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Topographical Sketch of the Zarafshan Valley

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peratures of the sea and the air fell again to  $42^{\circ}6$  to  $42^{\circ}$ ; on  $39\frac{3}{4}^{\circ}$  w. Greenwich the thermometer marked in the surface again  $45^{\circ}5$ , but fell very soon to  $42^{\circ}6$ . The surface of the sea was afterwards between  $41^{\circ}$  and  $43^{\circ}2$ , and first in  $58^{\circ}$  n. lat. and  $30\frac{1}{2}^{\circ}$  w. of Greenwich the temperatures of the surface of the sea and the air rose to  $45^{\circ}5$ , and shortly after to  $47^{\circ}8$  to  $48^{\circ}9$ .

After all that I have explained in the above, it seems to me that probability speaks for admitting that the warmer streaks noted in the Northern Atlantic, which are crossed on every voyage between Fair Island and Greenland, are branches of the Gulf-stream. The westernmost warmer streak connects undoubtedly with that part of the Gulf-stream which passes nearest the banks of Newfoundland, while the streak more to the east probably has followed that part of the Gulf-stream which, according to the opinion of Rennell and others, proceeds in a direction towards Europe, after which it bends still more to the north, and thus gets a more eastwardly run, passing nearer Fair Island.

The mild winter-climate which is found on the western coasts of Europe, I suppose, can however not be ascribed to the Gulf-stream *alone*, but chiefly to the great Atlantic Ocean, over which, particularly during the colder season, a comparatively high temperature of the air is found, which, with the reigning south-westerly and westerly winds, is carried to the coasts of Europe.

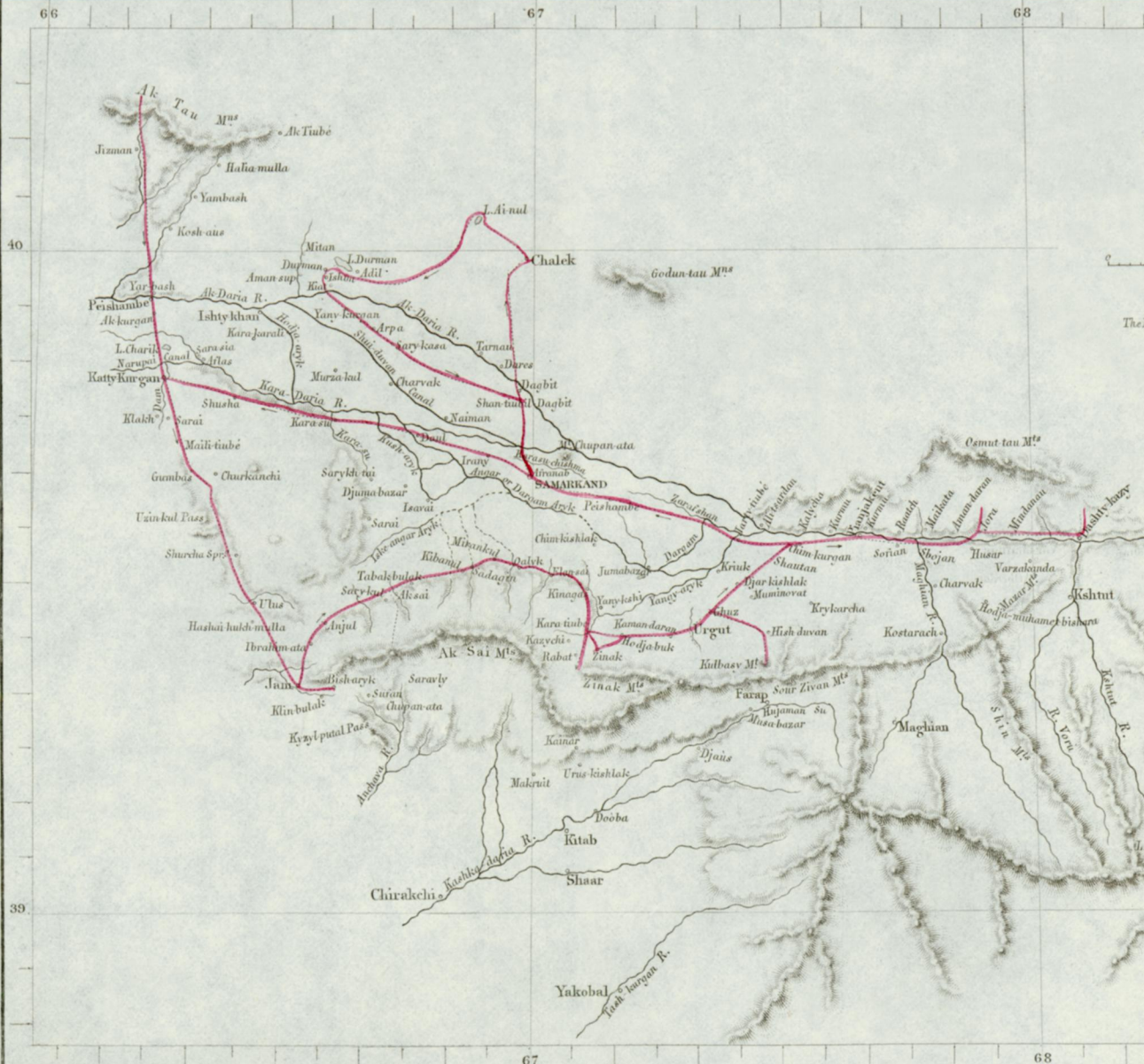
*Copenhagen, February 5th, 1870.*

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XVII.—*Topographical Sketch of the Zarafshan Valley.* By  
Mr. A. FEDCHENKO, Professor in Moscow University.

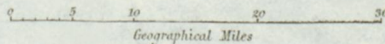
(From the Russian,—communicated by ROBERT MICHELL, F.R.G.S.)

THE portion of the Zarafshan Valley occupied by the Russians, includes only one-fourth part of the course of that river. The river terminates within the limits of the Khanat of Bokhara. This part of its course has been described by several travellers. The upper course is far less known. Lehmann in 1841 proceeded up the Zarafshan Valley, and his is the only account we have relating to the head waters. But even he got only as far as the Fan Rivulet, and by a long way failed to reach the sources of the Zarafshan. At that time, and long after, the lands along the upper course of the Zarafshan, as also along the right bank of the Oxus, belonged to the Emir of Bokhara. But as the power of that potentate declined before the aggressions of Russia, the captures of Ura-Tiubé and Jizakh involved

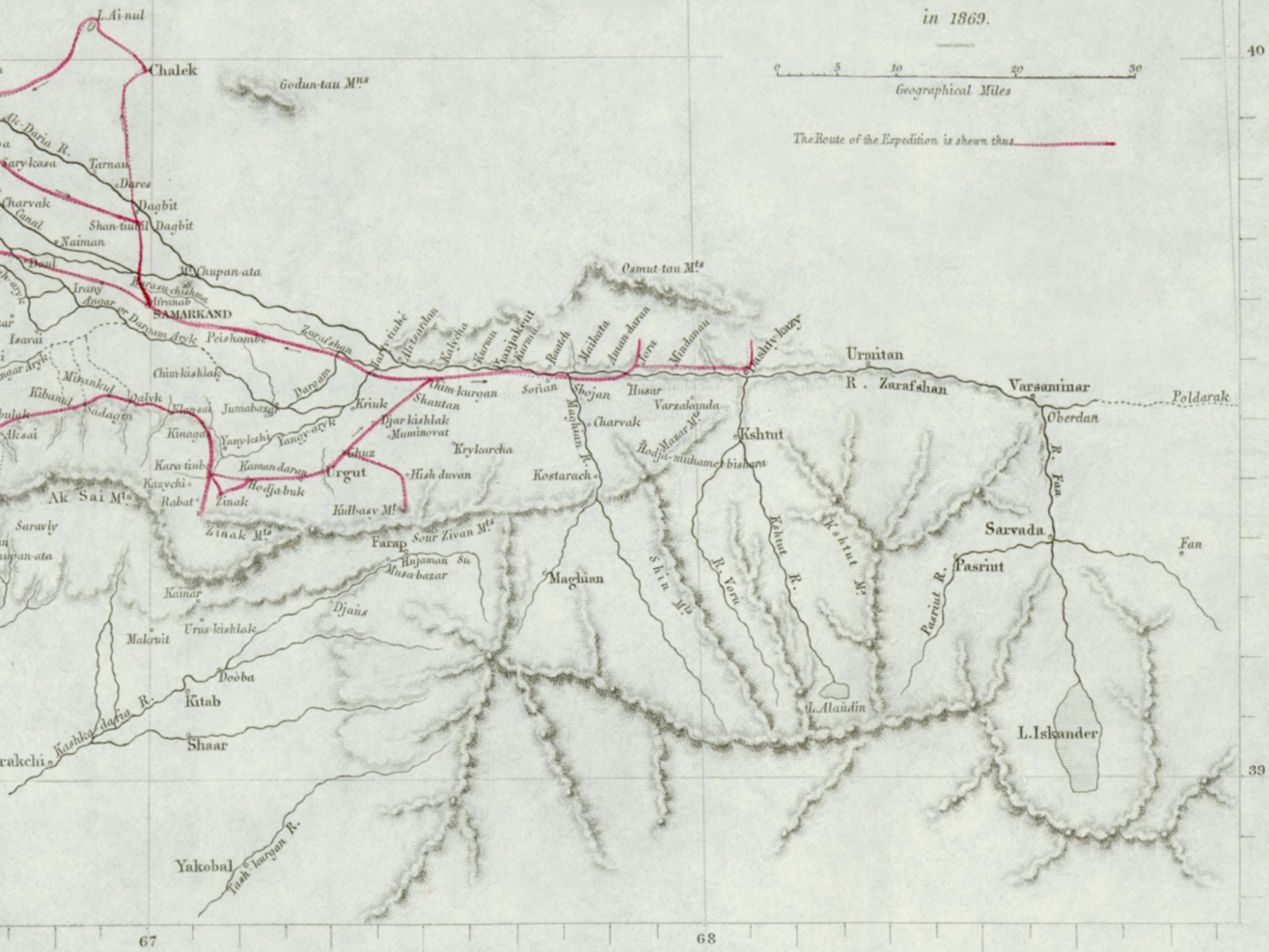




CENTRAL ASIA.  
 Map to illustrate  
 the Expedition of M.F. Fedchenko  
 to the  
 ZARAFSHAN VALLEY,  
 in 1869.



The Route of the Expedition is shown thus



the defection of the Bekships in the mountain regions. Macha and Maghian became then the centres of independent principalities at the head of the Zarafshan Valley. The town of Macha is, according to accounts given by the natives, situated in the same meridian as Kokan from which it is not more than about 27 miles distant. The sources of the Zarafshan are said to be somewhat still farther to the east.

It is asserted by the natives that the river first flows under the name of the Macha-daria. "There are no sources of the Zarafshan-daria," said the inhabitants of Pianjakent to Mr. Fedchenko; "there are the rivers *Macha-daria*, *Fan-su*, *Kshtut-su* and *Maghian-su*, which join together, and so form the Zarafshan-daria;" "the Zarafshan," they added, "is so called by the people of Miankal, situated on its banks at its mid-course, but to the inhabitants of the hill-district it is not known by that name."\* Similar statements were made in answer to Mr. Fedchenko's inquiries about the sources of the Oxus,—“Five rivers,” they replied, “flowing from the east combine in forming the Piandj-daria (meaning five rivers) which is called the Amudaria lower down.” As Mr. Fedchenko did not himself penetrate farther east than the Fan River, he found it utterly impossible to learn from the natives which was the largest stream of those they mentioned; whereabouts they sprang from, and what was their general direction. The people were not even positive about the names of those rivers. It may, however, be reasonably considered that the river rising east of Macha is the main head-stream of the Zarafshan, for it runs almost in a direct line from east to west. It is only in the Khanat of Bokhara that the river first makes a bend towards the south-west, and finally flows towards the south. All the above named affluents run into the Zarafshan from the south. From the north the streamlets which approach it are for the most part diverted for irrigation purposes into canals. Thus there are a great many more valleys and gorges in the mountains on the south, separating the water systems of the Oxus and the Zarafshan, than in those on the north side of the valley, between the latter and the Jaxartes. This frequency of defiles on the northern slopes is characteristic of the whole of the Thian-Shan. Baron Osten-Sacken has made the same observation with reference to the Thian-Shan in the meridian of Issyk-kul.† On the

\* The Zarafshan has been subsequently traced to its source by a Russian military detachment, led by General Abramof. The valley is said by the Russians to be closed at the top; the Zarafshan was found to issue from a stupendous glacier, extending from 32 to 37 miles up the valley. The same detachment reached the Iskander-kul. This survey was performed in the month of June, 1870.

† See 'Mém. de l'Acad. de Science de St. Pétersbourg,' S. vii. T. xiv. No. 4, p. 5.

north side of the valley, that is, in the southern slopes of the range along the right bank of the Zarafshan, there are only a few small defiles, such as the Jora, Mindanaù, and the Vichy, whilst opening upon the basin of the Zarafshan from the south there are several very wide and branching valleys, occupied by the streams above named, and with their feeders. These valleys are so very spacious that the entire independent Bek-ship of Maghian is located within one of them, though it is true that this principality is insignificant and poor.

The first of these valleys is that of the Fan, which appertains to the Macha Bek-ship; its wild and lovely scenery is described by natives in strains of extravagant enthusiasm. Of all the lateral valleys this is the most interesting, and it is known to us through Mr. Lehmann, who visited it with the mining-engineers sent by the Russian Government, at the request of the Emir of Bokhara, in search of gold.

Lehmann relates that following up the course of the Zarafshan, he and his party reached Varsaminar, where they crossed the river, and entered the Fan valley; here they passed a fort, called Sarvada, and reached a burning mountain. At this place coal was found, and Lehmann explains the phenomenon of the burning-mountain by attributing it to the ignition of the carboniferous strata. Among the people of those parts this mountain is famed for a variety of minerals procured from it. Thus, in the bazaar at Samarkand Mr. Fedchenko saw *salammoniac*, alum, and a certain substance unknown to him, called *Zak-Sia*, used in black paint.

From the burning mountain Lehmann turned away to the east, reaching the village of Fan. From here, in consequence of some misunderstanding with their guide, the travellers had to turn back, journeying westwards along the Pasriut rivulet, and leaving the Alpine lake of Iskander-Kul on the left. Lehmann discovered only one lake in those parts, but every one referred to by Mr. Fedchenko assured the latter there were two—one called Alaùdin-kul, which, judging by his map and description, was the one Lehmann saw; and the other Kuli-kalan, a large lake, otherwise styled Iskander-kul, in honour of Alexander the Great, who, of course, was never there.

The lake Iskander-kul lies in the mountains separating the Zarafshan from the Oxus. It must be well known to the inhabitants of that country, since there is a road from Varsaminar to Hissar which passes by it. The lake is situated at the great height of 7000 to 8000 feet, and is surrounded by high mountains, from which some small streams pour into it. The road from the lake to Hissar is described as being very difficult; the natives affirm that the watershed can be traversed only on foot,

for which reason travellers dispose of their horses in the village at the foot of the mountains, and procure fresh animals on the other side. In the winter the lake is frozen. From the description of the lake given by the natives, its length may be said to be about 8 miles, and its width about 7; its shape is oval, narrowing to the north, where a stream issues from it; this stream is small, and is not the main source of the Fan. This will in a measure serve to explain why Mr. Lehmann and his companion did not suspect that they were within only 17 miles of an alpine lake. A great many stories are related about this lake by the natives; for instance, they say that Adam-oba, *i.e.*, water people, live in it. What can this mean? It is hardly possible that there are seals in the lake.

We now pass on to the defiles farther west, within the Bekship of Maghian. In the month of June, when it was seen by Mr. Fedchenko, the Maghian river was deep and most remarkably rapid. It is spanned by a bridge in the village Sudjana, where it flows through a hilly country, but at Kostarach village it breaks impetuously through the rocks and falls in a series of cascades.

The defiles are visible from a great distance, going from Pianjakent to Dashty-kazy. The mountains on the left side of the river stand 10 miles off at one point, and slantingly approach the bank; the intervening space being occupied by undulating hills. The Mazar-taù, a massive range, approximatively 12,000 feet high, rises between the two valleys of Maghian and Kshtut. On the left side, by the Kostarach village, two snowy peaks, called the "Shin" raise their hoary heads to a great height, and beyond them, in the east, are visible the stupendous massy heights of Kslitut, with their numerous snow-clad crests. A peculiar beauty is lent to the grandeur of the scene by a confused distribution of various flowers. The foreland of undulations terminates by the Zarafshan in precipitous masses of rose-coloured clay, several hundred feet thick. Farther away in the Mazar-taù, is discernible a white streak of bare limestone; above this, like a broad, bright green ribbon, lies a zone of brushwood, then another barren streak, and over these tower the snow-capped heights of the mountains.

The Maghian bekship includes also Farap-Kurgan, situated at the sources of the Hujaman-Su, a river watering the principality of Shahr-i-Subz. The pass from Maghian into the valley of the Hujaman-Su is said to be very low, so that Maghian must be at a very great height, probably at an elevation of about 6000 feet. Farap-Kurgan is a small town with only one village in its vicinity, which is called Musa-Bazar.

The mountains stretching in a parallel line with the course of

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the Zarafshan, along the northern side of that river, terminate a little to the west of Pianjakent, where the valley suddenly widens. On the southern side this valley is skirted by a continuation of the Mazar-taù, bearing the name here of the Shahr-i-Subz mountains. On the northern side there are several ranges, the Godun-taù, a small oblong-shaped range, stretching directly north of Samarkand within a distance of 24 miles; and the Ak-taù, in a line with the former, running from near Aktiubé village, parallel with the Zarafshan, and 20 miles off these two mountain chains are linked by a series of tolerably high hills called Karadal. Although broken, and not very high, these mountains may be taken as the northern limits of the Zarafshan valley; at all events they constitute the water-parting of the Zarafshan. To the north of these mountains stretches a range called the Karacha-taù, between which and the Godun and Ak-taù lies an independent valley, or rather an elevated plain. Mr. Fedchenko conceives that this plateau, beginning in the east in the narrow Sanzar defile, widens out gradually, and so extends between the two mountain ranges, although the southern ranges of the Godun and Ak-taù are far from being unbroken in their continuity; and, although they are for the most part lower than the Karacha-taù, yet the Zarafshan does not receive a single affluent from the plateau. The only river rising in that plateau first called the Sanzar, and then the Djelanuty, runs through a narrow and deep fissure in the Karacha-taù, and flows through the fields at Jisakh, which are within the basin of the Jaxartes. The other parts of the plateau are irrigated by streams descending from the mountains in the north; they are occasioned by the melting of the winter snow, but the quantity of water supplied by them is said to be quite enough to enable the inhabitants of that country to pursue agriculture successfully.

The Zarafshan, issuing from the narrow part of the valley, enters upon a flat country, and flows between less abrupt banks. As far as the Jarty-tiubé village, it is walled in on both sides by strata of conglomerate; here, however, it runs between sloping banks of clay. The conglomerate consisting of rounded boulders of varying sizes, occupy the valley from Dashtykazy, the extreme eastern point of the Russians, to Jarty-tiubé. There the Zarafshan rushes with great impetuosity in a very narrow and deep bed. Above Pianjakent the river is not fordable in the summer, but bridges are laid across where there are villages on both sides. Within the Russian limits there are two such bridges; one half-way between the Jora and Mindanaù, and another near the Gusar village. This last bridge is particularly remarkable. The Zarafshan here widens out into a



large pool; the banks are composed of conglomerate, but the velocity of the current is such that it has broken them, and detached a number of heavy masses of conglomerate, washed into a variety of shapes. The predominating form of these is, however, that of a pillar 30 or 35 feet high. From this large pool the Zarafshan forces its way in two precipitous channels through the conglomerate. These two precipices are spanned by little bridges, resting on the immense natural buttress formed by the island between them. One is a wooden bridge, the other is made of brick. It is difficult to conceive to oneself the fragile and shaky nature of these constructions, of which the many component parts give way under one's feet. The construction of the bridges is simply this. Two trunks of the juniper tree are laid across the chasm, and over these, crossways, are laid logs of wood. No rider ever ventures to cross the bridge on horseback, he invariably leads his horse over by the bridle. Although the width of the bridge is even less than 6 feet, there is no guard on either side. The stone bridge inspires not more confidence than the other; the supports upon which it is built are of wood, and are very much bent and broken from the weight of the arch. It bears an inscription, with the year 1233 (A.D. 1816), but what this signifies is unknown, as there is not a single person in Samarkand who is able to decipher it.

Where the conglomerate ceases to prevail, there one finds the first of a system of very large canals, or "aryks" dug for the irrigation of the southern parts of the valley. The lands here are much more elevated than those of the north, and have a precipitous fall to the Zarafshan River. The streamlets flowing from the Shahr-i-Subz Mountains are all absorbed into the canals serving to irrigate the fields at the very base of the mountains; but for the supply of water to the whole of the southern portion of the valley it has been necessary to divert streams at great elevations. Thus the "aryks" are constructed on very large scales. The most remarkable one is the Dargam, re-christened "Angar;" it is 47 miles long. In the formation of this watercourse the inhabitants have very cleverly availed themselves of natural gullies and ravines, although it must, nevertheless, have required great exertion to execute the work. This watercourse near Samarkand—that is, at the midcourse of the Zarafshan—has still the appearance of a tolerably large river. The Nurapai is another gigantic "aryk," which has been mistaken for a natural current. The head of this canal is in the vicinity of the Aflas village, 4 miles from Katty-Kurgan, which it supplies with water passing into the Bokhara territories.

At Chupanata Hill, about 5 miles from Samarkand, the waters of the Zarafshan run off into two channels: the one on

the north called the Ak-daria, and the one on the south the Kara-daria. After separating from each other to a distance of 10 to 12 miles, these branches re-unite near Khatyrchi, at the Russo-Bokhara frontier. Thus the Zarafshan forms an island, which is divided into the two districts of Afarinken and Peishambé, the richest and most populous part of the entire valley. The excellent quality of the soil and the abundance of water make this island strikingly productive. But, though it lies between two branches of the river, the water-supply of this island is derived only from one side—that is, from the Kara-daria—the Ak-daria serving to irrigate the fields extending on the northern side.

The principal “aryks,” however, watering the northern parts of the valley are conducted from greater elevations; from heights equal almost to those from which the southern canals are dug. In this manner irrigation is supplied to localities far away from the Zarafshan, like Tash kupriuk, or the fort named the “Stone Bridge,” situated at a distance of 20 miles. This is watered by a canal from the river.

We find, then, that to describe the valley it can very conveniently be divided into *Northern*, *Southern*, and *Insular*.

The country to the north of the Zarafshan is pure steppe—at least that is clearly its character wherever agriculture has not altered its physiognomy. But agriculture has spread over a considerable portion of this tract; the road from Tash-kupriuk to Samarkand, a distance of 20 miles, passes almost entirely by gardens and cultivated fields. The great volume of water diverted from the Zarafshan abundantly satisfies the thirsty grounds over this extent of country, which cedes only to the Insular district in point of fertility.

The town of Chalek is situated in the Northern district. It was once the residence of Omar Bek, the fanatic, who, by his incursions, occasioned so much annoyance and trouble to the Russians when their advanced post was at Jizakh. Chalek stands on a line of road from Bokhara to Jizakh, which avoids Samarkand. This is the shorter road; but there is another reason for its being preferred to the Samarkand road by caravans. Owing to the melting of the snows at the upper sources of the Zarafshan, that river fills to a great depth at midsummer. The velocity of the stream is so great that it is impossible to cross over in boats; and sometimes by day it is not fordable near Samarkand, where there is a shallow. In such case the people avail themselves of the early morning, before the snow-water from the mountains reaches Samarkand. In 1869 the river was so much swollen that all communication between the two banks was suspended for several days. Bazaar

prices went up considerably, as most of the supplies come from the northern districts. There are, on the southern bank of the river, signs of an attempt having once been made to overcome the difficulty of the passage across the river by building a bridge. This evidence consists of two stone arches at the foot of the Chupanata, which, apparently, were intended to serve for a bridge. When these were built, and whether the bridge was completed and afterwards carried away by the river, or the work impeded through want of technical knowledge, there are no means of ascertaining. Mr. Fedchenko observes that a plan of a bridge has now been drawn, and leaves it to be concluded that the project is one of the Russian Government.

The tract of land under cultivation diminishes greatly to the west of Chalek, where, in the same proportion the zone of virgin steppe country opens out wider; and here also is a corresponding change in the form of life and in the nature of the occupations of the inhabitants. In the purely agricultural districts the population is a fully settled one, but towards the steppes it is semi-nomadic, cattle-breeding, on a large scale, being allied with agricultural pursuits. In Central Asia, cattle-breeding and farming do not go hand-in-hand. Where much attention is paid to the soil, and where, consequently, the field and garden yield abundant produce, there cattle-breeding is very little in vogue; but where the cultivated zone merges with steppe pastures, and where there is a scarcity of water, one finds immense herds of oxen, sheep, and horses. Here the people live in villages only during the winter; in the summer-time they are away with their tents, camping in the trackless steppes. In some cases a portion of these villagers remain in their permanent dwellings; in most, however, they all leave for the plains. It is sometimes difficult to say, on lighting on an abandoned "ulus," whether the place is a ruin or serves yet for habitation. In most cases, even when in "residence," these semi-nomads live in their tents in the court-yards, while their mud houses are reserved for the shelter of their beasts.

There are four lakes in the steppe district between Mitau and Chalek; it is therefore called the Djurt-kul (Four Lakes) district. The lakes are called Chibisht, Airauchi or Ai, Bigisht, and Durman *kuls*. They all lie in a depression between the Ak-daria and the Karadal hills. They are below the level of the Ak-daria, as is evidenced by the canals leading into them almost at straight angles from that river, and by another canal conducting the waters of the lakes towards the Karadal hills. Mr. Fedchenko saw Airauchi and Durman kuls in the month of August. The latter is the largest of the four: it was covered with reeds over an extent of 3 to 4 miles. The clear space in

the centre of the lake is not more than 180 feet long by 120 wide, the depth being about  $1\frac{1}{2}$  fathom. The water is fresh, turbid, and has the smell of sulphuretted hydrogen. There is a spring in the middle of the lake. The inhabitants of Hodjâ-Kishlak village pay the government 72*l.* a year for the right of cutting down the reeds. The other lakes yield a revenue of 30*l.* These reeds are used for roofing houses and for fuel; mats are also made of them. Innumerable quantities of leeches are found in the lakes, which have been proved to answer perfectly well in the hospital at Samarkand. They sell for about 1*s.* 3*d.* the hundred.

West of Kitaù the population is grouped under the Ak-taù Mountains. The gardens of these people, in the small villages of Ak-tiubé, Koshauâ, Jisman, and some others, are watered by small rills running from the mountains. The Ak-taù range has a hilly foreland of raised schist. The chain itself is composed of white marble, whence, probably, the name, Ak, meaning white, and taù, mountain. The highest point of the Jisman defile has an absolute height of 4076 feet. But the most elevated peaks, though not very much above the Jisman-taù, are to be found within the Bokhara limits, where this range extends far to the west, under the name of the Nurataù.

The Jisman rivulet forms the boundary line between the Russian territories and Bokhara.

The steppe, stretching away from the foreland of the Ak-taù to the Ak-daria, is nearly all sown with spring wheat, and the fields are never irrigated. The seeds are sown in February (O.S.), in the rainy season, so that the wheat, favoured by the little rain that continues to fall in March, and even partly in April, ripens by the beginning of June (O.S.). But there is a great difference in the heights attained by the wheat sown in the autumn, which is distinguished as the "irrigated wheat," and that sown in the spring which is called the "rain-watered." On seeing a field of wheat in the Steppe, after having passed through the Peishambé wheat-fields, Mr. Fedchenko was surprised, and asked if it would ever ripen, and when? He was told that it would arrive at maturity as early as the tall wheat growing in the irrigated fields. The short stalks compensate, too, for their diminutive stature by bearing a superior grain.

There is not an atom of land in the insular district which is not turned to account. It is all under the most careful cultivation. The landscape presented by each island is a multiplicity of fields sown with cotton, wheat, barley, rice, millet, and lucern, divided by hedge-rows of trees. These fields are sprinkled over with villages surrounded by gardens, and are



irrigated by means of numerous "aryks" of large and small dimensions.

It may not be out of place here to give a more complete idea of the system of irrigation adopted in Central Asia. The insular district, for instance, in the valley of the Zarafshan is irrigated by means of water conduits leading from the Kara-daria. The valley slopes considerably, though smoothly towards the west, rendering the process of irrigation easy. A canal is simply dug, and one side of it is made to project into the bed of the river from which the water is to be drawn. When a great body of water is required then a large weir is constructed. Thus at the parting of the Zarafshan, at Chupanata, a weir is built across the Ak-daria to force the greater bulk of the river into the Kara-daria. The importance of the weir is very great, for the greater part of Bokhara depends upon it for its supply of water. The Ak-daria and the Kara-daria reunite on the Russo-Bokhara frontier, but, as mentioned before, a large quantity of water from the Kara-daria is drawn into the large "aryk" of Nurapai, near Katty-Kurgan. This "aryk" serves to irrigate the majority of the fields of the Ziëddin Bek-ship. There is, nevertheless, only enough water conveyed through this "aryk" when the Kara-daria is full, and therefore the duty of constructing and regulating the weir on the Ak-daria is not imposed on the natives in its vicinity, but on the inhabitants of Katty-Kurgan and Ziëddin. The weir is so badly built that it is re-constructed every year, and has to be frequently repaired. There are special regulations bearing on this work, and the 1000 men who are each year required to execute it are brought to Chupanata from a distance of 64 miles. Notwithstanding this, however, Katty-Kurgan and Ziëddin were last year (1869) deprived of water for three consecutive days.

A little consideration given to this matter will convince any one, says Mr. Fedchenko, that the rest of Bokhara is not at the mercy of the Russians, through the fact of their tenure of the weir on the Ak-daria.

The water of the Zarafshan serves not alone to irrigate, it also fertilises the soil it passes over. Rapid as it is throughout a course of 134 miles in a mountain-valley, it brings down such a quantity of earthy particles that it is quite muddy. This slime deposited on the fields enriches them very much. Manure and marsh mud are used to a very small extent.

Dagbit, Yany-kurgan, and Peishambé, are the chief places in the insular district. Dagbit, within 9 miles north of Samarkand, is notorious for a great fair held in its vicinity on the banks of the Ak-daria. The inhabitants of five circuits assemble at this fair, and it is said that more business is done in it than at the

Samarkand bazaar. The Dagbit fair is held twice a week, like that in Samarkand. The fair in Chalek occurs once a week. In this manner there are fairs at different places on every day in the week, and many traders, particularly Jews, proceed from one bazaar to the other.

The feature in Dagbit is a mesjid, with the tomb of the Saint Mokhsun-Asam, who is believed to have died four hundred years ago. The mesjid is a low and long room, with two rows of columns, between which the ceiling is composed of a series of twelve cupolas. A high gallery, with paintings of various figures, runs along the outside of this structure. The impression produced by it on the people is so great that, in answer to Mr. Fedchenko's inquiry as to when and by whom it was built, they replied, "How could man have built such a place? God built it!" By some others the architect was, however, named, and his tomb at the entrance to the grave-yard where the saint lies was pointed out. The builder was one Jelengtash, to whom Samarkand is indebted for two splendid "medresses" (colleges). There are two remarkable palanquins preserved in the mesjid, which are quite Chinese in appearance; they are called "tokhtaravans," and were used more than a century ago by Musa-Khan and Ishan-Khan, descendants of the Saint Mokhsun-Asam.

Yany-kurgan is a very small town, enclosed, like all Central Asiatic towns, within a low mud wall. It is the residence of an "Amilakdar," the chief of the Afarinken "tiumen," otherwise district.

Peishambé is situated not far from Katty-kurgan. There is a citadel in the place which was at one time occupied by a Bek, and by Bokharian troops. In the south portion of the valley the most conspicuous place is, of course, Samarkand, the capital of Timur. It is the largest town occupied by the Russians in Bokhara, and contrasts favourably with other Central Asiatic towns; such, for instance, as Tashkend, which, from a bird's-eye view, is a scene of flat roofs. In Samarkand the many stately edifices rise above the level of low dwelling-houses.

The town of Samarkand is surrounded by a thick clay wall, with six gateways. The gardens are outside the walls. On the eastern and southern sides of the town these gardens are particularly extensive. There is a cemetery on the northern side, and a desolate spot, which is supposed to be the ruined site of the ancient city. To the east of the town there is a place colonised by Persians who were once slaves in the khanat.

The town is chiefly indebted to its bazaar for its popularity and animation. In the centre of the place where the bazaar is held stands a stone building, called the "Char-Su." From the

rooms within this building five corridors radiate to what were formerly covered avenues of the bazaar. These were, however, destroyed by General Kaufmann after the sudden attack made on the Russian garrison in 1867, after which the bazaar was rebuilt. The streets are now wide, and the shops are better than they were. The monotonous character of the town, composed mostly of mud-houses, with their backs turned to the streets, is relieved by the mesjids and their green ponds, by a variety of diminutive bazaars at the crossings and town gates, and also by old grave-yards.\*

The citadel, in which was the Emir's palace, and where his "Sarbazes" were located, is at the western extremity of the town. Now, of course, it is occupied solely by the Russians.

The gardens around Samarkand, as well as the ravines, give a picturesque appearance to the place, and present many charming landscapes.

The valley of the Kara-Su-Chishma is particularly lovely. A large canal runs through it, and as the fall of the ground is very great the water runs rapidly, setting in motion a considerable number of mills. On the northern side the valley is closed in by a wall of schistous formation, which forms the extremity of the Chupanata mountains. The "aryks" here, as in other places, are cut through rock, and the river tumbles in a series of romantic falls.

Besides Samarkand, the towns on the left bank of the Zarafshan are Piandjakent and Katty-Kurgan. Pendjikent was in earlier times the capital of a distinct Bek-ship. After the capture of Samarkand by the Russians, it first declared its independence of Bokhara and then succumbed voluntarily to Russia. It is a small town, with a proportionately small bazaar. The inhabitants occupy themselves with weaving and with agriculture; they grow wheat, barley, rice, &c., in fields by the Zarafshan. In the month of May, Mr. Fedchenko saw them already harvesting their barley. Fruit ripens here about a week later than at Samarkand, owing to the superior elevation of this locality—about 3393 feet—which is more than 1200 feet above Samarkand.

Villages, cornfields, and gardens line the entire road from Pianjakent to Samarkand. The zone under cultivation stretches

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\* The number of edifices, &c., in Samarkand is as follows:—Shops, 1846; caravanserais for storage, 7; caravanserais with shops, 11; Indian caravanserais, 9; bath-houses (Hummums), 7; mesjids, 86; medresses (Colleges), 23.

Since the Russian occupation 25 mesjids have been demolished—18 in the citadel and 7 in the town—so that, previously, the number of mesjids alone was 111, or 134 with the medresses, which are of the same religious character, being devoted to religious teaching; this gave a proportion of 1 mesjid to every 200 of the inhabitants, who numbered 30,000.

almost to the foreland of the Shahr-i-Subz mountains.—Below Samarkand there is very little irrigation, but the greater portion of the steppe is sown with spring wheat, which requires none. The absence of cultivation here is owing to the absence of water. The Zarafshan canals, after a course of from 30 to 50 miles, contain here very little water; and to the west of the Kara-Su the steppe is undulating and considerably elevated, so that water cannot be transmitted through it. The irrigated zone must, however, have extended farther in former days, for one can yet see the traces of the Iské-angar “aryk” passing along the very bases of the undulations. The Shahr-i-Subz mountains give rise to several small streams, which irrigate only the fields around the little settlements at their base. These mountains, rising 7000 feet, completely wall off the Shahr-i-Subz Bek-ship from the Russian possessions. From Samarkand there is only one pass over them, the Kara-tiubé, and this is practicable on horseback: the path lies through a narrow gorge traversed by the river Kara-Su. The other road from the Russian side lies through Djani; this also passes through a defile, but is suitable for wheeled carriages.

Mr. Fedchenko entered both these defiles, but could form a conception of the Shahr-i-Subz valley on the other side only, after ascending to the top of the Aksai mountain, which is 6986 feet high. This ascent, and a survey of the mountain district of Oalyk, enabled Mr. Fedchenko to project the little map of the Shahr-i-Subz valley which is incorporated with the one attached to this paper. The two principal towns of that Bek-ship—shown on the map—were determined instrumentally. The valley is bounded on the north by the Shahr-i-Subz mountains; on the east, by a chain of mountains stretching from Maghian, at first directly to the south, and then turning westwards. This chain is much higher than that forming the northern boundary, and is covered with perpetual snows. It gives rise to several streams; the principal one—the Hujaman-Su—flows by Farap, and on emerging upon a level country it receives the name of Kashka-daria. This river runs by Kitab to the Bokharian town of Chirakchi, and passing by Karshi discharges itself into a small lake.

The capital towns of the Shahr-i-Subz Bek-ship are Shaar (meaning *town*) and Kitab. The population is centred in these and in a few villages by the Kashka-daria and its affluents. Some of the villages of the Bek-ship stand on the northern slopes of the Shahr-i-Subz mountains and by the Anchava river. Chirakchi and Yakobak belong to the Emir of Bokhara.

A few words may here be added respecting the northern slope of the Shahr-i-Subz mountains, which is now claimed by Russia.



Some of the defiles, like those of Jam, Aksai, Oalyk, Karatiubé, and Urgut, which are long and deep, penetrate from the steppes almost to the main range. The sides are nearly bare, verdure appearing only in those places where there is trickling water. These springs magnify into rivers, or rather water-falls, and the inhabitants turn them into account for irrigation purposes, and the size of the villages here is quite proportionate to the number of such sources of benefaction. Urgut is the largest place in this district; it is a town with 5000 inhabitants, and was once an independent Bek-ship. The other places are of inconsiderable dimensions.

Where there is a scarcity of water, or where the ground is too steep to allow of its cultivation, the people pasture flocks. But besides the flocks of the native inhabitants of this country, sheep from Khulum and Balkh—from beyond the Oxus—are driven to these pastures. Owing to the absence of forest, these mountains have a most dreary and melancholy aspect. They contain no minerals whatever, excepting limestone, which is burned in great quantities in the village of Oalyk.

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NOTE ON THE MAP OF THE ZARAFSHAN VALLEY ATTACHED  
TO MR. FEDCHENKO'S PAPER.

THIS map is based on surveys, made during Mr. Fedchenko's explorations in the valley of the Zarafshan, by Lieut. Kutzei and Mr. Novasëlof, a topographer. They mapped all the southern portion of the valley and the country extending along the road to the Ak-taù Mountains. This was done instrumentally, with the aid of the plane-table, on a scale of 5 versts to the inch. The bases of 5 versts were measured in the neighbourhoods of Samarkand, Katty-kurgan, and Karatiubé. The island lying between the Kara-daria and Ak-daria is inserted in the map, according to a survey of it conducted under the personal superintendence of General Abramof.

No satisfactory survey having previously been made of the northern part of the valley, it is left in blank on the accompanying map; Mr. Fedchenko's route and the lakes on the northern side being, however, approximately traced upon it.

The Shahr-i-Subz valley is given from a sketch; the towns of Shar and Kitab having been alone determined by notches from the summit of the Aksai-taù and from the Oalyk Mountains.

The delineation of the Bek-ship of Magian, and of the Valley of the Fan River, are based on inquiries; but the main direction of the mountains was determined on the road from Pianjakent to Dashty-kazy.