Mosquitoes swarming.
"	Camp nearly flooded by sudden rush of water from Dalgleish reconnoitre for road. Learned that it led to Hajjar, and was only practicable for baggage animals from October to April.				Moved camping ground to higher ground. Messrs. Carey and
July 1	Mr. Carey returns and reports favourably of				the latter finds the track to the north impracticable at this season of the year. He subsequently
"	Camp in Bulantai camp	Camp in ravine.	..	7	Marched in a southerly direction, entering the mountains, gradual ascent to a fine patch of grass in the ravine, 3¼ miles from camp. At about 6th mile crossed sandy ridge. Shrub and brushwood plentiful.
"	Camp	Camp in glen with small stream.	..	9¾	Continued up ravine in a southerly direction for 5 miles to where the valley forks. Road good, but stony, with gradual ascent. The main stream turns S.W., and hills become low and undulating. Leaving stream, turned up ravine to top of ridge that runs S.E. by S. for 3¾ miles, with steady ascent to top of ridge. From here descended gently for 1 mile into narrow glen, and camped for the day. Many signs of nomad camps in the glens and wherever fuel and grass is plentiful.
"	Camp	Camp in valley near stream.	..	11¼	Marched up glen for 1¾ mile E.S.E., where we left glen and stream, and crossed over low hills into smaller glen, going in same direction for 3 miles. From here turned up ravine for 2½ miles, then E.S.E. for ¼ mile to top of ridge. Road good, with steady ascent all the way. From ridge descended S.E. by S. for ¼ mile into undulating valley, and marching along it for 1¼ mile S.E., turned E. ½ N. for 2¼ miles to camp. A little grass, brushwood plentiful.
"	Camp	Camp in glen	..	5½	Struck off in a S.S.E. direction for 2 miles, rounding low hills, then S.E. for 1¾ mile, when we crossed low hills and entered glen with grass. Camped at 5¼th mile in glen, as we were not sure of finding grass further on. Brushwood and argols are fairly plentiful.

Date.	From	To	Elevation.		Distance.	Remarks.
			feet.	miles.		
1886.						
July 6	Camp	Did not move	owing to	bad weather		and heavy snowstorm (8 inches of snow fell).
" 7	Camp	Camp in valley	..	6 $\frac{3}{4}$		Up glen, steadily ascending for 2 $\frac{1}{2}$ miles to top of ridge. From top gradually descended for 2 $\frac{1}{4}$ miles S.E. by S. into valley. Had to turn off to E.N.E. to avoid small salt-water lake for 2 miles. Grass scarce, brushwood plentiful. Another fall of 10 inches of snow.
" 8	Camp	Camp in valley	..	9 $\frac{1}{4}$		Slowly feeling the way, marched along valley E.S.E. for 6 miles, then turned S.E. for 3 $\frac{1}{4}$ miles, and encamped by a nice patch of grass and brushwood. Suffering from snow-blindness.
" 9	Camp	Camp in ravine	..	12 $\frac{1}{2}$		Crossed valley and entered ravine in a S.E. direction at the 3 $\frac{1}{4}$ rd mile. Marched up ravine with steady ascent S. by E. for 1 $\frac{3}{4}$ mile, and S.E. by S. 4 $\frac{1}{4}$ miles to top of pass. Descended gradually in a S.E. direction for 3 $\frac{1}{4}$ miles and encamped. Trying march, owing to deep soft snow on both sides of pass. No wood or grass, and the ground very wet.
" 10	Camp	Camp in ravine	..	6		Short march down ravine in an easterly direction to a patch of short grass and brushwood. We are in a most difficult part of the country, a perfect sea of mountains. A stiff shower of hail in the early morning.
" 11	Reconnoitred	way across the latter part of the range, and succeeded in finding an easy pass, the 7 $\frac{1}{4}$ th mile leading clear of the range along a broad and extensive valley, studded with lakes, a large lake lying in a S.W. direction. Made a trip across valley to low undulating hills, and struck at the 16th mile a large stream flowing in from the S.W. by S. and turning eastward. Returned to camp from the 23 $\frac{1}{4}$ rd mile, having much brighter hopes of reaching the high road someway about Naichi very soon.				
" 12	Camp	Camp in valley 3 miles E.N.E. of large lake.	..	11 $\frac{3}{4}$		S.W. by S. $\frac{1}{2}$ S. for 3 miles, and entered another ravine. From its mouth turned S. by W. for 1 mile, S.W. by S. $\frac{1}{4}$ mile, and S.W. by W. $\frac{1}{2}$ mile to top of easy pass; gradual ascent all the way. From pass descended in a southerly direction, with steady descent to the foot of ravine 2 $\frac{1}{2}$ miles, and entered on broad valley. From south side of range marched across valley S. $\frac{1}{2}$ W. for 4 $\frac{1}{2}$ miles, and encamped by a broad patch of grass and brushwood.
" 13	Camp	Camp in valley by small sweet water stream.	..	4 $\frac{1}{4}$		A short march across valley, which now becomes undulating, S. $\frac{1}{2}$ W. to a patch of grass and brushwood.
" 14	Camp	Camp by small lake.	..	7		Across very low undulating hills in a nearly S.S.E. direction, along south side of valley, and encamped by strip of grass and brushwood on the verge of the lake. Scattered among the low hills are many sheets of water.
" 15	Rested to-day,	and observed for latitude.			The mean of two observations is 35° 41' 33" N.	

Date.	From	To	Elevation. feet.	Distance. miles.	Remarks.
1886. July 16	Camp	Camp in valley near small lake.	..	9½	An easy march across low hills into valley, twisting and turning a great deal to avoid the many lakes, making, however, a nearly easterly course. Grass and brushwood scarce. The lake nearly ½ a mile across.
"	Camp	Camp in valley	..	7½	A short march into centre of valley, in a N.E. by N. direction, to clear the lakes and soft ground. Grass and fuel fairly plentiful.
"	Camp	Camp in valley	..	9	Marched along valley in an E. ½ S. direction for 9 miles, and encamped by a patch of grass and brushwood. The ground very soft at starting, but improved at the end of 3rd mile, when the valley became more level and fertile. This is the rainy season in Mongolia.
"	Camp	Camp in valley	..	8½	Continued along valley E. by S., and encamped by a long strip of grass; brushwood very scarce. After the 5th mile the valley becomes uneven and broken, with the ground soft and swampy in many places.
"	Camp	Camp in valley close to low hill.	..	10	Continued along uneven valley in an E. by S. direction, crossing at the 3rd mile a large stream running south towards the middle of the valley, then turning easterly, and at the 8th mile came on a fresh track; footprints of many horses and mules, and a few human beings, coming from the mountains and going towards the south. This is the first track we have seen since we crossed the Altun or Korah-tagh range. Following the track for 1½ mile S.S.W., we came upon the camp fires of a party who had left this morning, and ¾ mile further we encamped. Grass plentiful, fuel scarce, and water from small pools. Started to overtake the travellers, and after following their trail for 12 miles S.W. by S., came upon a band of Buddhist priests on their way to Lhassa. Ascertained from them that we are three marches in a N.E. by N. direction from the Naichi district.
"	Camp	Did not move to-day.	..	Visit from lama.	
"	Camp	Camp in glen	..	10½	On leaving camp started once more for the mountains to the north to obtain supplies before marching south again. Crossed valley in a N.N.E. direction for 3 miles, then turned gently in a N.E. direction, entering at the 4th mile a narrow glen, and striking right bank of large stream flowing towards the south. Followed stream up glen, crossing and recrossing it for 3 miles. Grass plentiful, fuel scarce. A large caravan of pilgrims passed on their way to Lhassa.
"	Camp	Camp at mouth of ravine.	..	11½	On leaving camp crossed stream and rounded shoulder of hill 1 mile E. by N. ½ N. Here the road turns N.E. by N. with gentle ascent for 5½ miles, recrossing stream at 2nd mile and leaving it flowing in from the north. Half a mile further N.W. by N. is the top

Date.	From	To	Elevation.	Distance.	Remarks.
1886.			feet.	miles.	
July 24	Camp	Camp at mouth of ravine.	..	8½	of the pass, called by the pilgrims Anghir-takshia-dawan. From pass descended by narrow ravine N.N.W. for 2¼ miles, then turned in a N. by E. direction, with gentle descent, crossing and recrossing stream, for 2 miles to mouth of ravine, and encamped. Hill sides are green with moss, too short for ponies to graze upon. Saw over 10,000 female antelope with their young. Crossed stream flowing into stream from pass, which flows east, and crossed narrow valley 1 mile N.W. to foot of the Naichi-dawan pass. Ascending pass, which is steep and stony, for 1 mile N.N.W., reached the summit after hard work with baggage animals. From top very gradual descent for 2 miles N. ½ W., and for the next 3 miles rather steep descent in the same direction. Here the descent becomes gradual, and the road turns N. by E. ½ E. Grass very plentiful, shrubwood a mile lower down. Road fairly good, but soft and slushy, owing to melting snow. 3 inches of snow fell last night at camp. Antelope in numbers on south side of pass.
" 25	Camp	Camp in Naichi valley.	..	2½	Left ravine and entered valley 3 miles broad, 1 mile N.N.E. to mouth of ravine, then N.E. by E. ½ E. for 1½ mile, crossing stream from pass, and encamping ½ a mile below junction of this stream with the Naichi-gol river. Grass, shrub, and brushwood very plentiful.
" 26					Turki servants and donkey men refused to accompany them south.
" 27					Mr. Carey started with three servants for Golmo to try and purchase provisions from the nomads encamped there. Golmo is 100 miles from here, but there is a road across the mountains 20 miles nearer. Mr. Dalgleish remained with the rest of the caravan in the Naichi valley. Not finding all he wanted at Golmo, Mr. Carey went on to Bhaga Tsaidam and Hoidutham. He was, however, unable to procure the necessary supplies, and wrote to Mr. Dalgleish to join him.
Aug. 28	Camp in Naichi valley.	Camp at foot of Sosani pass.	..	15¼	Marched along valley in a N.E. by E. ½ E. direction for 7¼ miles to foot of mountains on north side of valley, crossing and leaving river at 5¼th mile. Here entered broad ravine, carpeted with scrub and brushwood. Road is stony, with a steady ascent in a northerly direction for 5¼ miles, then turns E.N.E. to the 15th mile, entering narrow gorge. Brushwood and scrub fairly plentiful, little or no grass.
" 29	Camp	Camp in ravine.	..	9½	A stiff march across the Sosani-dawan Pass. Ascent and descent 4½ miles, steep and stony. From foot of pass descended gradually down ravine for 5 miles, and encamped by a fine patch of grass on hillside; brushwood fairly plentiful. The road zigzags a good deal, making a nearly northerly course.
" 30	Camp	Camp Toraling	..	11½	Continued down ravine for 3½ miles N.N.E., then turned in a N.N.W. direction to camp. For the first 6 miles the road is stony and bad, crossing and recrossing six times.

Date.	From	To	Elevation.	Distance.	Remarks.
1886.			feet.	miles.	Here the ravine widens, and the dark, bold mountains soften down into a sandy colour, with a good road—steady descent all the way. Little or no grass; scrub on banks of stream.
Aug. 31	Camp Toraling	Camp near right bank of stream at foot of the mountain.	..	12 $\frac{3}{4}$	Shortly after leaving camp, crossed again stream called Tora-gol, and marched along foot of mountains to camp. For the first six miles the road, which is good, runs in a nearly N.N.E. direction, then turns E.N.E. Grass scarce; belt of shrub on river banks. We are now fairly north of this grand range of mountains, the Kuen Luen, and instead we have a vast undulating sandy desert striking away to the north. From our camp in Naichi we have descended 1700 feet.
Sept 1	Camp	Camp Harmugin Namgha.	..	12 $\frac{3}{4}$	In Thaichinar valley. Ascended sandy mound and marched over desert N.E. by E. $\frac{1}{2}$ E. for 3 miles. Still going in the same direction, entered a large patch of shrub and reedy grass, which continues to nearly the 11th mile, when the pasture lands of the Thaichinar Mongols are entered. From the 6th mile the road turns nearly E. by S. There are over 100 nomad tents dotted over this extensive valley, with large numbers of cattle, sheep, goats, and ponies. Meeting between Messrs. Carey and Dalgleish here, after an absence of 37 days, Mr. Carey having returned from Tenkalik with several loads of barley and a little sattu.
„ 2	Shifted camp $\frac{3}{4}$ mile, and remained here till the 4th, receiving visits from the nomads and sick people.				
„ 4	Left the nomad camp at Thaichinar and reached the Naichi valley on the 7th inst.				
„ 8	Left the Naichi valley and reached the left bank of the Chu-mar (Ma-chu) on the 11th inst. via the Naichi and Anghirtakshia dawans (passes), to the foot of the range, then across the extensive valley, the northern boundary of the Chang Thang for 19 miles.				
„ 12	Left Chu-mar (Ma-chu) and returned to the Naichi valley on the 15th inst.				
16 to 18	Rested in the Naichi valley to allow the ponies to recruit on the good grazing that is here.				
„ 19	Left the Naichi valley and reached again the nomad camp in the Thaichinar valley on the 23rd inst. The nomads are now beginning to move further east.				
24 to 25	Rested at our old camp. On the 25th got everything ready for a start to Sachu (Sha-chau) to-morrow.				
„ 26	Camp	Camp on left bank of Toragol.	..	10 $\frac{1}{2}$	The road, which is fairly good, passes over a very saline soil with scanty vegetation, in an E. by N. direction along the valley, and crosses the stream at camp. Vegetation improves on nearing the banks of the Toragol, and on its banks there is a fine belt of shrubbery with bushes bearing red and black berries, and a fair patch of reedy grass. Water scarce, as the river is nearly dry.
„ 27	Camp	Camp Hodja Gor Namgha.	..	9 $\frac{1}{2}$	On leaving camp parted with the Toragol stream, which flows to the north for about 10 miles and becomes lost in the sand. The road, which is fairly good, runs in a

Date.	From	To	Elevation. feet.	Distance. miles.	Remarks.
1886.					
Sept. 28	Camp	Camp on right bank of Zokha-gol.	..	14 $\frac{1}{2}$	nearly N.W. direction across the valley, and near a line of low sandy hillocks. The soil is still very saline. Reedy grass fairly plentiful, and a few shrubs. Water from small spring.
"	Camp	Camp Yetka	..	13	Continued along valley in a W.N.W. direction over saline soil with patches of shrubby and reedy grass. Water from spring in bed of rivulet, which is more of a swamp.
"	Yetka	Camp on right bank of Horghway-gol streams.	..	7 $\frac{1}{2}$	On leaving camp crossed Zokha-gol (a swamp with a foot of soft mud), and continued along valley in a N.W. by W. $\frac{1}{2}$ W. direction over saline soil, with shrubby and reedy grass 2 feet long in places where the soil is not so saline. Water very scarce and brackish.
Oct. 1	Camp	Camp Torol Naingha.	..	12 $\frac{1}{2}$	A short march along valley in a N.W. direction over very saline soil and scanty vegetation until near the stream, which is very muddy. The valley to the north is very desolate and barren, while to the south are very arid sand hillocks. Grass and wood plentiful round camp. Observations for latitude gave this as 36° 47' 2".
"	Camp	Camp Hajjar on left bank of Otto Mairin-gol (Utu-murren-gol) stream.	..	14 $\frac{1}{2}$	On leaving camp crossed Horghway-gol and continued along valley in a W. by N. direction to avoid bad ground up to the 8th mile, then turned to N.W. over saline soil with thick patches of shrubby and long reedy grass from 2 to 5 feet long. Grass and wood plentiful for several miles round camp.
"	Hajjar	Rested to-day, Camp on left bank of Patagontogol (Baty gautu).	4	4 $\frac{1}{2}$	Direction W. by N., following valley over saline soil with thick shrubby to the 10th mile, when the pasture lands of the Hajjar Mongols are entered. At the 7 $\frac{1}{2}$ mile crossed the Nairin-gol stream, at present shallow, and on reaching camp crossed the Otto Mairin-gol (Utu-murren-gol), 1 foot deep and 10 paces wide. Hajjar is the name given to the pasture lands of this part of the valley, which extends for several miles to the W. and N. of our camp. The Hajjar nomads, numbering over 100 tents, are encamped about 2 miles to the W. of our camp. The pasture is coarse, reedy grass growing on saline soil. Shrub and scrub wood have disappeared round camp, making fuel very scarce. The road is good at this time of the year, the swampy parts being hard and dry.
"	Hajjar		4	4 $\frac{1}{2}$	March in a half circle. Lat. observed 36° 55' 34".
"	Hajjar		4	4 $\frac{1}{2}$	Lat. observed 36° 57' 51".

Date.	From	To	Elevation.	Distance.	Remarks.
1886. Oct. 5	Camp on left bank of Pataganto (Batygantu) gol.	Camp Toraling on left bank of Patagonto gol.	feet. ..	miles. 10 $\frac{1}{2}$	Followed the left bank of the stream to camp in an E. direction for the first 3 miles, then N.E. by E. Good road all the way. Coarse reedy grass plentiful, shrubs and scrub wood scanty. The Patagonto (Batygantu) gol is about 200 paces wide, and in summer is 2 feet deep. From what I can learn from the nomads, this is same stream that we followed from June 16th from its source on to Bokalik, and eastwards to Bulantai 29th June, and which I followed for another 15 $\frac{1}{2}$ miles into the mountains before turning south from Bulantai.
" 6	Camp	Camp Bartik on right bank of the Holl river.	..	14 $\frac{1}{2}$	On leaving camp parted with the Patagonto (Batygantu) gol and marched across valley in a N.E. by N $\frac{1}{2}$ N. direction over a bad road with very saline soil and swampy in several places. At the 11 $\frac{3}{4}$ th mile struck the Holl river and marched along its right bank to camp. There is a nice patch of grass on the river bank, and shrub wood plentiful growing on sandy mounds.
" 7	Camp	Camp on small island in the Holl river.	..	8	A short march along the right bank of the river in a N.N.E. direction. The road for the first 4 miles runs among sandy mounds covered with shrubs in a semi-decayed state, then opens out into a fine patch of grazing land. The soil continues saline. At the 5th mile, and just before reaching camp, crossed two channels of the river, which becomes a kind of delta here. Lat. 37° 18' 34".
" 8	Camp	Hajjar Zakha	..	9 $\frac{1}{2}$	Crossed the Holl river 2 feet deep, with a very soft and muddy bottom, and continued across valley in a N. by E. $\frac{1}{4}$ E. direction, twisting and turning over a bad, soft, and sandy road, and on reaching camp found the small stream from the river dry. Vegetation now becoming scanty, still around camp there is a fair amount of grass and shrub wood, and here there is a nomad camp in spring. This is the northern Hajjar frontier.
" 9	Hajjar Zakha	Camp among sand mounds in desert.	..	21	Took supplies of water preparatory to two days' marching without water. At 6th mile left all traces of vegetation and entered on the desert. Between the 9 $\frac{1}{2}$ th and 10th mile crossed a large bed of caked salt with a few inches of brine on the top and soft sand underneath. At the end of this bed of salt (which extends for many miles E. and W.) entered and ascended a range of sandy hills running E. by S., and continued across them with slight undulations to camp. The course to-day is about N.E. by N. $\frac{1}{4}$ N. All is desolate for many miles round camp. No wood, water, or grass. The numberless sandy mounds among the hills resemble large tombs, while the soil has become a kind of concrete.
" 10	Camp	Camp in desert.	..	26	Started early this morning across the undulating sandy hills in a N.E. by N. $\frac{1}{2}$ N. direction to the 20 $\frac{1}{2}$ th mile, when it turns to E. by N., twisting and turning among the sandy mounds. At the end of the 12th mile ascended for $\frac{3}{4}$ of a mile to higher

Date.	From	To	Elevation.	Distance.	Remarks.
1886.			feet.	miles.	
Oct. 11	Camp	Makhai Zakha	..	6½	sandy mounds, which gradually dwindle away 4 or 5 miles from camp. The road throughout is fairly good, but the many slight ascents and descents are trying on the ponies. Another desolate camp: no water nor sign of vegetation. We are now nearing a ridge of mountains, probably the same range that we passed between Kara Choka and Mulli Korgan. Water and vegetation is now not far off.
"	Makhai Zakha	Camp Makhai on right bank of the Makhai-gol.	..	9½	A short march across valley in an easterly direction over soft saline soil to the southern frontier of Makhai or Makha, and to good grazing and fresh water. At the 4½ mile crossed stream from the mountains now become salt, and 2½ miles lower down valley forms a small lake; crossed another stream shortly before reaching camp. The streams in this part of the valley run in a north-westerly direction.
"	Camp Makhai	Sho-woto in valley near foot of mountains.	..	7½	Marched across valley over saline soil, soft in many places, twisting and turning over a bad road to avoid the swamps. Crossed the Makhai-gol, a small stream a few paces wide, with a foot of water flowing from the mountains, and encamped. Grass and shrubwood fairly plentiful. Our last camp (Makhai Zakha) S.W. from here. There are 20 or 30 tents of nomads scattered over the valley.
"	Sho-woto	Camp Shushik at foot of the mountains.	..	13½	A short march across valley in a N. by W. direction, twisting and turning over a soft saline soil. At the 1¼st and ¾rd mile crossed a small stream which, together with the Makhai-gol, flow into a large lake 3½ miles W.N.W. from camp. The lake is called Chaghan Tolghai-nor. Water fowl in great numbers about the swamps preparing to migrate to a warmer climate. Grass and shrubwood fairly plentiful. The centre of the Makhai district is about 8 miles E. by N. from yesterday's camp.
"	Shushik ..	Camp Kutil (Kotal) Amun.	..	14½	Continued across valley in a N.W. by N. direction over a good road slightly stony to the 11¾th mile, when the road turned to N. ½ W. to the 13th mile. From here touched the hills and entered them N.E. by N. No wood; grass and water scarce. There is a gradual rise from the 9¾th mile.
					Followed narrow passage in sandy hills N.E. by N. ascending gently for 2¼ miles. At end of 2nd mile passed small spring, a little brackish. Shrubwood and grass rather scarce. From here entered a barren valley and marched across it N. by W. for 5 miles. Entering narrow ravine in the mountains, which are arid and barren. Four miles further N.N.W., with a gradual ascent, reached top of the Maklai Kutil (Kotal) Pass. From pass descended gradually for 3 miles N.W. by N. ¾ miles, then turned to N.E. and to N. ¾ W. and encamped. No water or grass; brushwood plentiful on the N. and S. side of ravine. Instead of water, patches of new snow.

Date.	From	To	Elevation. feet.	Distance. miles.	Remarks.
1886. Oct. 16	Kutil (Kotal) Amun.	Kuku (Koko) Bashing Taen Ekin.	..	13½	Left ravine and descended into extensive valley lying in an E. by N. direction. At the 8th mile reached grass and very swampy ground for the last mile and a half before encamping. Tents of nomads scattered about. We are now in the Sirthang district. Grass fairly plentiful, no wood.
"	Kuku (Koko) Bashing.	Ulan Gazar (Ulan-gadjir)	..	4	A short march across valley for the first mile over very swampy ground N. by E. From here the road turns N.W. and becomes dry. About ¾ mile N. by E. from yesterday's camp is the nomad camp Chaga Nam-ba, and here we joined the road from Igi Tsaidam and Urel. I learn there are about 300 tents in the Sirthang district, and to-day we passed many tents E. and W. of the road, with herds of sheep, goats, camels, ponies, and several yaks. Grass fairly plentiful, no wood.
"	Ulan Gazar (Ulan-gadjir)	Bhaga Nairin	..	6½	Marched across valley in a N. ¾ W. direction for 6½ miles, and halted for the day. The road is good throughout the march, but the soil very saline in places. Grass fairly plentiful, but no wood, only animal dung for fuel. The small Goupa (i. e. monastery) at Yempin, called "Karim Goma," lies west from camp about 4 miles. Yempin is called Yembi on the chart.
"	Bhaga Nairin	Sair Gotto ..	..	5½	Marched along valley in an E.N.E. direction for 4½ miles to avoid swampy ground, then turned N. by W. for 1 mile near the northern edge of the grass in the valley. Grass plentiful, no wood. A supply of flour and grain obtained from the nomads. This grain costs a rupee per 15 lbs., and the flour a rupee per 9 lbs., and is brought from Sachu.
"	Sair Gotto ..	Camp on north side of Tawan Bulgan Kotal Pass.	..	22½	Left camp, and marched across valley, now barren, in a N.E. by N. direction, with gentle ascent from the 3rd to the 12¾th mile, when we entered ravine in the mountains. From mouth of ravine the road lies N.E. by N. for 2 miles, then turns N. by W. to the 21¼st mile; half a mile further N.E. by N. is the top of the Tawan Bulgan Kotal Pass. From the pass descended gradually N.E. by E. ¾ of a mile, and encamped. At camp there is a little grass and brushwood, no water except by melting snow. Road excellent throughout, with a steady ascent from mouth of ravine to top of pass. Small lake lies W. ¼ S. from the end of the 6th mile.
"	Camp	Camp Tam Bulak.	..	13½	Descended gradually for 3½ miles (N.E. ½ E. 2 miles, then N. by E. 1¼ mile), and entered glen leading to second pass in a N. by W. ¾ W. direction for 2 miles, and N. by E. ¾ E. ¼ mile to top of the Kurchiling Kotal Pass, which has a steady ascent of about a mile. The road from camp to top of the pass is good. From pass a sharp descent into stony gorge, twisting and turning in a N.N.W. and N.N.E. direction to near the mouth of gorge over a bad and stony road, with steady descent. At 10¾th mile leave gorge

Date.	From	To	Elevation. feet.	Distance. miles.	Remarks.
1886.					
Oct. 22	Tam Bulak ..	Hoyur Aliasai	..	14	(and you might say the mountains, as they now dwindle down to sand-hills), and enter an undulating valley, thickly covered with long grass and brushwood for 2 miles N. $\frac{1}{2}$ W.; $\frac{3}{4}$ of a mile further, N. by E. $\frac{1}{2}$ E., is camp, Tam Bulak, nicely sheltered among sand-hills, where flows a spring of fine water and a small stream. Grass, shrub, and brushwood plentiful.
" 23	Hoyur Aliasai	Kokcha Bor-gosun, on right bank of Danga-gol.	6700	10	Left the mountains, and marched across plain in a N. $\frac{1}{4}$ W. direction, and encamped by a dry stream. Brush and scrub wood plentiful all over the plain; no grass nor water. Road fairly good, with gentle descent to the 9 $\frac{1}{2}$ th mile.
" 24	Kokcha Bor-gosun.	Chinja Benla village.	5820	12 $\frac{1}{2}$	Continued across plain in a northerly direction over a good hard road with small stones, and forded the Danga-gol river at camp, 2 feet deep and 200 paces wide, with high sandy banks. Grass scarce; shrubs fairly plentiful along the river banks, and at camp there are three fair-sized trees, with a group of smaller ones.
" 25	Chinja Benla	Saitu, Sachu, or Shachau city.	5225	8 $\frac{1}{2}$	Parted with river at camp, and marched across plain in a N.W. by N. direction for 2 $\frac{1}{2}$ miles to foot of high sandy hills; ascended these hills, and marched across them in a nearly N.N.W. direction, with steep ascent and descent to the 12th mile, when we once more entered on large plain, and struck the Danga-gol, and crossed one of the channels. A quarter of a mile further reached the western end of the Chinese village of Chinja Benla, and encamped. This is the first cultivation we have seen since leaving Chaiklik six months ago. The farm people are all Chinese, and very civil they have been to us since our arrival. The road over the hills, owing to the soft and yielding soil, was very heavy and trying for the baggage animals.
" 26	Rested at Sachu 1 $\frac{1}{4}$ mile N. by E. $\frac{1}{2}$ E. from camp.				A pleasant march through cultivation in a N.E. by N. direction, following the left bank of the Danga-gol, brought us within hail of Sachu.
" 27	Sachu	Camp on plain	..	12 $\frac{1}{2}$	Section V. Settled everything this morning, and started on the march by 11 A.M. On leaving camp crossed the Danga-gol, at present nearly dry (as the water is run off on to the fields), and entered the city. At the 1 $\frac{1}{2}$ th mile passed from the city by the east gate on to the

Date.	From	To	Elevation.	Distance.	Remarks.
1886.			feet.	miles.	
Oct. 28	Camp	Gudak Jingzo 1st stage.	..	5½	high road, and after marching for 11 miles encamped. On both sides of the road there is cultivation for 4½ miles, when the cultivated tract to the south of the road ends, but continues on the north. Road good, runs in an E. by N. direction from city. At camp left cultivation, and a short march along plain over saline soil brought us to the first rest-house at Jingzo, consisting of a small bungalow and a few rest houses for servants. Vegetation is now becoming scanty. Water from well, wood from man in charge of rest-house.
" 29	Gudak Jingzo	Taustphi on plain at foot of hills, 2nd stage.	..	15	Marched along plain over a good road in an E.N.E. direction to 2nd stage, and encamped. Grass and scrub fairly plentiful near the rest-house. Water from well. After leaving cultivation water becomes scarce, and the extensive plain in many places an arid waste. This rest-house is in the same style as the last one, and at both they have a Joss-house full of fantastic stucco idols, gorgeously painted and with droll expressions.
" 30	Taustphi ..	Khwaja at foot of hills, 3rd stage.	..	15½	Continued along plain (now become an arid waste) N.E. by E. ½ E. to a rest-house partly in ruins, and a small fort and tower called Lu Sogolong, 9¼ miles from 2nd stage. Crossed here small stream from the hills with a fair belt of reedy grass and scrub wood. 6½ miles further along plain, in about the same direction, is Khwaja, near the edge of vegetation. Road good all the way.
" 31	Khwaja ..	Camp under western wall of Nainshe city.	..	14	Marched across plain in a nearly N.E. by N. direction to small Chinese town, Nainshe. From 2nd mile to 9¼th mile passed through cultivation and crossed two canals. From here entered again untilled land until near the city, where there is fair cultivation. Crossed two more canals on the latter part of the march. Road fairly good all the way. All along this march the plain is dotted with abandoned forts, fast falling into ruin. Nainshe, like Sachu, is surrounded by a mud wall, but much smaller, and is partly in ruins.
Nov. 1	Nainshe ..	Ba Tinsa on plain among low hillocks, 5th stage.	..	2½	A long march across plain in a nearly N.N.W. direction. Road good. Country a barren waste. At the 16¼th mile passed an encamping ground with two or three rooms dug out in the hollow of a rock, but at present there is no water, nor is there any grass or wood. From here the plain becomes undulating with low hillocks. This stage has six serais or rest-houses, and two or three small shops, but everything is very dear. The travellers' rest was disturbed by the arrival of a party of convicts who wished to share the same room with them.

Date.	From	To	Elevation.	Distance.	Remarks.
1886.			feet.	miles.	
Oct. 22	Tam Bulak ..	Hoyur Aliassi	..	14	(and you might say the mountains, as they now dwindle down to sand-hills), and enter an undulating valley, thickly covered with long grass and brushwood for 2 miles N. $\frac{1}{2}$ W.; $\frac{2}{3}$ of a mile further, N. by E. $\frac{1}{2}$ E., is camp, Tam Bulak, nicely sheltered among sand-hills, where flows a spring of fine water and a small stream. Grass, shrub, and brushwood plentiful.
"	Hoyur Aliassi	Kokcha Bor-gosun, on right bank of Danga-gol.	6700	10	Left the mountains, and marched across plain in a N. $\frac{1}{4}$ W. direction, and encamped by a dry stream. Brush and scrub wood plentiful all over the plain; no grass nor water. Road fairly good, with gentle descent to the 9 $\frac{1}{4}$ th mile.
"	Kokcha Bor-gosun.	Chinja Benla village.	5820	12 $\frac{1}{2}$	Continued across plain in a northerly direction over a good hard road with small stones, and forded the Danga-gol river at camp, 2 feet deep and 200 paces wide, with high sandy banks. Grass scarce; shrubs fairly plentiful along the river banks, and at camp there are three fair-sized trees, with a group of smaller ones.
"	Chinja Benla	Saitin, Sachu, or Shachau city.	5225	8 $\frac{1}{2}$	Parted with river at camp, and marched across plain in a N.W. by N. direction for 2 $\frac{1}{2}$ miles to foot of high sandy hills; ascended these hills, and marched across them in a nearly N.N.W. direction, with steep ascent and descent to the 12th mile, when we once more entered on large plain, and struck the Danga-gol, and crossed one of the channels. A quarter of a mile further reached the western end of the Chinese village of Chinja Benla, and encamped. This is the first cultivation we have seen since leaving Chaklik six months ago. The farm people are all Chinese, and very civil they have been to us since our arrival. The road over the hills, owing to the soft and yielding soil, was very heavy and trying for the baggage animals.
"	Rested at Sachu 1 $\frac{1}{4}$ mile N. by E. $\frac{1}{2}$ E. from camp.	the bridge across the river, to and from the city of Sachu, lies 1 mile N.E. from camp, and the centre of the city lies about			A pleasant march through cultivation in a N.E. by N. direction, following the left bank of the Danga-gol, brought us within hail of Sachu.
"	Sachu	Camp on plain	..	12 $\frac{1}{2}$	Settled everything this morning, and started on the march by 11 A.M. On leaving camp crossed the Danga-gol, at present nearly dry (as the water is run off on to the fields), and entered the city. At the 1 $\frac{1}{4}$ th mile passed from the city by the east gate on to the

SECTION V.

VOL. III.	Date.	From	To	Elevation.	Distance.	Remarks.
				feet.	miles.	
	1886.					high road, and after marching for 11 miles encamped. On both sides of the road there is cultivation for $4\frac{1}{2}$ miles, when the cultivated tract to the south of the road ends, but continues on the north. Road good, runs in an E. by N. direction from city.
	Oct. 28	Camp	Gudak Jingzo 1st stage.	..	$5\frac{1}{2}$	At camp left cultivation, and a short march along plain over saline soil brought us to the first rest-house at Jingzo, consisting of a small bungalow and a few rest houses for servants. Vegetation is now becoming scanty. Water from well, wood from man in charge of rest-house.
	" 29	Gudak Jingzo	Taustphi on plain at foot of hills, 2nd stage.	..	15	Marched along plain over a good road in an E.N.E. direction to 2nd stage, and encamped. Grass and scrub fairly plentiful near the rest-house. Water from well. After leaving cultivation water becomes scarce, and the extensive plain in many places an arid waste. This rest-house is in the same style as the last one, and at both they have a Joss-house full of fantastic stucco idols, gorgeously painted and with droll expressions.
	" 30	Taustphi ..	Khwaja at foot of hills, 3rd stage.	..	$15\frac{1}{2}$	Continued along plain (now become an arid waste) N.E. by E. $\frac{1}{2}$ E. to a rest-house partly in ruins, and a small fort and tower called Lu Sogolong, $9\frac{1}{2}$ miles from 2nd stage. Crossed here small stream from the hills with a fair belt of reedy grass and scrub wood. $6\frac{1}{2}$ miles further along plain, in about the same direction, is Khwaja, near the edge of vegetation. Road good all the way.
	" 31	Khwaja ..	Camp under western wall of Nainshe city.	..	14	Marched across plain in a nearly N.E. by N. direction to small Chinese town, Nainshe. From 2nd mile to $9\frac{1}{2}$ th mile passed through cultivation and crossed two canals. From here entered again untilled land until near the city, where there is fair cultivation. Crossed two more canals on the latter part of the march. Road fairly good all the way. All along this march the plain is dotted with abandoned forts, fast falling into ruin. Nainshe, like Sachu, is surrounded by a mud wall, but much smaller, and is partly in ruins.
	Nov. 1	Nainshe ..	Ba Tinza on plain among low hillocks, 5th stage.	..	$2\frac{1}{2}$	A long march across plain in a nearly N.N.W. direction. Road good. Country a barren waste. At the $16\frac{1}{2}$ th mile passed an encamping ground with two or three rooms dug out in the hollow of a rock, but at present there is no water, nor is there any grass or wood. From here the plain becomes undulating with low hillocks. This stage has six serais or rest-houses, and two or three small shops, but everything is very dear. The travellers' rest was disturbed by the arrival of a party of convicts who wished to share the same room with them.

Date.	From	To	Elevation.	Distance.	Remarks.
1886. Nov. 2	Ba-Tinza ..	Hong-lu-yin 6th stage, among low hills.	feet. ..	miles. 17½	Across undulating plain in a N.W. by N. direction to the end of 12th mile. From here entered a range of hills and marched across part of the range by a glen with gentle ascent in a nearly N.N.W. direction to rest-house. Road good, country an arid waste.
"	Hong-lu-yin	Da-chen, 7th stage, in valley.	..	19½	Across undulating hills for the first 3 miles in a northerly direction. From here the hills dwindle down into undulating valley, and the road turns more N.N.W. At the 12¼ mile passed a single house and serai with a fair patch of reedy grass and brush-wood. Road good; from Nainshe we have been on high road between China and Turkestan.
"	Da-chen ..	Ma-lung- Jingzo, 8th stage, in valley.	..	16½	Across valley in a N. by E. direction for 12½ miles to round hill, then turned N. by W. ½ W. to stage, which has a fair rest-house and two serais. Road good. Vegetation very scanty. Grass and wood at famine prices.
"	Ma-lung- Jingzo.	Shing-shing- shie in ravine, 9th stage.	7900	18½	Continued to cross valley in a N. W. by N. direction for about 6 miles. From here entered hill country in about the same direction, with gentle rises and falls to camp. Road good. Vegetation very scanty. Housed with convicts in one of the serais to pass the night—a most goodly company.
"	Shing-shing- shie.	Iswa Chenza, 10th stage, in undulat- ing valley.	6300	20½	A long march across hilly country to rest-house. At the 13th mile passed a <i>paroda</i> nicely built on top of a hill, and at the 12th mile an old rest-house now in ruins. Road good, but a little stony in places. Vegetation still very scanty in places. Weather clear and cold. Road lies over low undulating hills for the first 5½ miles.
"	Iswa Chenza	Kosthphi, in plain, 11th stage.	..	17½	From here, which may be fairly called the easternmost verge of Chinese Turkistan, an extensive plain, perfectly waste, is entered. Road good. Rest-house in ruins, with no supplies. Water brackish.
"	Kosthphi ..	Yen Dung, 12th stage, in plain.	3750	30	A long march across undulating plain, arid and barren. At the end of the 16th mile rested for four hours near an abandoned rest-house, called Kai Binza (4450 feet), and then went on to Yen Dung, where we were able to get grass and wood at very high prices.
"	Yen Dung ..	El-Timar, 13th stage.	3840	15	Road good, with gentle descent throughout, more perceptible from end of 20th mile. Ascended gently for the first ½ mile, then continued across undulating plain, reaching vegetation at the end of 12th mile, and a little cultivation at the rest-house. The march from Nainshe across this broad belt of waste has been very trying on the ponies. They have all, however, reached their native Turkistan, though two or three of them are much done up.

Date.	From	To	Elevation. feet.	Distance. miles.	Remarks.
1886. Nov. 10	Rested to-day at El-Timar.	The rest-house crowded with Muhammadans from Hami, who have come to see their Wang off on his way to China. Another range of mountains stands out boldly several miles to the north of camp.			
" 11	El-Timar	Kara Khodja, 14th stage in plain.	..	15	Continued across plain, now level and covered with coarse reedy grass right up to rest-house. Had a light fall of snow. Rest-house in bad repair. There are also three serais and a very small bazaar. All the rest-houses and serais along the route are in the hands of the Chinese.
" 12	Kara Khodja	Hami or Hamul, 15th stage.	3600	15½	Road lies over plain covered with reedy grass to the village of Kara Mukchi (3¼ miles), with about fifty houses and a nice strip of cultivation. At the 5th mile entered a strip of waste land extending to the 8½th mile. Here again entered on cultivation and pasture land extending nearly to the 15th mile, when we crossed stream and entered waste land to east end of city. In the evening two young Russian traders and a Belgian in the Chinese service paid us a visit.
" 22	Hami	Sim Kargha, 1st stage.	..	17½	Left Hami en route for Turfan. The road, which is good, continues along plain covered with reedy grass to rest-house. Passed two fresh springs of water; supplies to be had at rest-house at very high prices. From here there is a straighter and nearer road to Turfan, but it is very seldom used, owing to the long strip of desert, void of wood, grass, and water, that has to be crossed, and the fierce winds that prevail for several days together.
" 23	Sim Kargha	Tograchi, 2nd stage in plain.	..	15	The road, which is good, continues along plain covered with reedy grass to the 4¼th mile, where there is a small fort and village with good cultivation. From here vegetation becomes scanty to the 11th mile, when cultivation begins anew, and continues to rest-house. Crossed two small streams which rise from springs. Supplies plentiful here at high prices.
" 24	Tograchi	Jigda village, in plain.	..	12¼	The road, which is good, continues along grassy plain running with the mountains. At the 1¼th mile left the high road and kept a little nearer the mountains to reach this village, where supplies are to be had at more reasonable rates than at the rest-house of the 3rd stage; and as you enter a long strip of desert from here, supplies have to be taken from Jigda village. The name of the 3rd stage is Taranchi, and lies S.W. ¾ W. 4¼ miles from Jigda.
" 25	Rested to-day.				

Date.	From	To	Elevation.	Distance.	Remarks.
1886. Nov. 26	Jigda	Urdak lik, in plain.	feet. ..	miles. 13½	Left village, and continued along plain now almost bare of vegetation, striking the high road at the 5½th mile, and encamped by an old rest-house, where reedy grass and water are plentiful, but wood scarce. There is a patch of cultivation, but only one Chinaman resides here.
"	Urdak lik ..	Sarik Kumish	..	13¼	Left the half-way house, and marched over plain, now undulating and scantily clothed with vegetation. At the end of the 10th mile reached the 4th stage, Lo Dhung, with spring. 1¼ mile further brought us to two roads running to Turfan. The one nearest the mountains is the high road, with rest-houses; the other is the old road, and is shorter by one march. We have chosen the shorter, and will pitch tents. Road good, but stony. Coarse grass plentiful at camp, water a little brackish, wood not over plentiful. In the distance to the 8½th mile, with gentle descent all the way. From a stony barren waste extends to the 8½th mile, with gradual ascents and descents to camp, where there are the remains of an old rest-house, with a narrow strip of reedy grass and a spring slightly brackish. No fuel.
"	Sarik Kumish	Shilder Kumish in small glen.	..	12	Continued across low undulating hills, with gentle ascents and descents. The whole plain is now composed of these undulations, which are arid and barren in the extreme, and very stony in places. At the 19th mile reached a rest-house called Otta Gaima, now in ruins, with a small patch of grass and a spring of brackish water. Rested here until 7 P.M., when we made another march of 2¼ miles still over the same undulating hills, and encamped for the night.
"	Shilder Kumish.	Camp among low hills.	..	28¼	Another long march across low undulating hills and glens, passing at the 19¼th mile a rest-house, now in ruins, with a little grass and a well of brackish water. At camp there is a small patch of reedy grass and spring, but no wood. Road good but stony; country a barren waste.
"	Camp	Camp in valley	..	28¼	Another long march over the same kind of country. At the 6¼th mile found an old rest-house, and another at the 10¾th mile, both in ruins. At the end of the 18th mile left the desert and entered on a long belt of reedy grass. Soil saline. At the 22nd mile struck again the high road.
Dec. 1	Camp	Village of Chiktem.	..	25¼	Marched along valley with low undulating hills to the south of road, passing at the 3¼th mile and 6¼th mile two small villages. Road excellent, with reedy grass on both sides of the road for most of the way. There is a small patch of cultivation with two houses.
"	Chiktem ..	Korgha Utra	..	16¼	

Date.	From	To	Elevation.	Distance.	Remarks.
1886. Dec. 3	Korgha Utra	Pichan, 9th stage.	feet. ..	miles. 8	In valley with mud hills on south side of road. A short march along valley with gentle descent, entering cultivation at the 5th mile, where there are two small forts. Pichan or Pachan is a large struggling village with several miles of cultivation. The bazaar is inside a mud fort. Population, Turks, with a number of Tunganis and Chinese.
.. 3	Pichan ..	Lemstin or Lemyin, 10th stage.	..	15½	In valley with high sand hills on south side of road. Half a mile from Pichan crossed a small stream, at the end of 2nd mile left cultivation and entered barren waste with gradual ascent to the 5½th mile. From here the road descends gently to stage and enters cultivation again at the 12th mile, crossing two small streams at the 10½th and 13½th miles. Lemyin has a large patch of cultivation and many farm houses.
.. 5	Lemyin ..	Suigim, 11th stage.	..	10½	At mouth of gorge. On leaving Lemyin crossed stream and soon entered on barren waste to nearly the 9th mile, when cultivation again begins, and extends for several miles along valley, with many farm houses. At the 12½th mile passed a single serai, and at 14th mile left the valley and entered the sand hills by gorge. There are only two or three serais here.
.. 6	Singim ..	Turfan, 12th stage.	..	19	Left mouth of gorge and entered valley, an arid waste, but to the S. and S.W. of road there is a large extent of cultivation. At the 12½th mile joined the high road from the city of Lukching, and entered cultivation at the 15½th mile. On nearing Turfan the road runs through ruins of an old city, and passes a large tomb with pillar 200 feet high. At 17½th mile reached east wall of the Chinese town, and 1½ mile further reached the Muhammadan city, which we entered, and put up in a trader's serai.
.. and .. 7 .. 8	Rested at Turfan and reduced our caravan, paying off part of our Turkish servants, and also cashed several currency notes at a very heavy discount. Turfan, like Hami, is near the southern slopes of the Tian Shan, and is one of the largest towns of E. Turkistan. Climate very hot in summer and cold in winter. Water is produced from wells chiefly, and irrigation is carried on by means of underground canals.				
.. 9	Turfan ..	Dah-din ..	..	16	Left Turfan this morning, and continued along valley over a rough and rather stony road. Country the most of the march a barren waste. At the 3rd and 4½th mile crossed small streams, and a third on reaching rest-house, which is situated in a barren waste, with only a little coarse scrub. Wood and grass sold at the rest-house, but no other supplies to be had.
.. 10	Dah-din ..	Tokhtasun ..	..	14½	Shortly after leaving Dah-din the valley becomes fertile, reaching cultivation at the 12th mile. At the 10½th mile strike stream, and follow it to the 14th mile, where it is crossed by small bridge. Tokhtasun, a small town within mud wall fort, has a fine

Date.	From	To	Elevation.	Distance.	Remarks.
1886.			feet.	miles.	tract of cultivation, with many farmhouses dotted over the tilled land. Population, Turks, with a large body of Tunganis and Chinese. Good road all the way. Put up in a small serai for the night.
Dec. 11	Left serai, and	put up in the Bey's house,			and rested for the day.
" 12 to 16	Tokhtasun ..	Urumtsi ..	..	95½	Left Tokhtasun on the 12th. Ascending gently for nearly 29 miles in a northerly direction, entered the southern slopes of the Tian Shan mountains. At the 47½th mile passed the small town of Daivan Chin, inside a mud fort in bad repair. Wheat and barley cultivation extensive. Population, Tunganis, with a few Chinese and Turks. From Daivan Chin travelled along valley for 33½ miles W.N.W., then entered low undulating hills to Urumtsi, 14½ miles in a N.W. direction. Reached Urumtsi on the 16th, and put up in a house kept by a Chinaman. On the 18th called on the Joshwai, the governor-general of Turkistan.
" 24 to 27	Urumtsi ..	Tokhtasun ..	..	95½	Left Urumtsi on the 24th, and returned to Tokhtasun on the 27th.
" 28 " 29	Rested at Tokhtasun. Tokhtasun ..	Su Bashi ..	.	12¾	Left Tokhtasun and crossed valley, with gentle ascent to the 12¾th mile. From here descended a few feet into gorge with small stream. No vegetation. Grass and wood sold at rest-house.
" 30	Su Bashi ..	Eghar Bulak, in ravine.	..	15	Followed stream up ravine, with gentle ascent to end of 6th mile. From here the ravine or gorge closes in, and becomes stony. A steady ascent to rest-house. The stream comes bubbling out of the ground at the end of 6th mile. No wood or grass. Supplies to be had at rest-house.
" 31	Eghar Bulak	Kumish ..	..	28	Continued up stony gorge with steady gradual ascent for 8½ miles to top of easy pass. From pass descend gradually down ravine, and passing at the 13½th mile a small rest house called Uzma Dhung. The descent now becomes more gentle, and the hills dwindle down as you enter valley at the 17th mile. Kumish has 3 serais, a small mazar and sheikh, and a small patch of cultivation and thick scrubwood.
1887. Jan 1	Kumish ..	Kara Kizil ..	..	18	Marched along valley for 13¾ miles to foot of mountains, entering these by a good road to the stage in ravine. The rest-house here is also a frontier post, where all travellers and goods are examined by a Chinese official. Water from well; no grass; scrub fairly plentiful among the defiles.
" 2	Kara Kizil ..	Ushak Tal ..	..	28½	From Kara Kizil ascended gently for 2 miles to top of defile through the mountains, and after 1 mile further of gentle descent, entered valley and marched along it to stage,

Date.	From	To	Elevation. feet.	Distance. miles.	Remarks.
1887.					
Jan. 3	Ushak Tal ..	Tavilgo ..	..	21½	keeping close to the mountains all the way over a good road. At end of 14th mile passed a single house, used as a half-way house, called Sha Shinza. Ushak Tal is a small village, with a long belt of cultivation, a small bazaar, several serais, and a small fort. Population, Tunganis, Kalmaks, and a few Turks. About 15 miles to the south is Baghrash Kul, a large lake, frozen over in winter. Continued along valley, passing fort just after leaving stage, and crossing at the 1st mile a small stream. At the 10¾th mile passed the small village of Chukur, and at the 15¾th mile entered grass and shrub, with patches of forest to rest-house. At 16¾th mile passed Togarchi, a very small village, and crossed small stream at the 20¾th mile, and another large stream on reaching Tavilgo. Road fairly good all the way. This part of the country, from Ushak Tal to Karashahr, and its surroundings, as well as a tract to the north of the mountains, belong to the Kalmaks, who, though nomadising in their habits, also cultivate extensive patches of land. Tavilgo is situated in the valley, covered with long reedy grass, and has only a few rest-houses and cook-shops for travellers.
"	Tavilgo ..	Karashahr ..	..	20½	Marched across valley covered with long grass and one patch of jungle. At 15¾th mile reached cultivation, and crossed five canals by small bridges en route to the city. The belt of cultivation extends east and west, and the land is tilled by Tunganis and Kalmaks.
"	Karashahr ..	Shorshuk ..	..	*13¾	On leaving Karashahr crossed river 200 yards wide, over the ice, and continued along valley, perfectly flat and covered with grass. This is the home of a large body of Kalmaks engaged in pastoral pursuits. At 5th mile passed Kalka Mazar, and at 7th mile Dhung Zil langar, a kind of half-way house. A little to the left of Dhung Zil are the ruins of the old city of Karashahr (<i>ante</i> , p. 28), and from the langar the country becomes an arid waste. Shorshuk has only a few rest-houses and serais for travellers, with a little scrubwood and grass.
"	Shorshuk ..	Kurla ..	..	*18½	Leaving Shorshuk, continued along barren waste to 6¾th mile by Ak Tagh langar, near the banks of the Kurla river, which has a thin belt of grass within its banks. At the 10¾th mile the road runs through centre of old fort (built by the late Amr Yakub Beg), and enters narrow defile cut by the river. At the 12¾th mile pass mazar, with a small patch of cultivation and first garden. At 15¾th mile leave mountains and enter on plain; 3 miles farther is the small town of Kurla. At the 17¾th mile enter suburbs, with small fort, and a little further on small bazaar. Before entering the walled town cross Kurla river by bridge.

* These distances differ from those on p. 28.

Date.	From	To	Elevation.	Distance.	Remarks.
1887. Jan. 7 & 8	Rested at Kuria, and took up baggage that was left in the Beg's house.		feet.	miles.	
" 9	Kuria	Shangkho ..	..	10½	Left Kuria, escorted outside the town by old Ashir Beg. Crossed bridge and passed through bazaar in a northerly direction to 1½ mile to the high road, then turned N.W. by W., following the hills to Shangkho, with a fine strip of cultivation.
" 10	Shangkho ..	Halted to-day.	..	27	Continued along plain, over patches of barren waste and jungle. Road good, but sandy Charehi is a small village with several serais or rest-houses. Supplies plentiful. The Kuria district ends here.
" 11	"	Chachu or Charehi.	..	19½	The road, which is fairly good, but soft and dusty, runs along plain, through jungle, and a few patches of barren waste. Iahma is a small village, with several serais and a few cook shops.
" 12	Charehi	Iahma .. ..	..	10	Continued along plain through jungle and patches of waste over good road, but soft and dusty. At 8¼ mile crossed small stream and entered cultivation, crossing two other small streams. Chadar has one Government rest-house.
" 13	Iahma	Chadar .. ..	..	16½	On leaving Chadar crossed stream and marched along plain through jungle. At the 12¼ mile passed a single house and entered cultivation, crossing a small stream 1½ mile from Yenghi Hisaar bazaar. Road good, but dusty, Yenghi Hisaar is a large village with a long belt of cultivation.
" 14	Chadar	Yenghi Hisaar.	..	21½	On leaving Yenghi Hisaar crossed stream and continued along plain with shrub jungle, which gradually disappears, and the plain for many miles N. and S. of road becomes a saline waste and marshy in many places until drawing near to Bugar. Crossed four streams <i>en route</i> ; the two last are bridged over. Bugar is a large village with bazaar and extensive cultivation, and has a Chinese official. Road fairly good.
" 15	Yenghi Hisaar.	Bugar, old stage in plain.	..	22	From old rest-house continued along plain through cultivation for 8¼ miles. At the 14th mile strike road from bazaar, and at 14th and 4¼ mile cross small streams. Leaving cultivation entered on a desert waste as far as Yenghi Abed, a very small village with a patch of cultivation. Road good, but soft.
" 16	Bugar	Yenghi abad	..	28	A long march over an arid plain. At 13¾ mile passed Awat, a half-way stage with two or three Muhammedan houses and a Government rest-house. Yaka is a fair sized village, with good cultivation and a small bazaar. The mountains abreast of Awat take a bend towards the road.
" 17	Yenghi abad	Yakaarik ..	..	

Date.	From	To	Elevation.	Distance.	Remarks.]
1887. Jan. 18	Yaka arik ..	Kuchar ..	feet. ..	miles.] 18½	On leaving Yaka Arik crossed stream and continued along plain, now fairly well tilled and dotted over with farm houses chiefly to the S. of the road. At 11½th mile passed Ush Kara Langar, and reaching E. gate of city crossed large stream. Kuchar city is well situated near the foot of the mountains, and has a population of 15,000 inhabitants, chiefly Muhammadans, with a sprinkling of Chinese. A large stream from the mountains flows past the E. side of the town and runs S. The suburbs of Kuchar are extensive, with large Tungani quarters. Alum, sal ammoniac, pashm, and a little copper are the products. Grain is exceedingly cheap, but the great rice fields are at Shah-yar, 30 miles S. of Kuchar (see p. 25).
„ 19	Kuchar ..	Toghrak- Dhung. ..	..	16	Leaving N. gate of city marched along a wide level road for nearly 4 miles, when the road becomes a little soft and stony, with steady ascent to rest-house in ravine. At 11th mile passed Karaul, where passports are checked and examined. From the 2nd mile the country becomes an arid waste. A number of sick people came to be cured—Mr. Dalgleish's fame having spread through this country owing to a cure he had effected in passing through Kurla in January, 1886.
„ 20	Toghrag- Dhung.	Kizil .. ..	..	21	Leaving Toghrak Dhung, reached top of Shilder Dawan Pass at the 4½th mile over a good road with steady ascent of 1200 feet. At top of pass there is a langar or rest-house. Hence there is a gentle descent into valley, and along this by a good road to Kizil, a small scattered village with fair cultivation. Coal is used here as fuel.
„ 21	Kizil	Sairam .. ..	..	10½	A short march along valley partly under cultivation, with good road. Shortly after leaving Kizil crossed a large stream which passes through a ravine in the mountains towards Shahyar. Sairam is a large straggling village with extensive cultivation. The bazaar is small, and in bad repair. There is also a small fort close to bazaar.
„ 22	Sairam ..	Bai .. ..	..	20½	Continued along valley with cultivation on both sides of road right up to Bai. At the 2½th mile crossed a stream, and on reaching west end of town crossed a large stream. Bai is a small town with extensive cultivation, and has a large bazaar. Bai is five marches E.N.E. of Aksu.
				1145½	

DISTANCE TRAVELLED.

Section	Geogr. miles.	Eng. miles.
1	508½	586
„ 2	564½	651
„ 3	310½	358
„ 4	about 1170	1349
„ 5	1145½	1320
Total	3699	4264

THE OROGRAPHY OF NORTHERN TIBET.

Described by General PREJEVALSKY in Chapter VII. of his last work, entitled 'A Winter's Excursion from Gass.'*

THE famous Kuen Luen, that "backbone of Asia" as Baron Richthofen calls it, before our last journey, was entirely unknown through 12° of longitude, from the meridian of the Najin-gol in Tsaidam to that of Keria in Eastern Turkistan. We have now passed along this unknown belt of the most ancient ranges of Asia, and have in some measure elucidated its topography. We find the principal chain forms an arc, the eastern and western extremities of which lie in the same parallel of 36°, whilst the northern periphery touches 38° N. lat. A line drawn to the westward of this in about the 87th meridian of east longitude (from Greenwich) at the point where the still more northerly Altyn-tagh chain separates from the main range would serve to define approximately the centre of the Kuen Luen, its eastern limit being, according to the eminent authority just quoted, the 104th degree of east longitude, where the system is characterised by a ramification into parallel chains. The chief of these, the Kuen Luen proper, serves as a gigantic buttress to the highlands of Northern Tibet, facing on the north the desert and saline plains of Tsaidam; while on the east it cuts off the upper basin of the Hwang-ho and continues far into China.

That this is the principal and no subsidiary chain is proved by its continuity, and the connection between its eastern and western parts through no less than 40° of longitude. Other ramifications of this system fall away about the meridian of Lang-chau-fu. Even that huge snowy range, which, according to the reports collected by us on our last expedition, starts from the Western Kuen Luen, near the gorge of the river of Keria, and is prolonged in a south-easterly direction for a whole month's journey, uniting, perhaps, with the Tang-la or with the mountains rising to the north of Tengri-nor—even that range, I say, should not be considered as the principal one of the system—because in any case its continuity is less, and, deflecting in a meridional direction, it merges in the ranges dividing the head-waters of the rivers of Indo-China and the Upper Yang-tsze-Kiang.

It should also be borne in mind that the central Kuen Luen is always composed of double, and sometimes triple, parallel chains, while throughout its entire extent it borders the plateau of Tibet, and in common with

* Translated by E. Delmar Morgan.

other marginal ranges of Central Asia is only fully developed with wild mountainous scenery on one side, viz. towards the plain at its northern foot, while the reverse southern slopes are incomparably shorter and less rugged.

The eastern part of the Central Kuen Luen as far west as the Naijin-gol,* or even a little farther—to the Utu Murren†—was described in the narrative of my third journey.‡ I will only add that the outermost chains in this part of the system towards Tsaidam are the Burkhan-Buddha, Ho-shili, Tolai, Torai, Tsosoneh, and Dzukha, the two last, as it would appear, taking the place of the Yusun-obo and Tsagan-nir chains of my former map. More recent information, though somewhat obscure, locates Yusun-obo between the head-waters of the Utu-murren and Batygantu, while the name Tsagan-nir (i. e. white face) has been associated with three snowy groups: Shara-gui, Umykeh, and Karzà in Marco Polo range. This last mentioned range, starting from the confluence of the rivers Shuga and Ugan-Karzà, was followed by us as far west as the snowy Kharzà group. From this point the North Tibetan rampart turns to the west-north-west, continuing, however, its twofold and three-fold character. From its outer part, nearest to Tsaidam, the huge snowy crest of Jing-ri towers aloft, probably connected with Garingà range. Between this last mentioned and the western part of Marco Polo range, according to the Mongols, lies a narrow, confined valley; barren in the beginning, but afterwards abundantly watered. This valley is known under the name of Tsagan-tokhoi, and contains the source of the Batygantu,§ a tributary of the Utu-murren, which it joins in Tsaidam.

West-north-west of Jing-ri for 130 miles, as far as the gorge of the Zaisan-saitu, stretches my Columbus range,|| while to the southward of Jing-ri lies another wide snowy range, perhaps forming the principal chain of this part of the Kuen Luen. In the first instance I named it "Conjectural,"¶ then, at the instance of several members of the Imperial Geographical Society and by the award of the Council, it was rechristened after me.** Its highest point, seen by us only from a distance, I named "Shapka," i. e. Cap "of Monomakh."††

* The Naichi-gol of Mr. Dalgleish; cf. Itinerary, p. 42.

† The Otto-mairin-gol of Mr. Dalgleish; cf. Itinerary, p. 47.

‡ See his 'Third Journey into Central Asia,' chaps. vi. and vii.; cf. also 'Proc. R.G.S.,' N.S., vol. iv. p. 218.

§ The Patagonto of Mr. Dalgleish; cf. Itinerary, pp. 44-45.

|| I have given new names to those ranges which, as far as we could learn, had no native names—not an unusual occurrence in Central Asia, where the natives as a rule distinguish by name only separate peaks or passes, perhaps two different portions of one and the same range.

¶ 'Izvestija of Russ. Geogr. Soc.,' vol. xxi. p. 240.

** 'Izvestija,' vol. xxii. pp. 200 and 480.

†† Vladimir Monomachus, Grand Prince of Russia, 1113-1125. A drawing of his crown, the so-called "Cap of Monomachus," may be seen in 'Rimbaud's History of Russia,' translated by Mrs. Lang, vol. i. p. 105.

North of Columbus and Garingà ranges and parallel with these runs Tsaidam range, described in a previous chapter of this work,* terminating on the east in a thin wedge on the Tsaidam desert, while on the west it runs up to the gorge of the Zaisan-saitu. A narrow valley, watered by the Khatyn-zang, separates Tsaidam from the two last mentioned chains of mountains; and here let it be observed such funnel-shaped valleys are very characteristic of the Kuen Luen.

The continuation of "Columbus" range beyond the gorge of the Zaisan-saitu is formed by another snowy range, named by me "Mosco," and its highest peak "Kremlin." Mosco range extends to the west for 70 miles, or thereabouts, to the Tokus-dawan, uniting with this latter probably at the point where the more northerly Altyn-tagh separates from it before being joined by the Chamen-tagh. The Tokus-dawan has a south-westerly direction, and near the gorge of the Oherohen river unites with a gigantic mountain mass belonging to the Western Kuen Luen, also bordering the Tarim basin, and named by me as far as the Keria river "Russian" range. This range, or perhaps the Tokus-dawan, is joined by "Prejevalsky" range.

The chief constituent rocks of the west Central Kuen Luen are silicious schists and granite, with occasional quartz reefs. The most striking features of eastern parts of these mountains are their immense height and, therefore, great number of snowy peaks, the comparative absence of cliffs—at all events in the snowy groups, the want of rivers, general sterility of the soil, and lastly the poverty of their flora and fauna. On the other hand gold is everywhere abundant, and will be the first bait to tempt hither the avaricious European.

Upon returning from a reconnaissance, undertaken with the object of discovering the road to Lob-nor, our two Ulan-gadjir † guides were dismissed to their homes, handsomely rewarded for their services. We now remained alone in the midst of the wilderness, having to discover the road for ourselves in the winter expedition we were about to commence. But this was nothing new for us, and in winter when ice can always be transported, there is no insuperable difficulty to be overcome. We formed our depôt at Chong-yar, ‡ leaving under the charge of Sergeant Irinchinoff, six Cossacks, the interpreter Abdul Yusupof, besides camels, horses, sheep for food, and a quantity of baggage. The Cossacks were to take turn and turn about in pasturing the animals and night-watching; their leisure hours they were at liberty to employ in literary diversion and the chase. Yet, notwithstanding the comparative rest they were now to enjoy, the men left behind envied their companions who were about to march, for these would experience novelty and variety incidental

* For the chief rocks of the Eastern Kuen Luen, see the narrative of my third journey.

† The Ulan-Gazar of Dalglish's Itinerary, cf. p. 47.

‡ Corresponding with Bagh Takal of Dalglish's Itinerary, cf. p. 34.

to active life, while those at the depôt would suffer from the tedium and monotony of daily routine, irksome at all times, but especially so in winter. Our marching caravan was not large. It consisted only of 25 camels,* 4 riding horses, and 15 sheep—the last mentioned being intended for food. The baggage was reduced to the smallest possible limits, and supplies taken only to last two months.

On the 19th November (1st December) we started in a westerly direction, travelling along a wide valley extending as far as we could see, and named by me, in consequence of the continual winds and tempests which visit it, the "Valley of the Winds."

The first march from Chong-yar is 23 miles long, over an absolutely barren plain covered with sand, loess, and small pebbles, with a gradual rise amounting to 1300 feet in the aggregate. We left in the afternoon, camped half-way, and, having replenished our supply of water and fuel, reached the Zaisan-saitu the following day at the point where this river, owing to the steeper incline, hides itself below ground, reappearing again in the form of springs at Chong-yar and other salt marshes round Gass. These springs give rise to a number of brooks, which collect in one rivulet and fall into the south-western corner of the lake.

The Zaisan-saitu has its sources in the glaciers on the southern slope of Mount Kremlin. It divides Mosco from Columbus and Tsaidam ranges, afterwards turning eastward along the Valley of the Winds, where it soon disappears from the surface; after an underground course of 13 miles it again shows itself a good-sized river, then for the second time it disappears as above stated. Not far from this spot the Zaisan-saitu is joined from the south-east by the Khatyn-zang, a river which rises in Mount Jing-ri, and receives the drainage of the glaciers on the southern slope of Columbus range. This river, however, does not approach within seven miles of the Zaisan-saitu in winter, though in summer the two probably unite.

At the place where we now struck the Zaisan-saitu, i. e. in its lower course, this river, measured over the ice, had a breadth of 140 to 175 feet; † the thickness of the ice was $2\frac{1}{2}$ feet, and the depth of water under it did not exceed $1\frac{1}{2}$ foot. The width of the valley on either side averaged about a mile, and the soil is loess and sand lying in wind-drifts. Vegetation consists of a dirisun-like grass, reeds, and a few species of the order *Compositæ*. The bushes are *Myricaria* and *Oxytropis*. The pasturage is generally good, especially in summer, when there are neither mosquitoes nor flies here, said to be prevalent at Gass. To the right and left of the valley sterile plains extend up to the steep slopes of the margining mountains, with an occasional group of hills as barren as the

* Twelve for baggage, nine for riding, and four in reserve.

† At the point of its disappearance the Khatyn-zang, tributary of the Zaisan-saitu, is twice and even four times this width.

plain they rise from. The valley we are describing is the haunt of the Tibetan antelope; it is visited by the wild ass, and the yak may as an exception be seen here.

Ascending the Zaisan-saitu, we at first made good progress, there being plenty of forage, water, and fuel. All this, however, came to an end as soon as we had passed the springs which supply the river. A bare wilderness then stretched out before us, of what extent none could say. We were therefore obliged to return to the springs and reconnoitre the country. Starting myself with two Cossacks, I was rejoiced to alight upon the river the same day. Emboldened by this discovery and the fineness of the weather, we extended our survey in a westerly direction up the Valley of the Winds and along the snowy ranges bordering it, our whole caravan advancing to the newly-discovered water-supply. From our barometrical observations it appears there is a rise of 800 feet in 15 miles, and owing to this the stream, not strong enough to keep above ground, hides itself below the surface.

When we had risen to an altitude of 11,500 feet above the sea, we found no vegetation even on the banks of the river, and could foretell a bad time for our unfortunate animals. To make matters worse, the night frosts continued and the wind-storms increased in vehemence and frequency, their direction being mostly from the west, i. e. right in our faces. In such weather surveying was most difficult, and at the end of a day's march eyes and head ached from constant exposure to the icy blast.

We continued the ascent of the rediscovered Zaisan-saitu over a pebbly plain, where only occasional tufts of stunted camel-thorn (*Alhagi camelorum*) and *Reaumuria* appeared above ground. A dead quail and thrush were picked up in an arid tract, these birds having probably dropped from exhaustion during flight, and fallen victims to their inexperience in attempting a direct passage southward across so desolate a region.

We now turned to the south-west instead of continuing in the same westerly direction as hitherto, and then to the south, where the Zaisan-saitu bursts through the neighbouring mountains of Tibet. We went in this direction because we intended first visiting the plateau and then resuming our journey along the Valley of the Winds, which now remained on our right and vanished away to the westward. From the higher ground we could see accumulations of ice along it in places, and therefore felt certain that our caravan could pass that way.

The defile of the Zaisan-saitu, which we soon entered, proved excellent marching ground even for camels, the main chain of the Kuen Luen at this point only being lower, and much less rugged and precipitous. The defile is 11 miles long, and divides the two ranges I have named Tsaidam and Mosco. The mountains here are almost barren, and mostly covered with deposits of loess. Along the banks of the river

only are there a few patches of sedge, and even these had been eaten off by wild animals. Towards the southern end of this defile the Zaisan-saitu again disappears, at all events in winter, for a distance of 11 miles. To the west stretches Mosco range, while to the south and east, beyond some low hills steeply scarped in places, lies the great plateau of Tibet, with the western angle of Columbus range visible in the distance.

WEATHER IN NOVEMBER.*

Meanwhile November had passed, two-thirds of which we had spent at Gass, at an elevation of 9000 feet above the ocean; the last part of this month in the Valley of the Winds, at altitudes of 10,500 to 12,000 feet.

Like October, November was remarkably clear; during this month we counted twenty-four clear days, and only six cloudy. The frequent recurrence of bad weather experienced by us in Tibet was now at an end, though in the mountains bordering that country it was certainly more cloudy than at Gass and in the Valley of the Winds. There was no snowfall in November—indeed, throughout the winter, it rarely snowed in this region, and then only very little, while the atmosphere remained continuously extremely dry.

In clear calm weather the warmth of the sun could be felt though the thermometer stood as low as 20° Fahr. in the shade at one o'clock in the afternoon. With a moderate wind in the daytime, after the sun had warmed the surface of the ground a little, the temperature would rise occasionally to 39° Fahr. The dominant winds came from the west, though calms were not unfrequent; at night there was always a light or moderate wind from the west or south-west. We counted seven gales blowing from the same quarters, therefore many more than in October. But these gales, as a rule, followed one after the other, as we had noticed in Tibet and Tsaidam, with alternations of fine and bad weather. During a gale the atmosphere would be always filled with dust. The frequency of these storms and winds, however, increased towards the end of November when we had entered the Valley of the Winds, where the configuration of the country causes a nearly constant west wind. The night frosts at Gass were as much as -20° Fahr.; in the Valley of the Winds, if there were no calm, the temperature at the end of November never fell below -15° Fahr.

Let us now speak of the mountains in whose vicinity we found ourselves.

* The old style dates have been converted into new throughout this translation, but when only a month is given the reader must calculate the difference for himself, e. g. November must be understood to mean from the 13th of this month to the 12th of December, and so on.

MOUNTAIN RANGES.

Chamen-tagh.*—The northern border of the eastern half of the Valley of the Winds is formed by the Chamen-tagh, of which I had heard on my Lob-nor journey.† It stretches from east to west for upwards of 70 miles, uniting on one side with Altyn-tagh, and on the other with the arid, waterless range rising to the north of Gass. In breadth the Chamen-tagh does not exceed seven, at most, ten miles, while, throughout, its elevation is enormous, and at three groups—at both extremities and in the centre—it rises above the snow-line. Judging from the position of the glaciers, the westernmost of these three groups of peaks is the highest. From its northern slope, as we heard, starts a river which breaks through the Altyn-tagh and discharges into Lob-nor. This is probably the Chargalyk-daria. From the same slope of the easternmost group, underground drainage forms the lakelet and swamps of Gashun-nor. Lastly, the glaciers of the southern slope of this eastern knot of mountains contribute to feed the Zaisan-saitu also with subterranean water.

The Chamen-tagh, as we have said, rises as a narrow precipitous rampart, but the slopes of its valleys, north and south, form a steep glacis from one to two thousand feet in vertical elevation. These slopes are absolutely barren, aridity being a marked feature of the Chamen-tagh, at all events on the south side where there are neither brooks nor springs. The gradients are exceedingly steep, and, in the upper belts, covered with detritus, while the ravines are narrow, also precipitous and nearly devoid of vegetation. In these and at the foot of some of the lower slopes, occasional clumps of fruit-bearing *Ephedra*, wormwood, mugwort, and other plants allied to *Artemisia*. Tamarisk and camel-thorn occur, while here and there are scattered an occasional clematis, statice, small grasses, and *Compositæ*.

The *mammalia* of the Chamen-tagh comprise the wild donkey, the argali or mountain sheep (*Ovis Dalai-Lamæ* n. sp.), and probably wild goat, wolves, foxes, hares, and Alpine hares; a few wild yak are also occasionally seen.

Among birds we observed the brown vulture (*V. monachus*), lammergeier (*Gypaëtus*), choughs (*Fregilus graculus*), horned and black-crested larks (*Otocoris albigula*, *O. Teleschowi* n. sp.), the allar or great mountain partridge (*Megaloperdix tibetanus*, *M. himalayensis*), and thrushes (*Carpodacus rubicilla*). The fauna and flora of these mountains are so scanty that the Turkish name *Chamen-tagh*, i. e. flowery range, is undeserved.

Tsaidam.—From the southern side of the same eastern half of the Valley of the Winds rises another great range named by me as already stated—*Tsaidam*. It stretches from east to west for upwards of 200

* The Chimen-tagh of Dalgleish's Itinerary, cf. p. 34. See Supplementary Note.

† See 'Proc. R.G.S.', 1889, p. 375.

miles in a direction parallel with Columbus and Garinga ranges, from which it is separated by a narrow valley. On the east it terminates in a narrow arm in the Tsaidam plain, not far from Ulan-gadjir; on the west it unites with Mosco range, from which it is separated by the defile of the Zaisan-saitu, or to define its limits more accurately, by a transverse chasm three miles farther east.

The Tsaidam range is for the most part narrow, particularly in its western half; to the east of the Khatyn-zang it widens and is higher. Here are situated two snowy peaks: Ikhyn-Gansyn-Khorgu and Ikhyn-Gasyn-Khorgu. Between them the range is somewhat lower, and from the north, on the Tsaidam side appears as a bulging wall, while the southern slope inclines towards the Khatyn-zang valley. Not far from its eastern snowy summit the Shara-gol Pass leads into the last-mentioned valley from Gansa. There is one other transverse defile, 17 miles to the west of the Khatyn-zang Gorge, in the narrowest part of this barren, waterless range. The rocks composing it are granite and schists, much weathered by atmospheric influence, particularly by winds, and for the most part covered with loess.

Columbus.—Parallel with Tsaidam there is yet another great range, nearer the Tibetan plateau named by me in honour of the discoverer of the New World. Columbus range starts from snow-capped Jing-ri, trends north-west, then due west, terminating in a thin wedge, 17 miles short of the Zaisan-saitu defile. With a total length of 130 miles it is steeply scarped on the north towards the valley of the Khatyn-zang, while its southern shorter slope overhangs the tableland of Tibet.

This range is narrow throughout, not exceeding even in its widest part 13 miles. Its western half is lower than its eastern, where snow lies all the year round, and where the ice-clad peaks are as white as Jing-ri itself. The western half only rises once above the snow-line at a small group on the northern side. The prevailing feature of Columbus range, in common with other chains of the West Central Kuen Luen, are an identity of rock formations, comparative absence of crags, aridity, and probably an equal profusion of gold.

Mosco.—The third range, forming a continuation of the two last mentioned, and sheltering the valley of the winds on the south, has been named Mosco. It runs, as we have said, for 70 miles or thereabouts to its junction with the Tokus-dawan. With the exception of a small section on the east, this new range is covered throughout with glaciers, most extensive in the centre where Mount Kremlin rises. When viewed from the plateau, this peak has the appearance of an obtuse cone, perhaps not lower than Jing-ri. Enormous glaciers cover its northern and southern slopes, and on its eastern side lies a wide *mer de glace*.

Near its junction with Tokus-dawan, Mosco range seems to widen, and its southern slope is steep and precipitous—at all events, in its

eastern parts; the northern, though also steep, is comparatively smooth, especially in central parts of these mountains, for here the frequent gales of wind sweep the valley and choke the defiles with their deposits, disintegrating the rocks and rounding the contour of the hills. Even on the southern slopes of Mosco range, however, there are but few cliffs and this is a feature characteristic of Tsaidam, Columbus, and other ranges on the tablelands of Tibet. The rocks throughout are siliceous slates.

From the glaciers of the southern watershed of Mount Kremlin, the Zaisan-saitu takes its rise. What rivers drain the more westerly parts of Mosco range, and in what direction they flow, I am unable to say. Not a single rivulet descends from the numerous glaciers on the northern face, though dry channels here and there show where the rainfall and melting glaciers drain away in summer. Mosco range is, in general, exceedingly barren, especially on the south side. On the reverse northern slope are found a few grasses, such as *Carex*, *Avena*, *Ptilagrostis*, and diminutive specimens of *Oxytropis*, *Tanacetum*, *Androsace*, *Saussurea*, and *Saxifraga*, the two last-mentioned at an elevation of 14,000 feet above the sea. Among bushes we came across a kind of bean, barely showing its head above ground, and an *Eurotia*, six inches high. The Tibetan sedge (*Kobresia*), plentiful in the swamps of north-eastern Tibet, is conspicuous by its absence here, another indication of the absence of periodical rains in summer.

The fauna of Mosco range, as well as of all adjacent parts of the Kuen Luen, is poor, and offers but little variety to that of north-eastern Tibet. Among larger quadrupeds there are wild donkeys, argali, wild goat, and a few yak, together with wolves, hares, alpine hares, and small rodents. Birds are also scarce, both in variety and number, owing to the barrenness of the soil and the horrible climate. In the mountains we saw vultures, lammergeiers, choughs, great partridge, mountain finch (*Montifringilla Adamsi*) horned larks, and by way of exception, Tibetan grouse. No human beings inhabit these regions. But we came upon traces of bivouacs of Turkistanis, who come hither in summer, unbeknown to the Chinese, from the nearest oases of the Tarim basin to seek for gold.

THE PLATEAU OF TIBET.

In two short marches to the south of the Zaisan-saitu defile we entered the plateau of Tibet. Our highest point was 13,800 feet, the hills on either side being low. Another ascent farther north, by which we returned, is 700 feet lower. We now saw a wide plain opening out eastwards as far as the eye could see, bounded on the north by Columbus range, rising steeply, though not much above it. To the south-east and south lay a confused medley of hills and low ridges, beyond which glistened the hoary heads of Prejevalsky range. Finally, in the midst

of the plain, we beheld, to our astonishment, a large lake of unfrozen water, which I there and then christened Unfreezing Lake. We moved towards it over a slightly inclined plain, almost barren but for the few clumps of reeds the wild animals had not yet devoured. Beyond this again, we marched over pebbles. As we went towards the lake it appeared to be close to us, yet at nightfall, when we pitched our camp in some scrub *Artemisia*, we were still 12 miles off. This brushwood was an unexpected godsend, supplying us with fuel and our ravenous animals with forage; as for water, we melted some of our supply of ice, and on the morrow continued our journey towards the lake, feeling uncertain if we should find drinkable water there, our stock of ice being nearly exhausted. Fortunately, near the west shore of the newly-discovered lake, which proved to be excessively salt, we came upon several frozen springs in the midst of salt marshes, and, melting the ice, we gave our horses a bucketful apiece. The condition of these animals had become very poor, owing to the insufficiency of forage and the cold, but the camels held out well.

Having passed the night near Unfreezing Lake, concerning which more by-and-by, we advanced towards the south-east, in the direction of a rivulet we had seen from the pass. It proved, however, to be nothing but a dry watercourse, here and there encrusted with salt, which, from a distance, looked like ice, and we found ourselves obliged to halt for the night at some bare loess hillocks, where our poor animals again had nothing to eat, and the few remaining sheep eagerly tore tufts of hair off the camels' backs as these beasts were lying down at night, and devoured them ravenously.

On arriving at the camping ground, Robarofsky and I rode forward to reconnoitre. Two miles from our halting-place we ascended one of the clay hills of which I have spoken, and had an extensive view on all sides but could see nothing of a satisfactory nature. To the south and south-east was an unvarying expanse of the same loess hills. These were entirely barren and took all kinds of curious shapes. Here might be seen towers, forts, cones of every size, bridges, arched galleries, vertical walls, &c., &c. Their average height did not exceed 300 to 500 feet, while a few rose to 800 and even 1000 feet. In the direction of our lake they broke off suddenly with a steep fall. Here and there the porous loess had been cemented into a hard mass, in which layers of gypsum occurred. On the summits of these hills and in their fissures there lay coarse pebbles.

Having carefully examined with a telescope the whole neighbourhood, we decided to proceed no farther. The barren loess hillocks lay a great distance to the south, beyond were the snowy mountains; in fact, the difficulties were, as far as we could judge, insuperable for a caravan like ours of partly exhausted animals. In another direction towards the east, along the southern shore of Unfreezing Lake, though a few patches of

grass and ice-covered brooks might be seen, affording facilities for the march of a caravan, we had no object in going farther, for the margining Columbus range could be seen even without this, extending for 70 miles, and beyond it we could not in any case have gone. Lastly, we had to make the most of our time and survey the western half of the Valley of the Winds and its margining mountains while our camels were as yet fit for work. Upon the whole, therefore, we decided to turn our backs on the Tibetan plateau and continue our journey to the westward of the Zaisan-saitu river.

UNFREEZING LAKE.

This lake lies at an elevation of 11,700 feet above the ocean on a wide lofty plain stretching at the southern foot of Columbus range. In form it resembles, as far as we could see in the distance, a long arm stretching from east to west for over 30 miles, while in width, at all events in its western half, it was only six or seven.* The water was excessively salt† and of a deep blue colour, its extreme salinity being probably the cause of it never freezing. At all events, when we were there in December, in spite of frost of -30° Fahr., there was only a narrow belt of rotten ice along the margin for a width of 300 yards from the shore and about 12 inches thick. The temperature of the water below the ice on the 8th (20th) December was 12° Fahr. at 2 p.m. On calm frosty nights a thick mist covers the lake, having the appearance at daybreak, when the sun's rays first illumine it, of a dazzling white shroud. Near its south-western shore Unfreezing Lake is very shallow, and probably of no great depth anywhere, being even shallower along the southern shore, where we examined for some distance the belt of salt marshes and lagoons that fringes it in this direction as far as the ridges of barren loess hillocks of which mention has been made. The western half of the lake has no tributaries, but its eastern part is probably fed by several streams,‡ which take their rise in the snows of Columbus and Prejevalsky ranges, while subterranean water forces its way to the surface in the form of springs.

The shores of the lake, as well as the plain bordering it, are a wilderness of the type of the western Nan-shan, near Sha-chan, rather than of Tibetan character. Besides the ill-favoured saline plants and an occasional *Polygonum*, patches of reeds are occasionally met with, taking the place of the Tibetan sedge, while along the pebbly ground a few dwarf bushes of *Artemisia*, *Eurotia*, *Reaumuria*, and *Oxytropis* trail their stunted

* The Chong-kum-kul of Dalgleish's Itinerary, cf. p. 34. Carey estimates the width of the eastern end of the lake at 18 English miles.

† The sample of water we brought back has been subjected to chemical analysis by Professor K. G. Schmidt, of the University of Dorpat, and the result published in the Bulletins of the Imperial Academy of Sciences (May or June 1886).

‡ Carey mentions having come across a large river (Kum-kul-daria) flowing, as I suppose, from Jing-ri. Cf. Itinerary, p. 35.

growth. Such animals as the wild donkey visit its shores in passing, while among birds the few we saw were the sand-grouse (*Syrrhaptes paradoxus*) and horned larks (*Otocoris albigula*). Indeed, nothing can exceed the poverty of the flora and fauna right up to the snowy mountains on the south of the new Prejevalsky range.

PREJEVALSKY RANGE.

This range, as already stated, was named by me Conjectural, because we only saw it from a distance, and plotted it on our map approximately. We succeeded, however, in fixing, though only by one intersection, its highest apparent peak, reminding us in shape of Monomakh's Cap (*ante*, p. 61). Farther east again, we saw more snowy peaks, the farthest in this direction being apparently only 27 miles from Jing-ri, leading us to suppose that there was a connection between the two, though in reality this does not exist.* About 50 miles to the south of Unfreezing Lake we plainly saw a row of snow-capped summits, in all probability forming part of the same range, its intermediate part towards Monomakh's Cap being hidden from sight by comparatively low intervening outliers. To the west, again, nothing positive is known of this range except that from the Zaisan-saitu, and from the pass leading into Tibet, we saw, a great distance in a south-westerly direction, a lofty, sharply defined peak, which perhaps belongs to it. If this should prove to be the case, judging from the analogy of other ramifications of the central Kuen Luen, it may be inferred that Prejevalsky range stretches a long way to the westward, and is connected with Russian range or the Tokus-dawan.

Thus, the range we are describing forms a southern branch of the west-central Kuen Luen, and perhaps its principal chain, the last hypothesis deriving support from the circumstance of the non-Tibetan character of the region bordering on Unfreezing Lake, and from the fact that this lake occupies a hollow or depression between two ranges, the southernmost, Prejevalsky range, probably the loftier of the two, forming the verge or margin of the Tibetan plateau.

ROUTE ALONG THE VALLEY OF THE WINDS.

On our return from Unfreezing Lake we shortened our journey a little by taking a direct line to the Zaisan-saitu; then, having descended the defile of this river, we turned to the west into the Valley of the Winds. For two or three marches we passed through localities which we had already surveyed from a distance, and here reconnaissance was unnecessary, more especially as forage was obtainable in sufficient quantities, and there were frequent springs covered with ice; for fuel we grubbed up the scrub bushes and creeping myricaria.

* According to Mr. Carey's observations.

And so we advanced, without making any prolonged halt, by daily short marches, carrying a felt tent, while the Cossacks, except those who slept with us, passed the night under canvas. Nothing could have been better than their conduct throughout; the daily routine, the night and day watching were never relaxed, no matter what the difficulties and privations encountered, and in spite of a diminishing allowance of rations; for we were now obliged to economise even such necessaries as brick tea and barley meal, though frosts and tempests hardly ever ceased.

In the latter part of November the thermometer four times stood as low as -22° Fahr., and shortly afterwards the mercury froze, while an icy wind blew constantly in our faces from the west, sometimes accompanied by a light snowfall, which intensified the cold. How well I remember the violent gale that occurred on the 27th December, soon after leaving the Valley of the Winds. It began in the morning and continued till evening, reaching its greatest force between 11 and 3 in the day. The violent gusts raised clouds of sand, which turned daylight into a kind of yellowish-grey obscurity. Objects thirty and forty paces off were invisible; the wind took away our breath if we tried to meet it, and filled our eyes with sand, while the thermometer, even at 1 p.m., stood at 12° Fahr. During all this time the sky continued cloudy, and at 3 p.m. snow began to fall. Then the storm suddenly ceased, and the atmosphere at once became clear. In about two hours, however, there was another burst, less violent, however, than the first, and gradually becoming weaker, till about midnight the wind dropped, and it was calm. In the morning we had to take spades and clear the drift sand from our camp.

As we advanced westward the elevation gradually increased and the valley grew more barren. But in the lower belt of the northern slope of Mosco range, along which we were marching, patches of grass were here and there to be seen in the ravines. The huge glaciers of the central parts of these mountains glittered brilliantly in the midday sun, yet so smooth was the glacis at their foot that, if our horses had not been tired there would not have been the slightest difficulty in riding up to them. But we hardly thought of attempting such an excursion for the present, our chief aim being to reach the pass leading over the marginal mountains to the Tarim basin. To our great joy, and sooner than we expected, we gained this pass on the 31st December, the ascent from the valley being imperceptible, though the elevation was 12,900 feet above the sea. The descent on the other side in a continuous westerly direction is also quite gradual for about 12 miles to where the Altyn-tagh meets the Tokus-dawan range. Here the defile of the Cherchen-daria begins, and the Altyn-tagh, causing this river to describe a wide bend, rises in an extensive snow-capped group of peaks, the only one in the range. According to hearsay information, these mountains

have no specific name, and may therefore bear that of Cherchen, for the river and oasis of Cherchen * derive their waters from their snows. From the northern side of this snowy group another rivulet flows, probably to Vash-shari.† The road from the pass to Cherchen is suitable for pack asses and horses, but camels cannot pass it without difficulty. We saw well-beaten tracks leading from the Valley of the Winds to Cherchen, and it is by this route that gold miners cross the mountains with their laden asses.

However attractive the idea of at once proceeding to Cherchen might now be, with its warmer climate and abundant supplies, and much as we wished to survey the road thither, we nevertheless were obliged to renounce all idea of doing this for the present, for we were a long way from our depôt, our horses and some of our camels were exhausted, and we had to reach Lob-nor in due season. These considerations prevailing, we only looked with longing eyes at the descent, and the following day turned our backs upon it, retracing our steps to the Valley of the Winds.

DESCRIPTION OF THE VALLEY OF THE WINDS.

This newly-discovered valley, already repeatedly mentioned in my narrative, stretches for 130 miles from east to west, with a slight inclination to the southward in its western half. It is bordered by the ranges—Chamen-tagh and Altyn-tagh—on the north, Mosco and Western Tsaidam, on the south, while on the east it opens on the lake of Gass. Its average width, if we include the skirts of the mountains bordering it, is about 14 miles in the west, and 27 miles in the east. The elevation gradually increases from east to west; near Chong-yar reaching 9500 feet, while at the descent to the Cherchen defile it rises to nearly 13,000 feet above sea level.

Throughout the whole extent of the eastern half of this valley, along a trough-like depression in its centre, flows the Zaisan-saitu, except where this river hides its stream underground. In the western half the channel is marked only by a broad pebbly bed, in which frozen springs occur. In summer, when the snow melts on Mosco range, there is water in this channel as well as in the lateral glens descending from the same snowy mountains.

The climate of this valley is, as I have already stated, characterised by a prevalence of westerly gales. Calms, lasting only an hour or two, are exceptional; and the wind occasionally attains the violence of a hurricane, blowing continually from the west, a fact attributable in

* The Charchand of Carey and Dalgleish.

† Vash-shari is, according to the map, 107 miles north-east of Cherchen (Charchand), at the foot of the Altyn-tagh. Here Prejevalsky, when he afterwards visited it, found the remains of an ancient city, with a river, probably the one mentioned above. There are different versions of the name—Gass-shari, Vass-shari, or Vash-shari.—M.

some measure to the lie of the land, which is that of the westerly winds prevailing over Tibet, and also by the proximity of huge snowy ranges from which cold currents of air descend into the valley. This latter circumstance, as well as the great absolute elevation of the land, fully account for the severity of the climate. Certainly the eastern lower part of this valley, including Gass, is warmer, while in the western the cold is severe enough to freeze mercury, a fact never before observed on any of our previous journeys into Tibet, not even when we were on the Tang-la. Even in summer the cold is probably great, and there are sharp night frosts. Rain, judging from the arid appearance of the country, must, I should think, be rare.

The soil is sand, loess, and pebbles. Where there is no water there is next to no vegetation, except where *Artemisia*, camel-thorn, and tamarisk (*Reaumuria*) occur. The last-mentioned plant at elevations over 12,000 feet, is replaced by a creeping Tibetan *Myricaria*, but no bush in this region raises its head high above the ground. Along the lower course of the Zaisan-saitu we met with a somewhat richer vegetation and tolerable pasturage. Farther west, we only found a small sedge near the springs, and higher still, a species of small primrose (*Androsace*) upon which the numerous alpine hares eke out their subsistence. The flora of the eastern half of the valley, as far as the defile of the Zaisan-saitu generally, assimilates with that of Tsaidam; that of the western half, with northern Tibet.

The fauna of this valley and adjacent tracts is poor. The orongo-antelope, however, is plentiful in most parts, though we saw none of these animals at Unfreezing Lake. Neither are there any at Gass or in Tsaidam. The wild ass, wolves, and hares, are also not uncommon, but the wild yak only passes through this valley on his migrations from one range to another. Near the pass leading to the Cherchen defile, we came across marmot burrows, and large numbers of a new species of alpine hare. Birds are also scarce throughout the valley. We only found the mountain finch (*Pyrgilauda ruficollis*, *P. barbata*, *Onychospiza Taczanowskii*), horned larks (*Otocoris albigula*?) and Tibetan sandgrouse (*Syrrhaptes tibetanus*); even vultures and crows are scarce.

The only attraction so desolate a region could possess for man is the gold, which, as we heard, is very plentiful, particularly about Buguluk. In fact, we saw diggings, generally not over two feet below the surface. The style of working them is, of course very primitive, the miners being, evidently, used to carry the alluvial soil in sacks slung over their shoulders to the running water, a mile off.

The Valley of the Winds might serve as a most convenient approach to China from the southern oases of Eastern Turkistan, by way of Tsaidam and the defile of the Cherchen, for along this latter, as we heard, caravans may pass without difficulty. For a considerable distance this newly suggested route would pass along the salt swamps of Southern Tsaidam and

for two long, waterless marches through the north-western part of that plain. On the other hand, it should be borne in mind that the deserts of Central Asia nowhere afford a completely satisfactory route for great distances. Deserts they are and deserts they will remain. The obstacles here, however, are insignificant compared with those presented by the arid Kum-tagh sands or the difficult mountain track along the Altyn-tagh, following a more northerly route to China by way of Lob-nor. Farther south again, the Tibetan plateau offers even greater difficulties for the march of a caravan, owing to the rarefaction of the air at those enormous heights, the want of firewood, and the scarcity of pasturage. But in summer all these routes would be impracticable for caravans: that by Northern Tibet, owing to the rains which flood the rivers and moisten the argols, indispensable for fuel; the Tsaidam route, in consequence of the inundated state of the salt marshes and the myriads of insects infesting them at that season, while that by way of Lob-nor and the waterless Kum-tagh owing to the heat and want of forage in the Altyn-tagh, where, moreover, the ravines are difficult to cross. In summer, however, all Central Asian deserts are impassable for caravans, and the natives never venture to set out on long journeys at such times.

The following is a brief summary of some particulars of the route. Starting from the town of Donkyr, in Western China, an easy road leads to the table land about Koko-nor. Here the road bifurcates, one branch leading north and the other south of the lake, the two uniting again at the Buhain (Pouhain-gol), whence by gradual ascents and descents the pass (12,900 feet) over the south Koko-nor chain is crossed and the open valley of Dabasun-gobi reached. Continuing westward along this valley, another chain of the south Koko-nor range is traversed by an equally easy pass. The narrow defile of the Dulan-gol has now to be followed, and for ten miles the road lies over a salt plain, before crossing a small spur of the mountains. Twenty miles farther the traveller finds himself at Irgitsik, where the salt swamps of Tsaidam begin. The road along its south-eastern part for 47 miles, as far as the *Khyrma* (station) of Dzun-zasak, offers no special difficulty when there is a good guide to point out how the swampy places may be avoided. Nor is the ford across the Baian-gol difficult, except during the summer floods. The distance from Donkyr to Dzun-zasak at the foot of the Burkhan-Buddha is 310 miles* ; and this is the usual route taken by caravans of pilgrims bound for Lhasa and by Tibetan merchants going to Sining. Along the whole way there is sufficient water, fuel, and forage for man and beast, whether camel, yak, or horse.

From Dzun-zasak our route turns towards the west as far as Ulan-gadjir on the Utu-murren, keeping along the southern border of the bare salt plains of Southern Tsaidam for 250 miles along a belt of bushes

* That is by the southern shore of Koko-nor; following the northern shore the route is 27 miles longer.

where the near proximity of the lofty Tibetan mountains insures a water supply, whether in the form of springs or brooks, at intervals of seven to ten miles, and there is only one waterless march of 23 miles. Here, too, are three fair-sized rivers—the Nomokhun-gol, the Naidjin-gol, and the Utu-murren. On the two last mentioned pasturage is abundant, and there is generally plenty of grass, at all events in autumn, near the springs. Fuel, consisting of bushes, is also plentiful. The track is well beaten by the Mongols, whose unshod horses trample the saline clay till it becomes as hard as stone, and the swampy bits of the road may always be avoided by making circuits.

From Ulan-gadjir, where the salt plains of Tsaidam terminate, the road takes a north-westerly instead of a westerly direction; at the same time the elevation increases, the ground becomes more hillocky, more arid, and pebble strewn. Here two long waterless tracts have to be crossed: one of 45 miles from Ulan-gadjir to Gansa, where forage and water are abundant; the other from Gansa to Gass, 38 miles. At Gass there is an abundance of water, good pasturage and fuel. This is therefore a convenient place for halting the caravan and giving the beasts of burden time to recover their strength. In the course of the summer these animals, if allowed to graze in the neighbouring Zaisan-saitu and Khatyn-zang valleys, will entirely recover. Total distance from the Utu-murren to Chong-yar, our depôt at Gass, 210 miles,* along which, if we except the two above-mentioned waterless marches, there is no want of water, fuel, or grass.

From Chong-yar the road into Eastern Turkistan again divides: one branch leading due north, direct to Lob-nor, the other taking a westerly direction, brings you to the oasis of Cherchen. Both roads are suitable for caravans, even with camels. By the former, the distance to the village of Abdal on Lob-nor is 168 miles, including two waterless marches—one of 48, the other of 35 miles; besides which, the region traversed is generally more arid than that by the westerly route. Following the latter, at the end of the first day's march of 22 miles from Chong-yar, you reach a well-watered and grassy camping ground on the lower Zaisan-saitu. Up this river for forty miles lies the continuation of the road before entering the Valley of the Winds. In the western part of this valley forage and fuel are scarce, but caravans may nevertheless pass along it. Having gone 150 miles, the traveller at length finds himself in the valley of the Cherchen, and here I can only repeat the information I heard, according to which the marginal range may be crossed without difficulty by laden asses and horses, though not so easily by camels. From the summit of the pass it is 133 miles to the oasis. The distance is usually accomplished in eight days, viz. two from the commencement of the descent to the source of the Cherchen, which is

* From Dzun-zasak to the Nomokhun-gol 38 miles, hence to the Naidjin-gol (Nalchi) 94 miles, and from the last mentioned river to the Utu-murren 118 miles.

fed by glacier water from the Altyn-tagh and Tokus-dawan ranges; three along the upper course of this river, and three more for the passage over the western angle of the Altyn-tagh * and the descent of the lower Cherchen-daria to the Cherchen oasis. By this route the whole distance from Donkyr to Cherchen is about 1030 miles, while from the same place to Lob-nor *viâ* Gass may be reckoned at 942 miles.

Such, then, is the route discovered by us from Western China to Eastern Turkistan. It is strange that the Chinese have, so far as we know, not availed themselves of it for their intercourse with the last-mentioned country, an intercourse dating from the second century before Christ, when the dynasty of the elder Hans ruled over China. These relations, at times peaceful, at times warlike, now active and now wholly interrupted, according as they were influenced by political events in Central Asia and China, were always directed in the first centuries of our era by way of Lob-nor. The road ran from the town of Sha-chau to Lob-nor; then through Cherchen, Khotan (Yutien), Yarkand (So-tsiui), Kashgar (Suleh), and so on to the western countries beyond the Pamir.

By this line of communications, continued through Balkh (Bactra) and Merv (Margiana) to the southern shore of the Caspian, the ancient trade of China with the western world was maintained. From the eighth century after Christ the Lob-nor route began to fall into disuse, and the more convenient one at the foot of the Tian Shan came to be preferred. The former was not, however, altogether effaced, for at the end of the thirteenth century we read that Marco Polo travelled that way, and in the first quarter of the fifteenth century the embassy of Shah Rokh returned by it from China to Herat. The diary of the embassy supplies the latest information we have concerning this Lob-nor route, though it can hardly have been entirely abandoned even after that time.†

It seems to me that the chief reason why the Chinese preferred the more circuituous and more difficult route, at all events for the section between Sha-chau and Lob-nor, to the one described by us lay in the fact that the Lob-nor route, after passing the desert tract already mentioned, lay through a continuous line of cultivated oases to the east of Sha-chau, and, moreover, that there were probably many more settlements

* This pass is crossed in order to avoid the difficult ascents and descents of the spurs of the Tokus-dawan, which lean on the left brink of the Cherchen-daria. There are said to be nine of these spurs; owing to this the range itself has been named Tokus-daban (or dawan), i. e. the nine passes.

† According to information collected by us on our last journey to Lob-nor, Dungan traders passed this way from Sha-chau till the last Muhammadan insurrection. They spoke of the road as very difficult, owing to the scarcity of forage and want of good water. The Lob-nor people also knew of the way to China by Cherchen and Gass. They called this road Kumir-Saldy-yul, and told us of a tradition preserved in the country that upwards of 100 years ago (probably in the middle of last century, when the Chinese conquered Eastern Turkistan) detachments of Chinese troops passed along it to take part in the warlike operations against Khotan and others of the southern oases of the Tarim basin.

between Lob-nor and Cherchen than there are now. Even at a much later period there was an excellent station at the town of Lob. Besides which it is possible that in ancient times the tract of desert to the east of Lob-nor and between it and Sha-chau was less barren than at present. While, on the other hand, the Tsaidam marshes may in those days have been more inaccessible than they are now, and the nomad tribes inhabiting this region and Koko-nor may have attacked and plundered trading caravans with impunity, much as the Goliki (Kolos) do in Tibet.

All this is now changed. Owing to the general desiccation that has taken place all over Central Asia, the desert to the west of Lob-nor has become almost impassable, and the town of Lob has long since been destroyed. A caravan, therefore, starting from Sha-chau for the west would have to cross a waterless and barren tract 400 miles in extent before reaching the first oasis of Eastern Turkistan at Chargalyk, and beyond this, as far as the Cherchen-daria there is little water or forage to be obtained. The route we recommend is, therefore, the best under present circumstances, especially since our discovery of the navigability of the Tarim by small steamers all the way from Lob-nor to the confluence of the rivers of Yarkand and Aksu.

RETURN MARCH.

Turning our backs upon the pass leading out of the Valley of the Winds we first made an excursion to the nearest parts of Mosco range, in order to ascertain the lower limit of the glaciers. M. Robarofsky and I proceeded on foot towards the glaciers, which appeared to be quite near. But it was only after climbing for nearly three miles up steep slopes, for the most part covered with bare detritus, in severe frost, and wind, that we at length reached the edge of a glacier and ascertained the height to be 15,500 feet above the ocean according to the barometer. It should, however, be noticed here that this particular glacier lay in a defile of the northern slope of the mountains.

Descending the Valley of the Winds was much easier than its ascent; first because we had the wind at our backs and the sun as we met it warmed us a little; secondly, because we had no survey to make. The shortness of the winter days, however, and the tired condition of our animals, obliged us to reduce the length of our marches. The weather was as cold as ever; but on the 6th and 7th January the atmosphere was filled with a thick dust, probably raised by the tempest, and this dust, warmed by the sun, quickly raised the temperature, so that, on the 8th of January, with an overcast sky, the thermometer rose to 46° Fahr. at 1 p.m. The cold, however, soon afterwards returned, though not so severe as before, doubtless partly owing to our having descended 2000 feet in altitude. We halted for two days at the sources of the Lower Zaisan-saitu, chiefly to hunt orongo-antelope, our stock of provisions

having run low. At our first *chasse* we killed twenty-three of these antelope, and then stopped, for we had no means of transporting so much meat. Two days later we kept New Year's day (13th January) on the Zaisan-Saitu in a modest way, thankful for all we had been able to accomplish in the past and all we might expect to achieve in the future.

THE CLIMATE IN DECEMBER.

Down to the 25th December we had been in the mountains, along the river Zaisan-saitu, in the vicinity of Unfreezing Lake, and for the rest of the month (and part of January) in the Valley of the Winds at elevations varying between 10,500 and 13,000 feet. We had experienced during this time severe cold, nearly constant winds, increasing at times to the force of a gale, and an absence of atmospheric deposits. In the Valley of the Winds calms had been exceptional, lasting only for an hour or two. At other times the wind blew day and night, mostly from the west and south-west, with great force. Every tempest was ushered in by a cloudy sky and whirlwinds sweeping down the valley.

For two-thirds of December the sky was generally clear, but towards the end of the month (i. e. beginning of January) it was continually cloudy. From the 6th to the 12th January, the weather being then calm the air was full of dust, and as already stated, the temperature rose to 46° Fahr. At the same time the barometer fell .45 in., as compared with the reading at the same place a month before. On the night of December 31st (12th January) the mercury froze, and on eight days during the month the frost exceeded -22° Fahr. at sunrise; on six other days the thermometer showed -18° Fahr., and even at 1 p.m. stood at zero Fahr. Were it not for the westerly winds, the cold might have been even greater; yet with all their moderating influence, the daily temperature for the month averaged 5° Fahr., a trifle lower than that observed for the same month in 1872 on the plateau of Tibet, between the Shuga river and the Kuitun-shirik marsh, at an elevation of 13,500 to 15,000 feet above the ocean, and only a little higher than the average for December 1879 (3° Fahr.) when we were on the Tang-la range, and on our way thence to the Dunbure range * at an elevation of 14,500 to 16,500 feet.

Snow fell only six times during the month, in quantity just sufficient to whiten the ground, even in the mountains only lying to a depth of an inch or two, while in the valley it was soon blown away by the wind, and mingled with sand and dust so as rapidly to disappear.

EXCURSION TO THE RIVER KHATYN-ZANG.

On the 14th January, I despatched two Cossacks and some luggage camels to our *dépôt* at Chong-yar, while the rest of us made an excursion

* The Dungebura of A. K.

up the river Khatyn-zang, in order to clear up finally any doubtful points relating to the orography, and explore this river, which as already stated, fails to reach the Zaisan-saitu by seven miles. Having travelled thus far, we came to broad sheets of ice formed by the constant though feeble flow of water. Along both banks there is a dense growth of *Myricaria*; *Elymus*, *Clematis*, and *Ephedra* appeared in places, while on the sand we observed a thorny *Oxytropis*. Unfreezing springs force their way to the surface among these bushes. The Khatyn-zang forces its way through Tsaidam range by a short though tolerably wide defile; higher up it divides with its wide valley, the Columbus and Tsaidam chains, the level of the ground rising considerably towards the east where clay hillocks cover the surface. The westerly continuation of this valley continues to divide the two ranges we have named as far as the gorge of the Zaisan-saitu, while on the east beyond the Khatyn-zang where this river forms an elbow after its descent from its sources in Mount Jing-ri, the valley expands, and is gradually lost in the barren plains of Tsaidam. A little before this the Baian-gol, also issuing from the same glaciers of Jing-ri, enters the valley, and flowing for a short distance in the direction of Tsaidam is soon lost in the soil. The whole length of the valley is 180 miles, its best parts lying along the Khatyn-zang, this river also occasionally disappearing for short intervals underground. Here we found *balga-moto* and *kolosnik* (? tamarisk) up to an elevation of 12,000 feet above the sea, here too, creeping *Myricaria*, a species of rhubarb, a few grasses, and tufts of *Oxytropis* occur.

The soil in those parts of the valley nearest to the river consists of loess, sand, and small pebbles, affording sustenance to a few bushes of *Artemisia*, *Reaumuria*, camel-thorn, and an occasional *Ptilagrostis* and *Stalica*. The wild ass frequents these tracts, while the argali (*Ovis Dalai-Lamæ* n. sp.), yaks, and the orongo-antelope are also occasionally met with. Hares and smaller rodents are scarce. Among birds, besides those common to the whole of this country, and already repeatedly mentioned, we observed the Saksaul chough (*Podoces Hendersoni*) and a pair of *Podoces humilis*, the hedge-sparrow (*Accentor fulvescens*), mountain finches (*Erythrospiza mongolica*, *Passer Stoliczkæ*), and by the springs the solitary snipe (*Scolopax solitaria*). In summer gold-miners visit this region, and we saw traces of their camps.

Along the Khatyn-zang lies the route, now almost abandoned, of the Western Mongol pilgrims to Lhassa via Lob-nor. Having crossed the Altyn-tagh, these pilgrims keep along the western border of Gass and the lower Zaisan-saitu to the Khatyn-zang. They probably cross Columbus range in the region between its snowy part and the meridian of the east end of Unfreezing Lake.* Farther particulars of this route we were unable to obtain, and it was only afterwards that we learned that a few

* Probably by the Amban-Ashkan Pass crossed by Carey.

years ago a party of about 100 Torgute pilgrims travelled to Tibet and back by this route, and that seven of them died on the road.

From the bend of the Zaisan-saitu we marched 53 miles up the Khatyn-zang. We went no farther, for our horses were by this time quite tired and our stock of provisions nearly exhausted. But in order to survey the country ahead of us as far as possible, I rode forward alone from our last bivouac to the border of Tsaidam range, not far distant from us. Having ascended this for 1500 feet, I took all the necessary compass bearings. While engaged in this way I was favoured by a few hours of fine weather, and could see very distinctly the distant peaks both up and down the valley. On the south-east Jing-ri reared its giant form, outlined on the light blue background of the sky as though reflected on a mirror. To the westward of it lay the crest of the range, covered with huge glaciers for nearly twenty miles, probably the commencement of Columbus range. Towards the E.S.E. our valley disappeared altogether beyond the horizon, while immediately below lay the frozen Khatyn-zang like a riband of silver till a sharp turn to the south hid its sources in the mountains from my view. North of my position rose the snowy group of Tsaidam range, obstructing the distant horizon in this direction.

Having thus cleared up the position of the ranges and their bearings to one another and to the Khatyn-zang valley, I returned to camp.

RETURN TO OUR DEPÔT.

Had we been able from our farthest point on the Khatyn-zang to cross to the northern side of Tsaidam range we should have saved half the distance. But this being impossible, we had to retrace our steps. This, however, did not weigh heavily upon us, for we were looking forward to arrive shortly at our depôt, where we hoped to rest awhile after our fatigues and hardships, refresh ourselves with better food than we had lately been having, and allow our jaded beasts to enjoy their well-earned repose.

With these prospects before us we made three marches back along the Khatyn-zang, and two more across the waterless tract separating us from Chong-yar, and on the 23rd January, 1885, once more rejoined our companions from whom we had been absent fifty-four days, during which we had travelled 523 miles, and explored one of the least known parts of Central Asia.

At the depôt we found all well, the Cossacks in good health, the camels left behind thoroughly rested and in good condition. This was most important for us, as we could not hope to obtain fresh ones in the basin of the Tarim, as the event indeed proved. Our horses, however, were not fit for much, and four of these animals had to be abandoned.

As for ourselves, we lost no time in improving our personal appear-

ance, which had suffered from the rough life we had been leading. Shaved, washed, and regaled with the best of our provisions, we looked more like civilised men, and soon forgot the disagreeable experiences we had gone through in the cheering retrospect of success achieved. Three days were devoted to repacking, drying collections, writing up journals, &c., and then we bade good-bye to our excellent camping ground, and turned our faces northwards towards Lob-nor, following the route we had explored the previous autumn.

FROM GASS TO THE ALTYN-TAGH.

The day after leaving Chong-yar we crossed, in its narrowest part, that chain of mountains which forms a continuation of the Chamen-tagh, and stretches east-north-east for 106 miles, probably to its junction with the Altyn-tagh, or if it do not reach so far, is only separated from it by a short interval. Having been unable to learn of any local name, we called this chain "the Nameless," especially as in 1877 the people spoke to us of nameless mountains near the Altyn-tagh.* Their general features are aridity and barrenness. In their western part they are considerably lower, and flank the district round Gass. In the centre and farther east they rise approximately 13,000 to 14,000 feet above the sea, and are bordered here by the desolate wilderness of North-western Tsaidam, where, as already stated,† the country is a confused network of bare hills, and still more barren plains.

The pass over the nameless range, where we crossed it in its western part, is only from 700 to 800 feet above Gass. The ascent is gradual; the descent, however, on the opposite side is much steeper, and for a mile or two lies along a narrow defile, where the rocks are composed of conglomerate and schist much disintegrated and covered with loess. In places, particularly towards the east, there appear to be thick beds of loess.

To the west of this pass there is a wide hollow filled with salt marshes. Along its southern verge, towards the snowy parts of Chamen-tagh range, springs are abundant, and form the briny and unfreezing lakelet of Gashun-nor. By the side of these springs we found a little grass and thick reeds growing, the last mentioned having been trampled under foot and devoured by the wild ass.

Having supplied ourselves with ice at the springs of Gashun-nor, we struck out across the wide valley already mentioned, stretching for 100 miles east and west. The light soil consists of loess and pebbles. Neither water, vegetation, nor animal life are to be found here, though we saw foot-prints of wild camel. The valley where we crossed it in a direction due north to the southern foot of the Altyn-tagh has a breadth of about

* Cf. "From Kulja to Lob-nor," p. 82, *seq.*

† In a previous chapter of his book.

26 miles, and continues of this width westward, narrowing a little towards the east. Its elevation above the sea is between 10,000 and 11,000 feet along our line of march.

We were two days crossing it, following on the second day the track of the natives of Lob-nor when they go to Gass. This too is the road frequented—in former days oftener than now—by Torgute pilgrims to Lhasa. We actually saw here an old wheel track, probably of some great Lama or rich prince, who had gone to pray at the holy city. Wherever the nature of the country does not admit of the passage of these two-wheeled vehicles, they are taken to pieces and carried on a pack-saddle. To this day high Mongol dignitaries travel in this way from Urga to the capital of the Dalai Lama.

PASSAGE OF THE ALTYN-TAGH.

The Altyn-tagh, repeatedly mentioned in the preceding pages, at the foot of which we now found ourselves, was discovered by me in 1876, on my expedition to Lob-nor. The meaning of its name is 'golden range,' probably given it owing to the quantity of gold found here. With a general W.S.W. by E.N.E. direction, this chain stretches for nearly 470 miles from the headwaters of the Cherchen to the snowy group of Anembar-ula near Sha-chau. Here the Altyn-tagh unites with the Nan-shan, while on the west it closes on the Tokus dawan and its continuations, thus forming the central part of a continuous rampart of mountains bordering the highlands of Tibet on the north, and reaching from the Upper Hwang-ho to the Pamir. Like all these ranges, the Altyn-tagh has only a short slope towards the plateau, while on the Lob-nor side its mountain scenery is fully developed. Though it only reaches the snow-line in its western part near the source of the Cherchen, the average elevation of the Altyn-tagh is nevertheless very great, and it is rugged and inaccessible throughout. Of the passes leading across it we only know the one by which we now descended. But there is said to be another pass farther west by the river Djahansai,* difficult of access with donkeys and horses. There may be other footpaths across the range, but in any case these can be but few in number, and all are impracticable for camels.

Among the characteristic features of the Altyn-tagh are its lofty, loess-covered valleys,† barren and waterless, lying parallel with the main axis of the chain, and the general absence of running water in the range. Springs are rare, and for the most part supply water of a bitter saline taste. Besides the Cherchen-daria, which, as we have said, winds round the western angle of the Altyn-tagh, the following streams occur,

* Crossed by Messrs. Carey and Dalgleish (probably the Sai of Mr. Dalgleish's Itinerary, p. 32).

† The largest of these valleys known to us is Bektar, 10 or 12 miles north-east of the Kurgan-bulak.

taking them in their order and beginning on the west—the Vash-shari-daria, Chargalyk-daria,* Djahansai-daria, Kurgan-bulak, and Djaskansai-daria. The eastern parts of the Altyn-tagh, hitherto unexplored, are in all probability even more deficient in water.

As one might infer from the aridity of this range, due to the absence of snowy summits and small rainfall, vegetable and animal life are very deficient. In 1877, when we passed the whole of January in them, we only found 13 kinds of mammals and 18 varieties of Birds,† all being similar in kind to those met with in the ranges bordering the Tibetan plateau. There are no inhabitants in the Altyn-tagh, but in summer and autumn hunters come hither from Lob-nor and Chargalyk.

In the direction we took, the southern slope of Altyn-tagh is only a few miles wide, and the ascent from the Tibetan side imperceptible. •The summit of the descent is 11,000 feet above the sea. The chief axis of the range, marked by a ridge of lofty rocky eminences of black limestone and marble, is about three miles farther north, and is intersected by the narrow gorge by which we descended. It was difficult marching with camels, for here and there masses of sedimentary deposits had broken away from the sides and obstructed the road. But these were the only obstacles encountered. The valleys and slopes of the upper belts are covered with loess. No water could be found for the first 10 miles from the pass,‡ and the desolation was appalling. The only plants growing here are stray specimens of Reaumuria, bush Artemisia, camel-thorn, and an occasional clematis. We saw no birds of any kind. Among animals the wild goat (*Pseudo Nahoor*) and argali (*Ovis Dalai Lamæ*) inhabit these mountains, and wild yaks and camels occasionally enter them. Snow only lies on slopes facing the north, and even here in small patches.

After we had descended 3000 feet in 17 miles, we came to the source of the Kurgan-bulak or Kurgan-sai, at the place where our route crossed it in 1877. Then we went 62 miles farther in an easterly direction towards Sha-chau, finding the road exceedingly difficult for camels and the region barren and waterless. This is, however, a better route than that across the arid Kum-tagh sands from Lob-nor to that oasis.

Finding good pasturage for our camels in the defile of the Kurgan-sai, we halted for a day, experiencing that night, notwithstanding the lower elevation, frost of -21° Fahr., a greater cold than any we had yet felt, even on the other side of the Altyn-tagh. But as soon as the sun

* Perhaps flows from the Chamen-tagh.

† All these are enumerated in my book, "From Kulja across the Tian Shan to Lob-nor." The only correction to be made is that instead of *Ovis Poli* we have *Ovis Dalai-Lamæ*; instead of *Podoces Tarimensis* we have *Podoces Hendersoni*, and see the work referred to for further general information.

‡ I.e., for 48 miles from the springs near Gashun-nor we had come across no water.

rose and warmed the atmosphere, the thermometer rose rapidly, and by 1 p.m. showed 33° Fahr. in the shade.

On a hill near our camp were the ruins of a small mud fort,* which had formerly served to close the passage, and we learned that similar works of ancient construction may be seen in the other defiles of the the Altyn-tagh.

In the following two marches we descended the Kurgan-sai to where it issues from the range at an elevation of only 5800 feet. The Kurgan-bulak, as this stream is otherwise called, flows in an eccentric way, now above, now below the surface, finally disappearing altogether at the foot of the mountains. Its water has a bitter saline flavour. In those parts of the defile where accumulations of ice were piled up, we had to sprinkle earth or sand on the track to enable our camels to keep their footing. The sides of this gorge are high and rocky, composed of granite, dolomite, and hornblende; lower down there are fewer crags, and marble is the prevailing formation; lastly, the verge or skirt of the mountains towards Lob-nor is covered with hillocks of pebbles and loess.

The mountains we are describing are quite barren, but in the ravines there grow *Myricaria* (*M. Germanica* var.) at heights of 7000 to 9000 feet, and lower down tamarisk (*T. laxa*?); 500 feet lower still we found variegated poplar (*Populus diversifolia*), called by the natives *tugrak*. In the same defile we came across Kharmyk (*Nitraria Schoberi*), a species of *Lycium*, a fruit-bearing *Ephedra*, *Halostachys Caspia*, 7 feet high, a species of *Zygophyllum* in the higher belts, a species of *Hedysarum*, *Beaumuria*, camel-thorn, an abundance of common reeds (*Phragmites communis*), *dirisun*, in the Turki dialect, *chii* (*Lasiagrostis splendens*) in small quantities, *jerukha* (a species of *Lepidium*), *Carelina Caspia*, and, on issuing from the mountains, *jantak* (*Alhagi camelorum*).

The only animal we saw was the common wolf. We also observed traces of the leopard, tiger, and wild boar. The birds are few in number, the *keklik* (*Caccabis chukar*), jackdaw (*Fregilus graculus*), crow (*Corvus corax*), *Accentor fulvescens*, *Leptopæcile Sophiæ*, and a redstart, probably wintering. Judging from the accumulations of drift brushwood in the windings of the defile, the rains in summer, though rare, are heavy in these mountains.

ARRIVAL AT LOB-NOR.

On issuing from the gorge of the Kurgan-sai, our farther route lay in a west-north-west direction across a wide plain, sloping gradually from the foot of the Altyn-tagh to Lob-nor. In two marches, with a night's rest between, we accomplished the thirty-five miles of waterless tract and reached the spring of Astchi-bulak. For the first five miles after leaving the Kurgan-sai, we passed a succession of clay hillocks,

* Kurghan in Turki, Khyrma in Mongol.

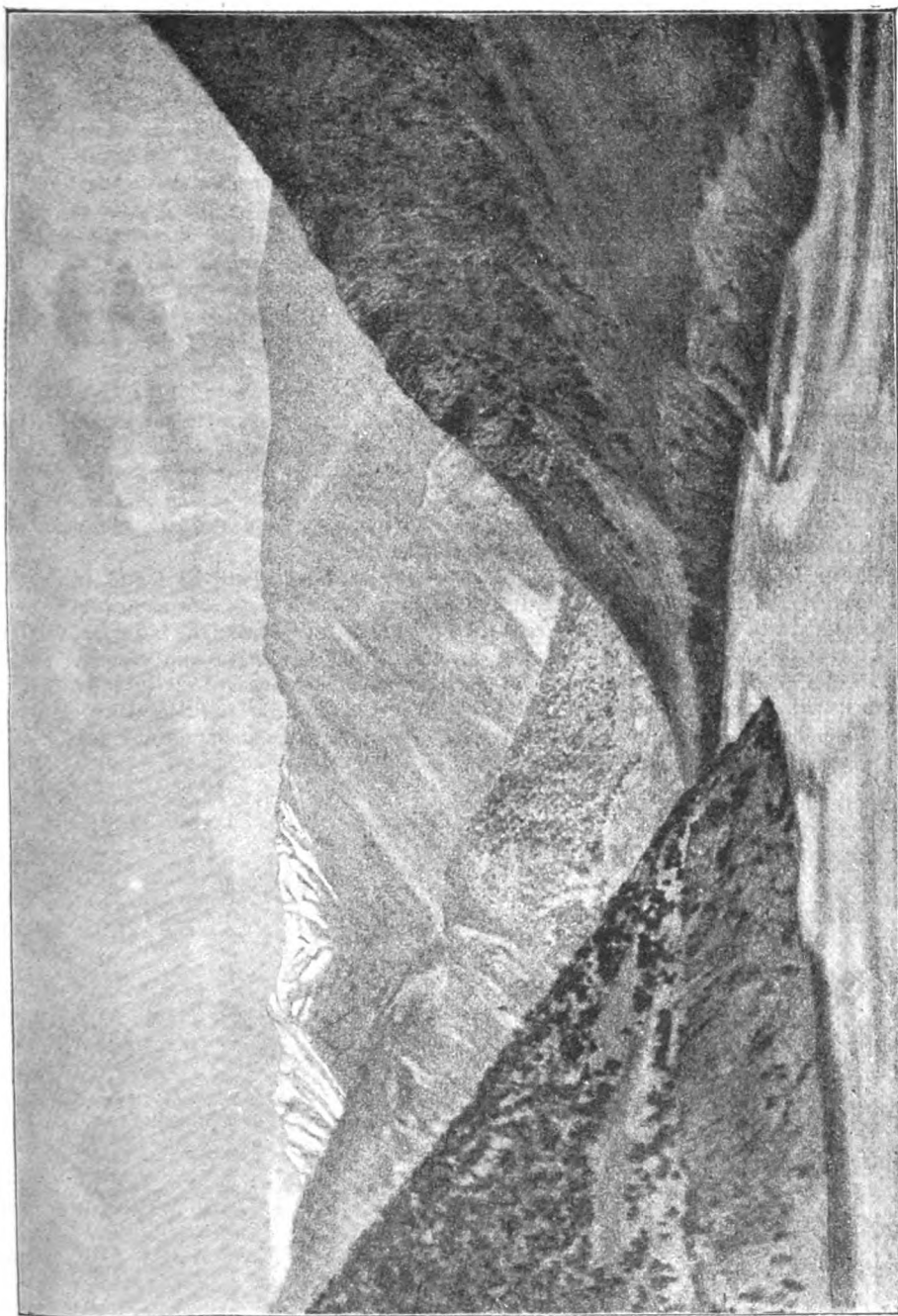
and on their border came to one of our camping grounds in the winter of 1877. Eight years had elapsed since then, yet we were able to recognise without difficulty the spot where our felt tent had been erected and the camels had been tethered; the cooking stove was intact, and even the spare fuel remained as we left it.

The soil of the plain over which we next marched consists of bare pebbles, loess, and sand; here and there were stones fashioned by the storms into all kinds of curious shapes, such as saddles, shoes, dishes, &c. We occasionally crossed the dry beds of mountain torrents, showing us the direction taken by the few rain-water channels. The plain itself is barren, except near the mountains, where scattered clumps of gnarled Saksaul, *Calligonum*, *Reaumuria*, and *Ephedra* grow. The well-beaten track is marked by piles of stones (*obo*), some of great size.

At Astchi-bulak, a bitter saline spring, we descended to the level of Lob-nor, i. e. 2600 feet above the sea, the lowest point we had reached since leaving Kiachta. It certainly was warmer here, though the winter had been generally a severe one at Lob-nor, and some snow had fallen. Even yet in shady nooks there lay snowdrifts.

From Astchi-bulak we marched seven miles to the southern shore of Lob-nor, and then 18 miles along this shore over execrable ground, where the surface was encrusted with salt and corrugated like the frozen surface of a troubled sea. A belt of this saline formation, seven miles wide, extends for a breadth of seven miles along the southern shore, as far as we went, having evidently formed the bed of the lake at some previous time; towards the east this saline encrustation is probably wider. Lob-nor itself was entirely covered with ice a foot thick. In 1877 the frozen part, clear of reeds, parallel with the south shore, had been about a mile or two in width. Now it was only half that breadth, owing to the shrinkage of the lake. We gladly observed here the first harbingers of early spring—a small flock of ducks and two of swans. The people did not show themselves, though occasional columns of smoke might be seen rising from the reeds, indicating the habitations of man. The natives, as we afterwards learned, had hidden in the reeds on our approach. . . .

By reaching Lob-nor, I had closed upon the third line of my travels in Central Asia. All three, starting from various points of the Russo-Chinese frontier, had Tibet for their objective. The first was directed from Kiachta through Urga, Ala-shan, Kan-su, Koko-nor, and Tsaidam; the second from Kulja through Yuldus, Korla, Lob-nor, and Gass; the third from Zaisan through Hami, Sha-chau, and Tsaidam. Lastly, in 1885, our fourth journey also led from the border of Semiretchia through Ak-su and Khotan.



RIVER DI-CHU (UPPER YANG-TSE-KIANG, NORTH-EASTERN TIBET).

POSTSCRIPT.—Since the foregoing pages were printed, Mr. W. W. Rockhill's communication on his attempt to reach Lhassa in 1889 has been published in our 'Proceedings,' (Dec. 1889, p. 730). In speaking of the sources of the Yellow River, he says there is no lake called Oring-nor east of the Ts'aka-nor, but one called Tsaga-nor: the former meaning "salt lake," the latter having apparently no meaning, at all events as far as he could learn. The close resemblance of these two names is confusing, and throws a little doubt on the correctness of Mr. Rockhill's information, especially as the names mentioned by Prejevalsky are identical with those given in d'Anville's atlas, founded, as we know, on the surveys of the Jesuits in Kien Long's reign. Neither is there any evidence of the salinity of one of these lakes as implied by its name. On the contrary Prejevalsky speaks of them as *freshwater* natural reservoirs of great importance to the internal economy of China. The circumstance of their receiving the drainage of the surrounding country and of their discharge by the Yellow River, is in itself a strong presumption of the sweetness of their water.

Mr. Rockhill's criticism on Prejevalsky's want of energy had better have been spared, for whatever his faults lack of energy was not one of them. He might, no doubt, have exchanged his camels for ponies and crossed the Di-chu, but he would probably not have had better success than Mr. Rockhill in advancing into that jealously guarded lama-ridden country, besides risking in the attempt the precious results of the whole expedition. With regard to the Mongols of Tsaidam, many particulars are given in Prejevalsky's earlier works.

The nomenclature of the ranges south of Lob-nor on the map will be found to differ from Mr. Dalgleish's itinerary, the cause being that this traveller's names do not agree with those given by Prejevalsky. I have preferred following the latter, as, being better provided with native guides, he was more likely to have been correct. The "Altyn" or "Altun-tagh" of Dalgleish must therefore be understood to refer to Prejevalsky's "Chamen-tagh," and Dalgleish's "Chiman-tagh" to Prejevalsky's "Columbus range." A note on this subject appears in a recent number of the 'Proceedings' (1889, p. 375).—M.