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*Prejevalsky's Journeys and Discoveries in Central Asia.**

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(Read at the Evening Meeting, February 28th, 1887.)

Map, p. 268.

BEFORE calling your attention this evening to the travels of Prejevalsky, let me give a few personal reminiscences which may help to bring his individuality before you.

I first met him at an evening meeting of the Imperial Geographical Society at St. Petersburg, when, with a flow of language and eloquence very striking, he gave an account of his first expedition into Central Asia, whence he had just returned. Calling at his lodging a few days afterwards I found him busily engaged in unpacking his collections which were in an admirable state of preservation, notwithstanding the many thousand miles they had come and the variety of climates to which they had been exposed. Among his chief prizes he showed me skins of the *Ovis Poli* and other rare animals shot by him in Northern Tibet. Ever since then our acquaintance has been renewed as opportunity offered between his long absences from Europe, and from time to time he has sent me particulars of his discoveries which I have communicated to this Society. As to his personal history, I may mention that his earlier years were passed in inuring himself to all kinds of physical privations and hardships to prepare for the career of an explorer, and soon after entering the military service, he asked for and obtained an appointment in Eastern Siberia, where he could indulge his passion for sport and adventure. In the dense virgin forests on the Ussuri, that remote part of the Russian empire acquired in 1860, he passed two summers, continually moving from place to place, and when not occupied with his official duties taking meteorological observations, collecting and drying plants, shooting and stuffing birds, keeping a diary, &c.

In 1871-73 he made his first great expedition in Mongolia and

* Compiled from the Russian originals.



MAP OF TIBET

illustrating the journeys of
GENERAL PREJEVSKY

Route of 1879-80, red
Route of 1884-85, green

Scale of English Miles
0 50 100 150 200

Heights in Feet.

Explanation of Tibetan and Mongolian Names

Chaidam	Place of Trade	Jong	Fort
Chang	Northern	Kiang (Chinese)	River
Cho	Lake	La	Pass
Chu	River	Nor	Lake
Giachug	Rest-house for Officials	Tung	Plain
Gomba	Monastery	Sampo	River

Tibet. After crossing the Gobi Desert between Kiachta and Kalgan he turned westward and followed nearly in the footsteps of Abbé Huc to the province of Kansu in Western China, visiting Lake Koko-nor, a magnificent water-spread 10,800 feet above the sea. He then entered Tsaidam,* a saline marshy tract some 500 miles long from east to west, which in his opinion has recently been covered by the sea. Hence he passed into Northern Tibet, but owing to the want of resources he was unable to prosecute his journey to Lhása, and was obliged to turn back when but 27 days' march or about 500 miles from that city. Among the results of this expedition, besides rich collections of the flora and fauna of the countries visited and a detailed route survey, was the discovery of a moist mountainous region in Kansu, to the north of the upper Hoang-ho and east of Lake Koko-nor, well wooded and abundantly supplied with rainfall though isolated by arid tracts. On his return journey he crossed the Gobi in its widest part between Din-yuan-ing and Urga, in the height of summer, by a route never before attempted by European travellers.

In 1876 Prejevalsky advanced from Kulja, then held by Russia, crossed the Thian Shan and turning southwards from the oasis of Kara-shahr, struck the Tarim and followed this river down to its out-flow in Lake Lob, the first European to visit this lake in modern times. His description of it, differing widely from the accounts given by old travellers and by Chinese writers, took geographers by surprise, particularly as regards the sweetness of its waters at its western end where the discharge of the Tarim takes place. But his most important discovery was that a high range of mountains, the Altyn-tagh, rises almost precipitously from its southern shore to the limit of perpetual snow, and apparently buttresses the northern Tibetan plateau. We can now understand, says Baron Richthofen, why the old silk traders passed so close to the south of Lob-nor, and encountered the terrors of the desert between it and Sha-chau rather than attempt a passage over huge mountains where the difficulties of transport were so great. We shall see, however, when we come to Prejevalsky's fourth and last journey that the trade route did in all probability cross these mountains by an easy pass from Cherchen, while an alternative route to China lay through Lob-nor and Sha-chau.

By these two journeys Prejevalsky had acquired a reputation as a traveller and observer, and when he started on his third expedition he was well supplied with funds and with every requisite. In 1879 he undertook what he himself prefers styling his third "scientific reconnaissance" into the heart of Asia. Fort Zaisan, now a town in the government of Semipalatinsk, was his point of departure. Here he obtained the supplies necessary, and transport animals for his party numbering thirteen all told, ten being Cossacks, picked men, and well

* 10,000 feet above sea-level.

practised in the use of firearms, upon which Prejevalsky's experience had taught him to place his chief reliance in dealing with the natives of Central Asia.

Their route at first led them by Lake Uliunghur, visited in 1253 by the Franciscan monk Rubruquis, who was sent on a mission by Louis IX. of France to the Mongol Khan at Karakorum. The lake has a circumference of 87 miles, an elevation above the sea of about 1600 feet, and receives on the east the discharge of a large river, the Urungu. A peculiar feature about this lake is that a narrow ridge of highland separates its north-eastern extremity from the Black Irtish, and therefore from the basin of the Obi and the Frozen Ocean.

Prejevalsky and his party passed along its western and southern shores to the Chinese fort of Bulan-tohoi, situated at the mouth of the Urungu. They then followed this river, which has a course of about 300 miles, and derives its source from the Altai Mountains, cutting a deep channel through the plain lying between them and the Thian Shan range. Not long before the expedition passed this way a large body of Kirghizes, numbering about 9000, had wintered on the Urungu, having escaped from the control of the Russian authorities in Semipalatinsk. They had suffered terribly from want of fodder for their cattle, and Prejevalsky saw numerous traces of their encampments along a tract extending over 100 miles up the Urungu, where everything edible had been devoured, even to the bark of the poplar trees, which had been felled and stripped, while the ground was strewn with the carcasses of their dead sheep. This incident serves to illustrate the great change that has come over Central Asia since the days when Jinghis Khan and other great conquerors found sufficient sustenance for their vast armies.

The natives of the upper valley of the Urungu or its chief tributary, the Bulugun, are Turgute-Kalmuks, whose kinsmen, inhabiting north-western Dzungaria at the foot of the Tarbogotai range, are the descendants of those Kalmuks who, driven out of their camping grounds by the Dzungars, migrated to the banks of the Volga and Ural at the end of the 17th century, and in 1770 suddenly departed, to the number of 460,000 families, into the depths of Asia under the leadership of their Khan Ubashi, and arrived, though in greatly diminished numbers, on Lake Balkash, and afterwards at Ili, where lands were given them by the Chinese Emperor. The Turgutes are subjects of the Emperor of China, and remnants of them who escaped the Dungan insurrection now occupy the lands about Yulduz and Kara-shahr.

After ascending the Urungu and Bulugun, Prejevalsky crossed a sand waste to the foot of the Thian Shan, called by him the desert of Dzungaria, after the country of which it forms part. It is bounded on three sides by mountains, while on the east, where the Altai and Thian Shan ranges approach one another, an isthmus of sand unites it with

the Gobi.* This connection existed in distant ages, when the whole area of what is now known as the Gobi was covered by a sea mentioned in Chinese annals as *Kan-hai*.† The Dzungarian desert formed a great gulf of this sea communicating with another vast water-spread, the Aralo-Caspian.

Prejevalsky describes at some length its climate, soil, flora, and fauna; we have only space here, however, for a few of his remarks. First, the most characteristic of the flora of this, and indeed the whole of the Central Asian plains and deserts, is the Saxaul (*Haloxylon ammodendron*), called by the Mongols *zak*, a tree or shrub growing to a height of fourteen feet, and a thickness near the root of half to three-quarters of a foot. It is most commonly met with in the drift sands, particularly in Ala-shan and in Russian Turkistan. It is by no means attractive in appearance, it gives no shade, and the sand round it is devoid of all other vegetation. But its usefulness to the nomad is beyond description; it supplies him with fuel, and his camels with food; its wood, though heavy and hard, is exceedingly brittle, so much so, that a large log of it when struck with the axe will fall to pieces. Hence it is of no use for building purposes, but it burns splendidly, almost like coal, and retains its heat a long time. Its geographical distribution is very wide in Inner Asia. It is met with throughout the vast tract extending from the Caspian Sea on the west, to the limits of China Proper on the east, and through nearly 12° of latitude from the parallel of Lake Uliunghur on the north to Tsaidam on the south, where it grows at a height of 10,000 feet above the sea; but its chief habitat is the Gobi and Northern Ala-shan, Dzungaria, and Russian Turkistan. Of the fauna of Dzungaria, we must mention the wild horse—Prejevalsky's wild horse—a stuffed specimen of which is preserved at the Academy of Sciences at St. Petersburg, and the wild camel, the Bactrian two-humped species. Both these animals inhabit the wildest and least accessible parts of the desert. The wild horse, which palæontologists have shown was once widely distributed over Europe and Asia, is now only met with in a corner of the desert of Dzungaria; but the wild camel was also observed by Prejevalsky in the desert of Lob, where he was the first European to see it since the Venetian traveller Marco Polo, six centuries ago, passed this way.

On turning southward from the valley of the Bulgun he soon left behind him the Altai and approached the Thian Shan, visible in the clear atmosphere of the desert 130 miles off, while its highest peak, Bogdo-ula, could be seen before leaving the Urungu, 160 miles distant. Among its spurs he found a few Chinese settlers, but they were not so numerous as they had been before the Dungan insurrection, and they had entirely driven away the nomads.

* Some chains of mountains between the Tarbogotai and Thian Shan border it on the west.

† Or "the dry sea."

Passing the salt lake and plain of Barkul,* Prejevalsky crossed the main axis of the Thian Shan by a pass 8700 feet high,† and descended to the oasis of Hami on the south side.

This oasis, supplied with moisture by the streams which descend from the snowy mountains, though of no great extent, is remarkably productive. Corn, vegetables, grapes and melons are grown here, the last of such exceptionally fine flavour as to be considered worthy of being sent to the court of Peking. But Hami in its present state shows unmistakable evidence of the ravages committed by the Mahomedan rebels. Its trees have all been felled, its gardens destroyed, its homesteads laid in ruins. Only within the last few years have the Chinese begun restoring their houses and cultivating the land. Prejevalsky considers it an over-rated place, not to be compared with Kulja, that "pearl of Central Asia."

The natives of Hami are descended from the ancient Uighurs, and are called Taranchi.‡ They wear a national dress, consisting of an ample flowered *khalat* or robe, and a cap of a peculiar shape, worn at the back of the head. The women are good-looking, black-eyed and black-haired, with splendid white teeth, but unfortunately they follow the Chinese custom of painting their faces. They walk out unveiled, and are generally free and easy in their manners, just as they were in Marco Polo's time.

Hami is a strategical place of the highest importance, as it commands the chief roads from China Proper to Eastern Turkistan and Dzungaria. It is the key to all the cities situated along the Thian Shan, for here a road passable for wheeled vehicles crosses the narrowest part of the desert to An-si-chau. By this route, 250 miles long, Prejevalsky passed, resting his caravan, much exhausted by the fiery ordeal they had gone through, in the environs of Sha-chau.

Sha-chau is one of the best oases of Central Asia. It is situated at the foot of the Nan-shan range, at a height of 3700 feet above the sea, and occupies an area of about 200 square miles, the whole of which is thickly inhabited by Chinese.§ Sha-chau || is interesting as the meeting-place of three expeditions started independently from Russia, India, and China. Just two months before Prejevalsky reached this town it was

* The town of Barkul, founded by the Chinese in 1731, remained on one side of Prejevalsky's route, and was not visited by him.

† On either side of this range there is a cart-road leading from Western China. The northern road, Peh-lu, leads to Barkul, Guchen, Urumtsi, Manas, Shi-ho, Jinho and beyond via the Talki pass to Kulja. The southern route, Nan-lu, passes through Pichan-Turfan, Kara-shahr, Korla, Kuchá, Bai, Aksu to Kashgar.

‡ Hami is composed of three parts, two Chinese (an old and a new) and one Taranchi.

§ Prejevalsky estimates the population at 10,000, of whom 2000 were soldiers. Szechényi gives 12,000 as the total.

Also known by its Chinese name Tung-lwan-hsien.

visited by Count Szechényi,* and eighteen months afterwards Pundit A—k, whose report of it agrees fairly well with that of our traveller, also stayed here. Both Prejevalsky and Szechényi remark on some curious caves in a valley near Sha-chau containing Buddhistic clay idols. These caves were in Marco Polo's time the resort of numerous worshippers, and are said to date back to the Han dynasty.†

Undeterred by the suspicious and unfriendly attitude of the Chinese, who thwarted him in every way, Prejevalsky pushed on towards Tibet, now seeking the road by scouting, now pressing into his service occasional Mongols with whom he chanced to meet. He crossed the Nan-shan, whose glittering snowy summits stood forth in startling contrast with the dark blue canopy of the heavens, those mountains which extend on the east to the sources of the Hoang-ho and on the west to Lob-nor, Khoten, and the Pamir, forming a gigantic northern barrier to the whole of the Tibetan uplands.

By his discovery in 1876 of the Altyn-tagh, Prejevalsky defined the till then unknown connection between the Nan-shan and Kuen-lún, at all events in a general way, and the position of the northern barrier of the Tibetan plateau, advancing this in the meridian of Lob-nor 3° farther to the north than had hitherto been supposed. Tsaidam proved to be enclosed on all sides by mountains, while the Kuen-lún, extending under various names from the sources of the Yarkand river far into the interior of China Proper, margined the lofty uplands of Tibet only in its western part on the side facing the low Tarim desert. The farther margin of that Tibetan plateau is formed by the newly discovered Altyn-tagh, uniting on the one side by means of the Toguz-daban with the Kuen-lún, and on the other, as may be now confidently asserted, with the Nan-shan, stretching from Sha-chau to the Yellow river.

In this way an uninterrupted gigantic mountain wall stretches from the Upper Hoang-ho to the Pamir, dividing the great intumescence of Central Asia into two parts, the Mongolian desert on the north, and the Tibetan plateau on the south.

Nowhere in this world is there to be met with on such a scale so marked a difference between two countries lying side by side. The chain of mountains separating them is often not wider than about 30 miles, and yet on either side of it lie tracts completely distinct in their geological formation and topographical relief, in their elevation and climate, their flora and fauna, and lastly, in the origin and the fortunes of the peoples inhabiting them.

But let us return to the Nan-shan. This range, as we have stated, extends westward from the Upper Hoang-ho, and is divided into several parallel chains forming a mountainous alpine country, widest to the north and north-west of Koko-nor, where parts of it rise above the

* In April 1879.

† Whether to the first or second dynasty of that name is unknown.

snow-line. In the meridian of Sha-chau the Nan-shan narrows to a belt of 27 miles, and even less near the snowy group of Anembar-ula. But before this contraction, 60 miles to the east of the group just mentioned, it stands as a gigantic range crowned with perpetual snow for a distance of over 70 miles in a direction W.N.W. to E.S.E.*

In the Nan-ahan mountains, Prejevalsky pitched his camp in a charming spot by the side of a brook, which he called "Bounteous," a name it richly deserved for its life-giving properties. The Nan-ahan, in the meridian of Sha-chau, is a sterile, treeless range, differing widely from its eastern part, the so-called mountains of Kansu. In the last-named, dense forests of every kind of tree and shrub clothe the slopes, particularly on the north. The alpine zone abounds in rhododendrons and rich pasturage; the treeless Sha-chau mountains, on the other hand, have only about a dozen kinds of bushes, and but little variety in their herbaceous flora,† while their avifauna is proportionately deficient.

Instead of grassy slopes, there are beds of rocky detritus, or bare clay, giving an aspect of dreariness and monotony to the scene. Yet the higher belts possess a savage grandeur, with their summits towering above the main axis, their precipices, and white-capped peaks.

In these wild mountains, Prejevalsky and his Cossacks remained several weeks hunting and exploring. Among the additions to their zoological collection, was a new species of deer,‡ and the large Tibetan partridge§ inhabiting the highest alpine belts. They visited a glacier, 17,100 feet by barometrical measurement, and gaining the crest of the range had a magnificent view of its whole extent.

But here a disaster nearly overtook them. Their mutton and dried venison being all consumed, they sent out hunters every day to try and obtain deer or yak. Owing, however, to the scarcity of these animals, they often returned empty handed. One day, a Cossack reported that he had fired at and wounded a yak, but approaching darkness had

* At its eastern extremity this range is joined almost at right angles by another range coming from the W.S.W., equally snowy, though perhaps less continued. In its southern part this range is contiguous with the desert of Northern Tsaidam, near Lake Ike-Tsaidamin-nor. Neither of these snowy ranges having any general name among the local inhabitants, who only distinguish certain parts of the mountains and their chief peaks, Prejevalsky claiming the rights of a first discoverer, christened one—that extending along the main axis of the Nan-ahan—Humboldt range, and the other, perpendicular with it, Ritter range. Distinct peaks of Humboldt range attain an elevation of 19,000 feet, and perhaps more in its central and eastern parts.

† The limit of vegetation on Humboldt range lies at an elevation of 13,700 feet on the northern, and 15,000 feet on the southern side. The snow-line is 700 feet higher on either side.

‡ *Cervus albirostris* n. sp.

§ *Megaloperdix thibetanus*. Its general name in Asia is *ullar*, a word of Kirghiz or Turkish origin; the Mongols call it *hailik*, and the Tibetans *kung-mo*. There are two other varieties of this bird found in the Himalya and Altai Mountains, but the habits of life and call-note of all three are the same.

obliged him to abandon the pursuit. The next day, he and a companion Yegoroff, set out to renew the search; they came upon the track of the wounded yak, showing that it had climbed a mountain ridge and descended the southern slope. The hunters, excited with the chase, followed. A mile or two beyond the pass they came across a herd of wild sheep, into which they fired a volley, and while Kalminin went to ascertain if any had fallen, Yegoroff continued his pursuit of the yak. In the meantime, Kalminin unexpectedly shot a *kulan* or wild donkey, and having done this, he returned to the spot where he had parted with Yegoroff and shouted. Receiving no answer, and thinking it possible his companion had gone straight back to camp, Kalminin retraced his steps and joined his party at ten that night. The next morning, the prolonged absence of Yegoroff caused much anxiety, and a search party was organised. For some miles they followed the tracks of the hunter, but at last lost all trace of him in the maze of crags and defiles. For five days they continued their search, Prejevalsky himself assisting. They climbed the rocks in all directions, they fired off their guns, and then concluding Yegoroff had perished from exhaustion, with heavy hearts they broke up their encampment and resumed their march.

They had gone about 17 miles, when the leading Cossack discerned, by the aid of a field-glass, a man coming down the mountains towards their caravan; two of the party set out at a gallop to meet him, and within half an hour they had brought back with them the unfortunate Yegoroff. He could hardly stand; his face was sunken and nearly black, his eyes bloodshot, his lips and nose swollen; he wore nothing but a shirt, and his feet were bound in rags. When he had sufficiently recovered, he related how he had come upon the yak; how he had wounded him a second time, how he had again pursued him till dark, and how, when he had turned his steps homeward, he had taken the wrong direction, and when morning dawned he had found himself on the Syrten plain. He told too how he had made his way again to the mountains, but instead of going north had gone west, and how he had kept himself alive by chewing rhubarb leaves and drinking water; he had also shot partridges, and eaten them raw. On the fifth day he came upon a herd of Mongol cows, but there were no herdsmen to be seen, they having fled probably at the sight of a stranger; he wanted milk, but alas, the cows were all dry; his strength was sensibly diminishing, and he knew that in a day or two he must die from sheer exhaustion; he determined therefore to walk to the very last, and then by the side of a spring wash his shirt and die. Thus ended Yegoroff's tale.

The expedition now entered the Tsaidam plains, an expanse of salt-marsh and clay flats, dotted with lakes, and elevated about 10,000 feet above the sea. Its Mongol inhabitants* received the Russians well,

* The Mongols of Tsaidam cultivate patches of the soil and obtain good crops where there is irrigation.

but feared to show them the direct road to Tibet, lest they should incur punishment from the Chinese authorities. The expedition had therefore to take a circuitous route along northern Tsaidam, which led them into the track followed by Prejevalsky in 1872-3. The native princes, acting doubtless by orders from Peking, refused Prejevalsky both guides and provisions, and it cost him no little trouble, and he had even to resort to threats to obtain these. At length he reformed his caravan, and prepared to enter the promised land, the mysterious realm of Tibet.

Northern Tibet* offers no exception to the well-known grandeur of Asiatic scenery. No other part of the world has anything to compare with its gigantic tablelands, 13,000 to 15,000 feet above the sea, its stupendous mountain ranges, not lofty compared with the general elevation of the country, yet bordered by the wildest alps.

But few Europeans have crossed its solitudes and these have followed the routes taken by the Buddhist pilgrims from Sining to Lhása.† Unfortunately none of them left a detailed geographical description of his journey through Northern Tibet. Far more important in this respect were the services rendered by Pundit Nain Singh in 1873, when he accomplished his remarkable journey from Ladakh to Lhása via Tengri-nor, took 497 altitudes, and determined the latitudes of 276 points.‡ Another pundit proceeded from Eastern Nepal to Tengri-nor, skirted its northern shore, and returned by way of Lhása to India.

Prejevalsky himself on his first expedition penetrated 200 miles into Northern Tibet by the same pilgrims' road, as far as the confluence of the Napchitai-ulan-murren with the Mur-ussu, the head-waters of the Yang-tse-kiang.

In 1879-80 he again made his way to the upper Yang-tse-kiang, crossed this river and the 'Tang-la range, besides exploring the upper Hoang-ho to the south of Koko-nor.§

* Prejevalsky includes within Tibet, viewed in its widest physico-geographical aspect, the region to the north bounded by the Altyn-tagh, the basin of Koko-nor and the Tangutan country, all of which lie outside Tibet proper, but from the similarity of their physical conditions may be included in it.

† In 1624 the Jesuit Antonio Andrada set out from Agra and reached the sacred shores of Lake Mansarowar; thence he made his way to Rudok, and eventually by way of Tangut to China (Markham's 'Tibet,' p. lvi.). In 1661 the missionaries Grueber and D'Orville passed through Lhása to Agra on the Ganges. Between 1723-1736 the Dutchman Samuel van der Putte travelled from India to Peking through Lhása and back again to India; and lastly, in 1845, the missionaries Huc and Gabet reached the capital of the Tale Lama from Northern China, and returned through Southern China to Canton.

‡ See 'Journal R.G.S.,' vol. xlvii. pp. 86-136.

§ Eastern Tibet was also visited in 1862 by the Abbé Desgodins, who went from Bathang to Cha-mou-to (Chiamto) (See 'Proc. R.G.S.,' 1885 and 1886. 'La Thibet d'après la correspondance des Missions'); and Pundit A-k, during his four years' travels, succeeded in making his way from Lhása to Tyingali (Tengelik) in 36° N. lat. and 96° E. long., and thence through North-western Tsaidam to Sha-chau.

Meagre as our geographical information is concerning Northern Tibet, its general features may be roughly sketched, more especially as nature has fashioned it on a large scale. The limits of our plateau are the Kuen-lún on the north, and the northern Himálya on the south; from east to west it extends from the Karakorum, and its south-eastern continuations, to the borders of Sze-chuen and Kan-su. The eastern, smaller half of this region differs widely from the western. A line drawn diagonally from Lake Tengri-nor to the sources of the Yellow river would serve to mark the division. West of such a line lies a continuous table land almost without relief, and having no waters flowing towards the ocean except in its eastern part. East of this line all the streams belong to the oceanic watershed, the country loses its tableland aspect, and now and again presents grandiose alpine scenery.

The whole of Tibet may from the diversity of its topographical features be divided into three parts:—a *southern*, comprising the upper valleys of the Indus, the head-waters of the Sutlej and the Brahmaputra; a *northern*, presenting a continuous tableland;* and an *eastern*, containing an alpine country reaching far into China Proper.† The Kuen-lún on the north and the Northern Himálya on the south are its representative chains, but neither of these has been yet fully explored, though their main features have been revealed to us by the Pundits Nain Sing ‡ and D. in the case of the Northern Himálya, and by Prejevalsky in the central parts of the Kuen-lún.

The climate of Tibet is characterised by (1) a low temperature at all seasons of the year, notwithstanding its southern position; (2) a prevalence of violent storms, especially in spring; and (3) by excessive dryness of atmosphere in autumn, winter, and spring—on the other hand, by an abundance of humidity in summer.§

Turning to the flora and fauna of Northern Tibet, we again meet with a strange phenomenon, a poor vegetation contrasting with large numbers of herbivorous animals. Of trees there are none, and Prejevalsky only found three kinds of bushes, one of which—the willow—grew half a foot in height; the others lie on the ground. There are three or four kinds of grasses along the banks of the Mur-ussu and some other valleys, but the soil is for the most part bare, or only occasionally covered with plants about an inch in growth. But its fauna places

* I am informed by Mr. Ney Elias that this country may prove to be mountainous, just as parts of North-east Tibet actually visited by Prejevalsky. In the same way the Pamir was thought to be a continuous tableland before exploration proved it to be a succession of ranges.

† It is not proposed in this paper to enter into the orographical details communicated by Prejevalsky. These might form the subject of an appendix in a separate paper.

‡ Nain Singh measured a peak, Gandizri (?), 25,000 feet high, and Pundit D. saw equally lofty summits south of Tengri-nor.—Journal R.G.S., vol. xlvii. p. 105.

§ I am informed by Mr. Ney Elias that the humidity noticed in Eastern Tibet and Kan-su does not extend to Western Tibet.

Tibet in a separate zoological category, not from the variety of species,* but from their number and size. Probably there is hardly any part of the world, except perhaps Inner Africa, where there are such numbers of wild animals as are met with on the solitudes of Northern Tibet. Here in one day the traveller may see hundreds of herds of yaks, wild asses, and antelope, and these show no signs of alarm at the approach of man. Their numbers may be estimated, not by tens or hundreds of thousands, but by millions.

The first place among them is taken by the wild yak, which may be distinguished from the domestic species by many, though comparatively minor, zoological marks, and may be called, as Prejevalsky suggests, *Poëphagus mutus*, owing to the fact that this animal never utters a sound, while its domestic congener grunts like a pig, and is therefore named by Pallas *Bos grunniens*.

Then there are two beautiful kinds of antelope,† two kinds of mountain sheep,‡ frequenting the wildest crags; lastly, a deer, only found in small numbers on some of the mountains, but not on the plateau itself.

On advancing into Tibet, rumours reached the expedition that the Tibetans had assembled troops to prevent their approaching the capital. Nevertheless they advanced, full of hope and scorning every inauspicious omen and report. In order to avoid the high pass over the Burhan Buddha they turned into the defile of the Nomokhun-gol, passing along one of those barren, stony plains so common in Central Asia,§ margining with a wide and slightly inclined belt the foot of the Burhan Buddha. Here, in the midst of tamarisk bushes, they came upon patches of cultivated land, sown with barley, a rare sight in a country inhabited by Mongols, who hate and despise agriculture. Having passed the Burhan Buddha and Shuga || ranges, the last-named by a pass of 15,200 feet, they entered a remarkable valley, only three miles wide, but 70 miles long, forming a natural causeway between two huge ranges. At either end of it, passes ¶ lead southwards across the range named by Prejevalsky

* All the mammals found by Prejevalsky in Northern Tibet belong to four orders, distributed as follows:—Carnivora, 5; Glires, 6; Solidungula, 2; Ruminantia, 9.

† The orongo (*Pantholops Hodgsoni*) and äda (*Procopra picticauda*).

‡ The white-breasted argali (*Ovis Hodgsoni*?) and Koko-yaman (*Pseudovis Nahoor*).

§ The occurrence of similar plains in Afghanistan has been explained by C. L. Griesbach, the geologist on the Afghan Boundary Commission, in the following way: "Nearly all the great valleys of Southern Afghanistan are covered with post-Pliocene deposits in great thickness; amongst them is conspicuous a deposit of gravel and irregular fragments of rock from the surrounding hills, more or less firmly cemented together by a calcareous or argillaceous matrix forming a breccia. After disintegration has taken place on the surface of this deposit, the prevailing sand-charged storms remove such decomposed material, leaving the larger particles, namely, the pebbles and angular rock fragments, behind, producing wide spreads of those stone-strown plains, characteristic of this part of Asia, and commonly termed *dasht* by the natives."

|| Described in Prejevalsky's book, 'Mongolia, &c.' vol. ii. chap. 6.

¶ Chium-Chium is the name of the eastern pass, 16,300 feet, Anghir-dakchin (A—k's

"Marco Polo." Their outward track lay by the eastern pass, their return journey by the western. They were now fairly on the plateau of Northern Tibet, and for the remainder of their journey in that country never descended below 14,000 feet. Here their difficulties were great. The guide refused to show them the way, or probably did not know it; the weather turned cold, with continued snowfalls, though it was only the middle of October, and their camels and horses could find nothing to eat; the *argols* became damp and refused to burn, and there was every prospect of an early winter. It required some resolution on the part of the leader of the expedition and his men to persevere. Difficulties, however, could not daunt them, and they all as one man said, "Come what may, we will go forward."

They still advanced in the same south-westerly direction towards the Koko-shili or Blue range,* visible as a long wall on the horizon. After two days more of bad weather, the sun shone out brilliantly, but the glare from the snow caused ophthalmia to men as well as animals, and one of their sheep became totally blind. But there were symptoms of a change for the better, and the severe cold they had so recently experienced had been exceptional. After they had extricated themselves—not without difficulty, for they had no guide—from the Koko-shili Mountains, the weather became warmer, and the snow melted off the southern slopes.

Before reaching the next parallel range, the Dumbure,† they crossed a plain 15,000 feet above the sea, studded with lakelets fed by springs, where the sandy soil supports a scanty vegetation consisting of mingled alpine and steppe forms. Their next march was most difficult, for they had not only to cross the main axis of the Dumbure and two of its ramifications, but to traverse intermediate tracts of half-frozen marsh land. Having at last extricated themselves from these mountains, they arrived on the banks of the Mur-ussu. Here they halted for two days, before ascending its valley, by a well-worn track taken by the Lhása pilgrims. But this disappeared altogether after about twenty miles, and they had again to resort to scouting in order to find the road. Fortunately, they were by this time so experienced in local land-

Anghirtákshia) that on the west. A—k also gives this name Anghir-takshia to a long rangelying east and west, probably identical with Prejevalsky's "Marco Polo" range. He derives this name from a medicinal herb used for burning as incense. Cf. 'Report on the Explorations in Great Tibet and Mongolia,' p. 42.

* The Koko-shili is a westerly continuation of the Baian-kara-ula. It stretches from the point at which the expedition crossed it for 400 miles due west. Its height above the plain is only between 1000 and 2000 feet, but the plain itself is 16,000 feet above sea-level. A—k's "Khokhoaili," at the point where he crossed it, in 35° 10' 37" N. lat. The height of the pass, as measured by boiling water, was 13,430 feet. Cf. Report, p. 41. His "Khokhoaili" lies to the south of the Ma-chu river (Prejevalsky's Napchitai-ulan-murren).

† A—k's "Dung-bura."

marks, that they had no difficulty in hitting off the right line. But the severe marching had told on the camels and horses; four of the former and one of the latter were disabled, and it was necessary to reduce the number of loads. A cache was therefore made in a natural valley in the mountains, where some of their heavier baggage, including the skins of animals, was left to be called for on their return. This was satisfactorily accomplished, and the expedition again pushed forward. But toils and hardships began to tell on all the men, who not only felt the usual effects of travel at great heights, loss of strength, giddiness, shortness of breath, sometimes palpitations of the heart and general lassitude, but one or other of the Cossacks was always ailing with cold or headache. Happening upon the tracks of a caravan that had recently passed and trodden down the snow, they were able to cross the Tang-la Plateau, which lay like a mighty swelling in front of them, crowned in the far distance with a long chain of snowy summits. But first they forded the Mur-ussu, the water only two and a half feet deep, being at its lowest, and the ice, though strong enough to bear a man, would not support an animal.

The pass over the Tang-la is 16,700 feet of absolute height, yet only 2100 feet above the valley of the Mur-ussu, and 2000 feet above that of the Sang-ohu flowing at the foot of its southern slope. Yet the ascent of this plateau from the north is 80 miles long and the descent 50 miles.* Towards the west of the caravan road, the Tang-la is still loftier, and its snowy peaks † stand closer together than towards the east.

In this direction too, i. e. towards the east, the range runs, according to hearsay reports, for 130 miles as a snowy ridge, and possibly the Tang-la itself, together with its accompanying plateau, continue eastwards, though on a smaller scale, to the Kin-sha-kiang, or Upper Yang-tse-kiang, where this river has a due southerly course. And if such be the case, the Tang-la range, like the Baian-kara-ula, divides the sources of the greatest rivers of Eastern Asia, the Yang-tse-kiang on one side, the Camboja and Salwin on the other.‡

* Equal to a rise of one foot in 26 miles on the north, and one foot in 40 miles on the south. The Tang-la might, therefore, be easily crossed by a railroad.

† The snowy peaks seen by Prejevalsky on the Tang-la were at least 19,000 to 20,000 feet above the sea, and the snow-line is at 17,000 feet on the northern side and about 17,500 feet on the southern side.

‡ All the rivers of the northern slope of the Tang-la certainly join the Mur-ussu, which has its source here. From the southern slope of the western Tang-la, according to the information collected by Prejevalsky, flows the river Zacha-Sanpo falling into Lake Mitik-jansu (probably the Chargut-cho of Nain Singh). This lake is also the reservoir of other streams, which are themselves fed by lakes lying south and west along the northern slope of the Northern Himálya range. Lake Mityk-jansu or Chargut-cho, sends its surplus drainage to the east by a river entering Lake Amdo-tsonak, and from this again issues another river called Nap-chu by Tibetans and Kara-ussu by Mongols. This river, known in its lower course as the Lu-tse-kiang (Tibetan Nge-kio) and other names, appears in Indo-China as the Salwin.

In this way, if there really be this connection between Lake Mityk-jansu and the

The inhabitants of these plateaux were Yegrais,* the first seen since the expedition left Tsaidam, and Goliki,† two Tangutan tribes known under the general name of *Sok-pa*. The Yegrais nomadise in the Tang-la, moving from place to place according to the supply of food for their cattle; the camping grounds of the Goliki are on the Blue river, much below its confluence with the Napchitai-ulan-murren. Prejevalsky saw nothing of the Goliki, but came across the Yegrais while ascending the Tang-la, and afterwards fought them when they attempted to close the pass to his caravan. Their appearance closely resembles that of all the tribes of Northern Tibet, though there are probably slight differences between them, but not enough to be distinguished by a passing traveller. Their long, matted, black locks fall on their shoulders, their whiskers and beard are scanty, their face and head angular, their complexion dark, their dress dirty. They carry a sword thrust into their belt, a gun of the old matchlock type over their shoulders, a lance in their hands, and are always on horseback. They are spoilt by the commissiveness of the Mongol pilgrims whom they plunder as well as every caravan coming from and going to Lhása. They live in black tents made of the hair of the yak. Their occupations, besides those of a predatory kind, are hunting and cattle-breeding. Their domesticated animals are the yak, sheep, and a few horses. They number 400 tents or 2000 souls of both sexes. After his engagement with the Yegrais Prejevalsky came to some warm springs on the south side of the Tang-la. One of these, surrounded by silicious crags at a height of 15,600 feet above the sea, had a temperature of 90° Fahr.‡ Within the rock a dull sound is heard continually and the noise made by the water is like the blows of a hammer; by their side is a funnel in the rock sending forth suffocating steam.

On the fifth day of their descent from the Tang-la the expedition left its plateau and arrived at [the Sang-chu river (14,700 feet),§ where

more westerly lakes as shown in Nain Singh's route map (see Journal R.G.S., vol. xlvii. pp. 87 and 110), the sources of the Salwin [or perhaps the Irawadi] should be placed on the tableland of Northern Tibet in 83½° E. long. and about 32½° N. lat., or a little east of the meridian of the sources of the Yaru-Sanpo, i. e. Upper Brahmaputra. If this should prove to be the case, both these rivers, the Salwin [? Irawadi] for an immense extent of their upper course along the plateau of Tibet, flow from west to east parallel with, and at no great distance from, one another, parted, however, by the mighty Northern Himálya chain.

* Cf. 'Mongolia,' vol. ii. p. 151.

† The Goliki are probably the *Kolos* of Abbé Huc.

‡ The lower springs are nine miles from the upper one on the banks and in the bed of a brook, the Tang-chu, which also receives the drainage of the upper spring. Two of them throw up fountains 3 and 4 feet high, the others issue in small streams with a hissing or bubbling sound. The maximum temperature observed at the lower springs was 122° Fahr.

§ The Sang-chu flows into the Tang-chu, called by the Mongols, Bugyn-gol, and this latter has a south-easterly course into the Nap-chu or Kara-ussu. The valley of

they met with the first encampments of Tibetans, whose black tents were scattered about the valley, among herds of yak and flocks of sheep.

On their second march from this valley they learnt that the Tibetans had decided not to allow them to pass, and that great excitement prevailed at Lhása, where reports were circulated that the Russians were coming to steal the Tále Lama and destroy their faith. Pickets had been stationed from the village of Napchu on the frontier to the pass over the Tang-la, but these had been withdrawn on the approach of winter, as it was thought that the expedition had been deferred. Now, on its sudden appearance, soldiers and militia were at once assembled on the frontier, and the inhabitants were forbidden on pain of death to sell the Russians anything or enter into relations with them. Two officials with an escort of ten soldiers were sent from Napchu to inquire who they were, in order that the authorities at Lhása might be at once informed on all points.

Having advanced to within a short distance of the village of Napchu * and met the Tibetan officials, Prejevalsky halted, and here he was obliged to wait until an answer had been received from Lhása. On the sixteenth day the answer came, positively refusing to allow them to proceed. And thus they were compelled to return when they were within 170 miles of the capital of Tibet.

I must now say something of Prejevalsky's fourth journey to Tibet, 1883-1885. Having left St. Petersburg in August 1883, he travelled to Kiachta, where he finally equipped his party, numbering altogether twenty men, well practised in the use of firearms.

From Urga he again crossed the widest part of the Gobi to Ala-shan, and marched thence to the Chinese city of Si-ning. Early in May 1884 he arrived at the foot of the Burhan-Buddha, having left a depôt in Eastern Tsaidam of all his superfluous baggage and spare camels under the charge of seven Cossacks, while he and his companions, a party of fourteen, started to explore the sources of the Hoang-ho or Yellow river. After about 70 miles of marching over a barren plateau, 14,000 to 15,000 feet high, they reached their goal. The Hoang-ho is formed by two streams flowing from the south and west out of mountains scattered

the Sang-chu is bordered on the south by a low ridge, the Jugulun, which forms the northern margin of another upland extending some distance to the south, probably to the Samtyn-Kansyr (Sanden-Khansa of A—k's map), which stands on the south bank of the Nap-chu. This snow chain (i. e. Samtyn-Kansyr) is, in Prejevalsky's opinion, the easternmost spur of the Nien-chen-tang-la, and therefore of the Northern Hímálya. Samtyn-Khansyr divides the waters flowing down its northern slope to the Kara-ussu and down its southern slope to the Yaru-Sangpo, i. e. Upper Brahmaputra.

* Huc's Naptchu, A—k's Nag-chu, situate on the river of the same name. Abbé Huc was fifteen days going from Napchu to Lhása.

over a wide marshy plain (40 miles long by 12 wide), known under the name of Odon-tala (thousand springs). Here the Hoang-ho appears as a very modest river, divided into two or three channels, each from 70 to 90 feet wide and two feet deep at the fords. After flowing in this way for 12 miles it passes through two great lakes, the Jarin and the Orin, 13,500 feet above the sea; then it makes a sharp elbow to avoid the snowy Amneh-machin range, bursts through the chains of the Kuen-lún, and hurries on to China Proper.

From the sources of the Hoang-ho, Prejevalsky continued southwards to the Blue river, the Di-chu of the Tangutans, passing over a hilly plain, for the most part covered with tussocky marshes overgrown with stiff wiry grass. He crossed the waterparting between the two great rivers of China at a height of 14,500 feet, and on entering the basin of the Di-chu came to a very different country, alpine in its character, but without forests, possessing, however, a rich and varied herbaceous flora. Here he met with a tribe of nomads called *Kam*,* who received him in an unfriendly, though not actually hostile way. After 67 miles of difficult marching, he reached the banks of the Blue river, flowing at a height of 12,700 feet, hemmed in by mountains, with a muddy, rapid stream of great depth. Finding it impossible to cross with his camels, he retraced his steps to the lakes at the sources of the Hoang-ho, which he explored and named.† Near this he was attacked by a band of 300 mounted Tangutan robbers, but succeeded in dispersing them, and made good his retreat down to Tsaidam, which in spite of its unattractive appearance, seemed a well-favoured land after his experiences in Northern Tibet. Hence he marched to the west along a wide valley stretching for 150 miles between the Chamen-tagh on the north and the Kuen-lún on the south, and rising gradually from 9000 feet at Gaz to 14,000 feet at its western extremity, where it is closed by a range, connecting the Kuen-lún with the Altyn-tagh. This valley is situate in the direction of the prevailing westerly winds, and is constantly swept by them. Hence Prejevalsky gave it the appropriate name of "Valley of the Winds." The descent from it to Cherohen in the Tarim basin is very easy, so that in all probability it was the highway in ancient times between Khoten and China. The Kuen-lún was found to culminate in the snowy group of Jing-ri, in meridian 90°, with 20,000 feet of absolute elevation, forming the centre of chains to the east and west, to which Prejevalsky gave the following names:—"Marco Polo," "Columbus," "Mosco," with its peak "Kremlin," 20,000 feet, and "Conjectural," with its rounded summit "Shapka Monomakh" (Cap of

* *Kam*, or *Kham*, is the name of the province of Eastern Tibet. Nain Singh came across a predatory tribe named "Khampa," who had originally come from the country north-east of Lhása. Cf. *Journal R.G.S.*, vol. xlvii. pp. 95 *seqq.*, 102.

† "Russian" and "Expedition" lake, but see *ante*, where the native names are taken from his own map.

Monomachus). Between the Mosco and Conjectural ranges lies an excessively salt lake, free from ice in the coldest weather, and named by Prejevalsky "The Unfrozen," having a circumference of about 36 miles, with a width of only seven.

Having returned to his depôt at Gaz, Prejevalsky started for Lob-nor, distant 168 miles, across an absolutely unexplored plateau. In revisiting Lob-nor, he verified his previous observations, clearing up doubts expressed by geographers as to whether the waterspread seen by him were the true Lob-nor or only an expansion of the Tarim before reaching its final discharge. He concluded that Lob-nor is a reedy lake of no great depth surrounded by flat shores, the haunt of prodigious numbers of waterfowl, and inhabited by a few hundred human beings, whose habits, tenements, and mode of life resemble those of the primitive lake dwellers.

Prejevalsky's farther journey lay along the southern border of Eastern Turkistan. He visited the oases of Cherchen, Kiria, Nia, and Khoten, heard of the buried cities which flourished 3000 years ago and are now almost obliterated by the moving sands, saw more snowy peaks, and made a short incursion into the Kuen-lún, but being opposed by the Chinese, could not proceed to any great distance.

NOTE.

With reference to the last part of his journey General Prejevalsky has been good enough to communicate the following particulars to me by letter.

1. *Changes in existing maps.*

(a) The Khoten river makes no bend to the west but has a nearly meridional course from south to north (our itinerary from Khoten to the confluence of the Khoten-daria with the Tarim measures 327 miles).

(b) There is no such lake as Yashil-kul, nor any lakes along the course of the Khoten-daria.

(c) Thirty miles below the fork of the Kara-kash and Khoten rivers, a low, narrow, and absolutely barren ridge, having an apparent elevation of only 500 feet, stretches from fort Maral-bashi in this direction (i. e. towards the Khoten-daria).

2. *More Details.*

Forty-three miles below Khoten, following the Khoten-daria, otherwise known as the Yurun-kash, lies the oasis of Tavek-kéhl, inhabited by about 500 families, not marked on any map. According to native information the population of the Khoten oasis (including Khoten, Kara-kash and Sam-pul) numbers 600,000.

In September the Khoten river is an insignificant stream, 70 to 100 feet wide and 6 inches to a foot in depth. After a devious course of 17 miles below Mazar-tagh ridge it dries up, only leaving pools here and there along its sandy bed. In summer, however, there is an abundance of water and the river then reaches the Tarim.

On either side of the Khoten river are drift sands the whole way from Khoten to the Tarim. The valley of the former river is about three miles wide and indistinctly defined; on the lower river there are no inhabitants.

The flora and fauna here are extremely poor; Khoten has an elevation of 4100 feet, and the confluence of the Khoten river with the Tarim 2800 feet, 12 miles below the junction of the Yarkand and Aksu darials. Here the Tarim has a width of about 200 yards at low water, and a depth of not less than five feet. The whole of the Tarim is navigable for small river steamers from the confluence of its upper waters to Lob-nor. The first inhabited parts of the Aksu oasis occur on the left bank of its river, 18 miles from the ford across the Tarim coming from Khoten. And it is exactly 66 miles farther to the town of Aksu. The Aksu oasis has a population of 56,000 families, according to native information, and is the most fertile part of Kashgaria.

After the paper,

Mr. H. H. HOWORTH, M.P., said he had spent many years in wandering over the terribly dry and arid history of the districts described in the paper. It was early in the thirteenth century when Jinghis Khan, the greatest of all Asiatic conquerors, and probably the greatest man the Asiatic world ever produced, set out to conquer the country described in the paper, then known as Tangut, and spent four summers in laying it waste. His victims were numbered by millions, and it is difficult to understand how it could have been so populous, unless its physical conditions have greatly altered. Jinghis Khan made himself master of all the Turkish tribes which then occupied Central Asia, and then made his famous expedition to the west, making the valley of the Black Irtish, so graphically described in the paper, the rendezvous of his troops. At the other end of the district described in the paper is the great bend of the Yellow river enclosing the country of the Mongol tribe called Ortu or Ordu, so called from their having been the guards and guardians of the Ordu, or special encampment and household of Jinghis Khan. On his death they were entrusted with the care of his tent and his body. Only three or four years ago the great French naturalist Père David made an expedition into their country, and found that they were in possession of a silver box in which they said they had the bones of Jinghis Khan. When Jinghis Khan had conquered the whole of Asia he performed one of the greatest feats in connection with the movement of human races that was ever known: he shifted the whole of the tribes of Central Asia very far to the west. When he died he left the Mongols in charge of the district still called Mongolia, which had previously been largely occupied by Turks, and it was very singular that one of these Turkish tribes with which he was specially in contact, called Kirais, was still found north of the Thian Shan. This was the same tribe that was ruled by Prester John. Some of the Kirais were transplanted into the Usbeg country, at the same time the Turkish people who occupied the whole district south of the Thian Shan was pushed very much to the south, so that along the borders of Tibet there were still the descendants of the Buddhist Turks who lived in that district when the Chinese pilgrims passed that way, and who were mentioned by Marco Polo. The Tibetans call them Horpa. When in 1368 the Chinese drove the Mongols out of China a certain number took refuge in the valleys of Tsaidam, &c. Another migration took place in the beginning of the seventeenth century when a large number of the Kalmuks were induced to migrate down to Lob-nor. In the last century, when the great struggle took place between the civil and religious powers in Tibet, the Dalai Lama was so hard pressed that he sent for these Kalmuks to help him, and it was with their assistance that he drove out the civil authorities. He had been much struck with one of the pictures shown to the meeting of a most desolate part of the desert which was known among the Mongols in the fourteenth century as the "Field of White Bones," which was an

extremely expressive description of the terrible waste. With regard to the other end of the district, to which Prejevalsky had referred, he might mention that in the Swiss lakes and also in some of the early megalithic remains in Brittany were found some little axes made of jade, and German geologists were convinced that they could only have come from the valley of Khoten. No jade was found in Switzerland, and if it were, there was nothing there to triturate and grind it down so as to make polished axes with. It was exceedingly likely that these small jade axes were brought from Central Asia. All through medieval times those small axes were in use among the Turkish tribes.

The CHAIRMAN (General R. Strachey) said he was probably one of the very few persons present who had actually been in Tibet, though he had not been very far into it. It was now thirty years since he was there, but he saw enough of it to get a more vivid idea of the nature of the country than it was possible to obtain without an actual visit to it. He looked forward with great interest to the full narration by General Prejevalsky of his latest journeys in the northern part of Tibet. The account that Mr. Morgan had given, combined with what had been learned from the native Indian explorers who went into the country under the Indian Survey Department, interested him greatly, and he was quite satisfied that what may be regarded as Tibet proper certainly extended as far as the great range, which was marked on the map as the Kuen-lún, and where travellers from the north first came upon very high mountains and an arid country. The region to the north of this range appeared to be altogether different in its character from Tibet proper. It had been visited by General Prejevalsky and was described by A—k, who was there for several months, and his description gave a fair impression of what the country was like. The people cultivated wheat, and A—k found there what he was pleased to call a forest, but what was in fact a thicket formed of bushes six or seven feet high, and that was altogether in excess of any arboreous vegetation to be found in Tibet proper. To some extent the climate also seemed to have changed. In Tibet there were commonly strong westerly winds, but A—k's account was that the prevailing winds of the district to the north of the Kuen-lún were easterly or north-easterly. The country, too, was generally speaking sandy with rounded hills, and without the steep rocky mountains found in Tibet. Although Mr. Morgan had spoken of luxuriant vegetation, he ventured to think it was very different from what was considered luxuriant vegetation in any other part of the world. Enormous crowds of animal life had been mentioned, but he entirely disbelieved anything of the sort. When a traveller was wandering over a stony desert the appearance of a comparatively few wild animals would no doubt engage attention, but he altogether doubted that there was any large amount of animal life there. Mr. Morgan had referred to the province of Kansu, and stated that there, there was really fine vegetation. No doubt the influence of the rain-bearing winds from the Pacific was felt there; but Tibet proper, so far as it had any rain or moisture at all, was under the influence of the winds that came up from the Bay of Bengal. Mr. Howorth's remarks regarding the transfer of the population in the time of Jenghis Khan were extremely interesting, but he doubted if any such change of climate had taken place since Jenghis Khan made his expeditions, as Mr. Howorth appeared to suggest. So far as India was concerned he did not think there had been any considerable change of climate within the historical period; but he quite admitted that there was evidence of great changes since the surface had taken its present form. He remembered Sir Henry Rawlinson and his brother Canon Rawlinson giving them most interesting statements regarding the changes of climate that must have taken place in the country about the lower part of the Oxus; but he did not think that similar changes had taken place in northern India. Whether they had occurred in the Mongolian plain was a matter

well worthy of investigation. It would be interesting to the Fellows present to be informed that at the present time an English traveller was still in those countries. Mr. Carey, a gentleman belonging to the Indian Civil Service, had been there for the last two years. He left India in May 1885, struck northward, and descended into the plains of Turkistan near Khoten. His plan was successfully carried out during August and September 1885, and resulted in more than 300 miles of country being traversed which had never before been visited by a European of any nationality. The altitudes on this section of the journey were always very great, the track being described as running usually at about 14,000 feet above the sea, while one, at least, of the passes crossed was calculated to reach 19,000 feet. In descending from the Tibetan highlands towards Kiria, an extremely difficult defile had to be passed, where five days were taken up in making good a distance of 28 miles. A short stay was made at Kiria, and a somewhat longer one at Khoten, where General Prejevalsky's party was camped on Mr. Carey's arrival. The two explorers, however, did not meet, the former being then just on the point of starting for Aksu and Russian territory, while the latter had to fit himself out with a new caravan of camels for crossing the desert of Kuchar. From Kuchar he made a fresh start, when the Tarim was followed down to a point where it turns southward towards Lake Lob. Thus the whole length of the Tarim had been explored. The country along its course was described as flat and reedy, and the people extremely poor and miserable; at the villages near Lob, fodder was so deficient that Mr. Carey had to pitch his standing camp for the latter part of the winter (about February to April) at a village called Chaklik, some distance south of the lake, and close to the foot of the great range of mountains which forms the northern scarp of the Tibetan highlands. This long halt was utilised in preparing for a journey southward into Tibet as soon as the season should permit; and it happened eventually that a new departure was made on the 30th April, 1886. The last that was heard of Mr. Carey appeared to have been in May last year, and it was to be hoped that before very long some more intelligence would be received from him. They were indebted to Mr. Ney Elias for this account of Mr. Carey's proceedings, and it was to be regretted that Mr. Elias was unable to be present at the meeting to throw some further light upon that country of which he probably knew more than any other Englishman.

Mr. E. DELMAR MORGAN, in reply, said that Prejevalsky had dealt at some length with the question of the violent winds, which he attributed partly to local causes. Prejevalsky gave full details of the extraordinary numbers of wild animals, stating that he saw them not only on his last but also on his previous journey. It was owing to the presence of these vast numbers of animals that travellers were able to cross the high plateaux of Northern Tibet, their dung being the only fuel to be found there, and he believed that A—k also referred to the subject. When winter commenced with its usual severity large herds were observed by the traveller immigrating to lower and warmer regions in the south-east. The conditions of life in Northern Tibet are, moreover, exceptionally favourable to them: 1st, their immunity from persecution by man; 2nd, the unlimited range over which they are distributed; and lastly, the absence at these high altitudes of the insects that torment them in the plains below. In summer there was sufficient humidity to support such scanty vegetation as Tibet afforded; at other seasons it was quite dry.
