

placed. He was comforted to hear from Mr. Simons that during the course of his life the country had borne seven different names, and that that part with which he had been familiar in his youth as New Granada had at last, after many changes, reposed finally in the name of Colombia.

*Steppe Routes from Karshi to the Amu-daria.* By E. DELMAR MORGAN.

To the following version of "Steppe Routes from Karshi to the Amu-daria," in the *Izvestiya* of the Russian Geographical Society, by M. N. Maief, the well-known editor of the *Turkistan Annual*, I have ventured to add a few explanatory notes, taking such liberty with the text as may, without deducting from the value of the original, render it more readable to Englishmen.

Of shifting sands much has been said and written lately; Sir Douglas Forsyth, Colonel Prejevalsky, and other travellers of note have come across them in different parts of Central Asia, and they have been fully described in our own 'Proceedings.\*' But there is one thing which M. Maief's article brings to mind, and that is the want of vigour on the part of the administration of Turkistan in arresting the process of decay now going on in that country. With the exception of Verny, which under General Kolpakofsky's auspices is assuming a somewhat European appearance, very little has been done in the way of public works. I certainly heard that a canal was being cut across the "hungry steppe," but have no means of knowing what progress has been made with it. In such a climate, on such a soil where trees grow with extraordinary rapidity, it might surely be possible to convert some of these wildernesses into fruitful places. Mention is made in the following pages of the military expedition to Charjui on the Amu-daria last year. This is the first notice of it that has appeared in any Russian official publication to which I have access. But it may be useful to remind our readers that the detachment sent by this way was intended to help in the reduction of the refractory Turkomans, and, if I am not mistaken, it was commanded by Colonel Kuropatkine of Kashgar fame, whose desire to take a leading part in every stirring event was thus apparently gratified.

M. Maief's paper is as follows:—

FROM two great centres of Central Asia, Bokhara and Karshi, the following routes lead across the steppe to the Amu-daria :

1. From Bokhara to Charjui, with branch from Kara-kul to Fort Osta.
2. " Karshi to Naruzima.
3. " " Burdalyk.
4. " " Kerki.
5. " " Kelif.

\* Vol. xxi. p. 27 *et seq.*

The first of these, from Bokhara to Charjuï, with its branch to Osta, was surveyed in 1876 by Major Cherniafsky, and was taken by Russian battalions last year [1880]. It will, therefore, be unnecessary to include it in this article, or that from Karshi to Kelif viâ Huzar, also surveyed by the same officer.

The route from Karshi to Naruzima is one of the worst, owing to the brackish water contained in the wells situate along it. The next of the series, however, that from Karshi to Burdalyk, is very different.

Let it be first observed that the chief obstacle to traffic arises from belts of shifting sands, which extend from the Aral Sea to the Kerkitchitau, as the mountains near Kerki are called. This sandy tract, widening towards the Aral and gradually diminishing in breadth towards the east, is doubtless caused by prevailing north-easterly winds blowing with extraordinary violence for six months in the year. In this way a sea of sand-dunes is formed, extending from north-east to south-west, advancing from the north-eastern border of the steppe to the lower Amu-daria, and gradually encroaching upon and silting up this river. These constant north-east winds may be compared with the monsoons of sub-tropical regions, and are caused by the heating of wide tracts of sandy desert lying south and south-west of the Oxus. As the hot air ascends, following the invariable law of nature, colder currents from the Kizil-kum on the north rush in to supply its place. After sunset the heated surface of the sand cools rapidly, the wind drops, and by midnight it is quite calm. The zone of these steppe "monsoons" is bounded on the north by a line passing through Karshi and Bokhara, continued in the same direction to the Aral Sea, so that our Turkistan soldiers experienced their full force during the Khivan campaign of 1873. On my recent expedition I twice crossed the belt of steppe subject to their influence, and noticed that the further east and north-east I went, the more they diminished in violence. If report speaks true, at Kerki ferry the right bank of the Amu-daria is margined by an inconsiderable extent of sand-desert, but having had no opportunity of personally visiting this tract, I rely entirely upon information derived from native guides, who deny that there are sand-hillocks in that quarter; moreover, *arbas*\* pass that way. Further west again, along the Burdalyk road, these sand-dunes are higher but cover a belt only 10 to 15 miles wide, whilst south of this they only occur sporadically and at rare intervals, being overgrown with a variety of bushes, and presenting altogether a different aspect.

Between Karshi and Naruzima the belt of shifting sands is three *tash*† (18 miles) wide, whilst between Bokhara and Charjuï it is but

\* *Arbas* are native carts on high wheels.—[All the footnotes are by E. D. M.]

† *Tash* are native milestones; the word is used for measuring long distances, and in this sense is equal to the Persian *farsang*, or about six English miles.

seven miles, the lower Zerafshan dividing it here into two parts. West of this, beyond the Charjui road, the desert has completely gained the mastery. It was this section in its widest part, between Kala-ata and Utch-Utchak, that detachments of Turkistan troops crossed diagonally on the way to Khiva in 1873.

As already stated, outside the belt of shifting sand-dunes lies a zone of steppe, interrupted by occasional saline tracts seamed with low ridges and hillocks of sand. These, however, are stationary, being knit together by a poor, stunted kind of vegetation, whose roots take firm hold of the yielding soil and prevent it drifting with the wind, which here only removes the lighter particles on the surface, leaving the heavier to be moulded by time and weather into a compact mass. North of this region lie saline argillaceous plains, supporting a scanty vegetation of wormwood and prickly bushes, with saline herbs in the marshes, a tract not unlike the Chinaz-Djizzak "hungry steppe." All these three belts have to be crossed on the road from Karshi to Burdalyk: thus, between Karshi and Alang wells, lies a zone of saline argillaceous earth wholly free from sand; between Alang and Tash-kuduk are stationary hillocks of sand, salt marshes, and gravel, and lastly, between Tash-kuduk and Burdalyk, the whole distance of 10 to 15 miles is filled in with shifting sands.

These prefatory remarks are necessary inasmuch as they apply generally to the tract between Karshi, Bokhara, and the Amu-daria, and may also serve to explain other routes leading to this river. All of them cross the three zones, the saline clay, the sand-hillocks, and the shifting sands, the difference between them consists in the number of wells and distance between each, and especially in the width of the belt of quicksands crossed. With these prefatory remarks let us proceed to consider the route from Karshi to Burdalyk.

*1st stage, Karshi town to Shirin\*-djuj hamlet, 14 miles.*—Road lies through arable land abundantly supplied with good drinking water stored in covered wells. The irrigating dykes are only flooded when the Kashka-daria overflows its banks at the end of May or early in June, not often earlier. The inhabitants are therefore obliged to dig wells. The following hamlets are passed in this stage: Mitán, four versts from Karshi, strictly speaking at the end of the gardens of this town; Kalla-Kurgan, four versts from Mitán, half-way between them is a roadside well with two mulberry trees growing beside it. The water in it is slightly tainted, and may be unwholesome owing to the immediate proximity of a large cemetery, but there are other wells in the hamlets Kalla-Kurgan and Hódja-Kurgan; six versts from the former is the hamlet of Zar-Kunak, and seven versts beyond it Shirin-djuj.

\* Shirin-hatun was a beautiful queen whose romantic story is told by Schuyler, 'Turkistan,' i. p. 108.

2. *From Shirin-djui to Denau, 14½ miles.*—The road, similar to preceding march, passes at three versts from Shirin-djui the hamlet of Chim-Kurgan, and seven versts farther the much larger one of Kazvi, with a *kurghan* or walled enclosure. Twelve versts beyond Kazvi lies Denau, a large hamlet where the *amliakdar* has his residence. Between Kazvi and Denau cultivated alternates with waste land, the latter supporting a prickly kind of bush.

3. *From Denau to Alang Wells, 12 miles.*—Road crosses level plain; six versts from Denau, Chandyr is reached, and two versts farther a solitary hut standing in the midst of arable land. Between Denau and Chandyr the road lies through cornfields and melon plantations; beyond Chandyr it passes over a saline rolling plain. Alang is the name given to a group of wells surrounded by a low mud wall with trough for watering cattle. These wells are lined with brick and contain excellent water. Their depth is 130 feet, and vessels are lowered into them by means of a rope passing through a block.

4. *From Alang Wells to Sardoba Chil-gumbez, 12 miles.*—The country is undulating steppe with ridges of sand overgrown by a few characteristic plants such as *djuzgun*. Here one begins to feel the *Garmsair*, a hot, suffocating wind which blows during the summer months—May to August—with great violence, always from the north, and usually beginning between nine and ten in the morning, attaining its full strength by two in the afternoon, and falling after sunset. Towards sunrise the temperature of the air becomes pleasantly cool, and between 2 A.M. and 10 A.M. is the most convenient time for exercise. This wind is not originally fever-laden, as Vambéry and other travellers have described it; it is in passing over marshy tracts and rice plantations that it becomes so. Thus at Charjui it is very noxious owing to the miasma it brings from Bokhara and the lower Zerafshan, whereas before reaching Bokhara it is pure and bracing, supplying fresh air from the depths of the Kizil-Kum, and scattering the noxious vapours of Bokhara and Kara-Kul.

Sardoba Chil-gumbez is a fair type of the conical buildings erected to store snow-water for use in summer. It stands in a small hollow and is carefully built of baked bricks. The steps leading down to the water have all been broken and the descent to it is now very steep. In order to prevent horses, sheep, and camels from falling into it, a low mud wall has been built across the entrance and no cattle are ever admitted inside the enclosure that its waters may not be polluted. We found this excellent at the end of August. Every winter Illebai Turkomans, nomadising in these parts, fill the cistern to the brim with snow, which thaws and remains pure throughout summer, an unusual circumstance in open stagnant pools.

5. *From Sardoba Chil-gumbez to Tash-kuduk Well, 16 miles.*—The first part of the road lies over hard, gravelly, and slightly undulating

soil with ridges of sand; further south is a tract of saline clay with its usual scanty vegetation. Sixteen versts from Chil-gumbez cistern the zone of stationary sand-hillocks begins. Here is Massa-kuduk well, with brackish water though fit for horses and cattle. In spring nomadising Turkomans rendezvous here before migrating to their summer camping-grounds near Burdalyk and the banks of the Amu-daria. Eight versts farther, on level ground, in the midst of sand-hillocks, is Tash-kuduk, also a brackish well though eagerly drunk by horses. Indeed, all water in these wells is more or less bad; on digging deeper, however, into the subsoil, below the sand, good water may be obtained, and this is what all Turkomans and travellers have to depend on; just as our men did at the famous Adam-Krilgan\* wells, the surroundings in both cases being very similar.

6. *From Tash-kuduk to Burdalyk, 16 miles.*—This march resembles the last. The road winds through loose sand-hillocks bare of vegetation except a few bright green patches of feather grass, not readily eaten by horses. These sand-hillocks, it may be remembered, take the crescent or horseshoe form, the side facing the wind being abrupt, whilst the opposite slopes gradually off. The road avoids their summits because of their steepness. Hot winds are as prevalent here as in the preceding belt.

Sixteen versts from Tash-kuduk stands another well, Baigrish-kuduk, with some others at a little distance off the road, subsoil water being everywhere procurable. Near Baigrish-kuduk there is a salt-marsh about two versts long, entirely free from sand, hillocks of which continue beyond it to the turning of the road to Naruzima. At the end of this stage some tall poplars (*Populus diversifolia*) and good-sized tamarisk bushes may be seen, the latter half buried in sand. The constantly diminishing belt of cultivated land on the northern bank of the Amu-daria is apparently destined soon to disappear altogether under sand-drift. The inhabitants of Bashkaul,† eight versts from Burdalyk, told M. Maief that in the course of four years they would have to abandon their homes and move elsewhere, for their land was being steadily encroached upon in two ways, on the north-east by sand, and on the south by the river washing portions of it away. A change, adds M. Maief, which is taking place along the whole extent of habitable

\* Adam-Krilgan is a place of historic interest, for this was the turning-point of the last Khivan expedition. It was here that General Kaufmann's force was reduced to well-nigh desperate straits, when an offer of fifty roubles for a glass of water led to the accidental discovery of Alti-kuduk (six wells), four versts from Adam-Krilgan, and saved the expedition. The late Mr. MacGahan, in his admirable narrative, gives the meaning of the word Adam-Krilgan, "fatal to men." ('Campaigning on the Oxus,' &c., p. 129).

† Bashkaul, possibly from two Tartar words, 'bash, "head," and aul, "village," the whole word might then mean head-village; the k being introduced for the sake of euphony, a bit of etymology for which the translator is alone responsible.

land on the right bank of the Amu-daria.\* Its left bank, however, is being swept clear of sand by the same wind which is doing so much mischief opposite (an apt illustration of the old adage, "It's an ill wind that blows nobody good"). Here the area of land fit for cultivation is extending, and forms one continuous strip, unbroken by those wide sandy tracts of such frequent occurrence on the right bank, where the steadily advancing sea of sand threatens to blot out all remaining traces of culture and leave it a barren desert. Roads, caravanserais, wells, and cisterns may all be swallowed up, for there is no commercial intercourse to prevent their falling into decay. None but *djigits* or native guides in the Russian service, or the Turkoman with his flocks and herds, pass along the Karshi-Burdalyk road now-a-days. Not for them or their cattle were these roads made, these cisterns built, these wells dug. These works refer back to the time of Abdullah Khan † (1555-1597), second of that name, the wise and energetic sovereign of Bokhara and greatest of the Sheibanides. Three centuries ago these desolate tracts could not have been nearly so extensive as they are at present on the right bank of the Amu-daria, and a considerable trade must have passed that way.

The close approach of sand-drift is intimately connected with the question of turning the Amu-daria into its old channel, for it is obvious, as M. Maief says, that if conditions remain unchanged and the right bank be entirely covered with sand, the river bed will in time be choked up. Sedimentary matter borne down in such vast quantities and deposited in its lower channel would alone render futile any attempt to divert the stream. ‡

But to resume the consideration of the Karshi-Burdalyk road.

\* The tendency of the Oxus to cut into its right bank, commented on by more than one writer of eminence, has been attributed to Baer's law on the rotatory motion of the earth.

† Abdullah Khan was, according to Vumbéry ('Hist. of Bokhara,' p. 284), styled "benefactor of his people," and has left much the same reputation as that of his contemporary Shah Abbas the Great in Persia; all useful works in both countries being generally attributed to these two sovereigns.

‡ When in Central Asia last year, I ascertained that the balance of opinion was against this project. General Kaufmann told me his reason for considering it impracticable was that an enormous quantity of water would be required to fill Lakes Sari-Kamish to a level sufficiently high to cause an overflow in the direction of the Usboi. But the late General Petrusévitch, who fell at Geoktepeh last year, after an elaborate survey of the delta and lower course of the river, was firmly convinced of its practicability. His idea was to connect the old and present beds by a continuation of the Déudan, a southern arm in the Khivan oasis, which is supposed to pass considerably to the south of Sari-Kamish Lakes and join the Usboi below these lakes. The more attentively these questions are considered, the more fully is one disposed to agree with the late Major Herbert Wood, R.E., who remarked:—"But if humanity and civilisation be not empty words, it behoves Russia to reclaim these deserts, the saltness of whose wells fills the heart of the Turkomans with anger and malice against all men."

Taking the sum of all the above stages, the itinerary appears to be as follows:—

Town of Karshi—						
Shirin-djui hamlet .. .. .	21	versta.				
Denau .. .. .	22	„				
Alang well .. .. .	18	„				
Sardoba Chil-gumbez .. .. .	18	„				
Tash-kuduk well .. .. .	24	„				
Town of Burdalyk .. .. .	24	„				
	<hr/>					
	127	„	or	85	miles.	

the exact distance given by Burnes of his route from Kojah-Saleh ferry to Karshi, which he reached on the fourth day after crossing the Oxus, marching upwards of 25 miles a day. According to the route now described, Sardoba Chil-gumbez lies about half-way between Karshi and Burdalyk. Of the importance of the latter of these towns in former times, the great highway leading thither affords ample evidence. But little remains of the great works except the wells, solidly built of brick. Even the edifice erected over the entrance to the Sardoba has suffered greatly; and were it not for the Turkomans, who fill the cistern with snow every winter, it would also disappear under sand-drift, a fate that has befallen many similar buildings on the Chināz-Djizzak road.

The Karshi-Burdalyk road leads direct to Guriāsh, the centre of the Ersari Turkoman settlements. Here resides their elder, Tillia Toksabai, nominally vassal of Bokhara, but, for all that, an independent potentate. These Ersari Turkomans pay tribute to the Khan of Bokhara on 40,000 kebitkas, but their number is much greater; yet nothing further is required of them, and they are left to settle their own strifes and dissensions. The most influential of their elders, Tillia Toksabai, is on intimate terms with Abdurrahman Khan, and was invited by him to Cabul, doubtless with the view of coming to some arrangement in order to check the incursions of the Ersari into Northern Afghan territory. So far, these negotiations have not resulted in anything; for in the early part of the present year the Ersari raided to Andkhoi, and carried off numerous cattle, horses, camels, and prisoners. All these are held in expectation of a ransom.

Nor do the Ersari Turkomans suffer their allegiance to Bokhara, such as it is, to interfere with their raids upon the bekships of Naruzima, Burdalyk, and Kerki, included within Bokharian territory, and one of their serkars, Heldi-gok, has gained notoriety by acts of brigandage near Burdalyk.

If the Bokhara Government looks upon them as incorrigible, and does not attempt to control them, it knows, on the other hand, how to avail itself of their predatory instincts for purposes of its own; thus recently it invited them to harass the Tekkehs, and 600 of them, according to M. Maief, have gone on an expedition into their country. In this

way the Ersari and Tekkehs are enemies, instead of uniting, as formerly, to plunder Persia.

Another very good road leads from Samarkand to Karshi via Djain and Kermina, whence its continuation is as follows:—

Kermina town—			
River Sypta (tributary of Narupai) .. ..	4	taah.	
Yablu-kuduk .. .. .	2	”	
Arab ” .. .. .	2	”	
Kassan hamlet .. .. .	3	”	
Town of Karshi .. .. .	3	”	
	14	”	or 112 versts = 75 miles.

The road is throughout level, and water is abundant. Yablu-kuduk and Arab-kuduk are groups of wells with good water. In conclusion, M. Maief gives the following itineraries:—

1. From Bokhara to Farab, crossing the Amu-daria opposite Charjui:—

Bokhara—			
Mazar-hosh-tiube .. .. .	13	versta.	
Hodja Islam ruins .. .. .	2	”	
Yak-tut hamlet .. .. .	19	”	
Shari-haiber ruins .. .. .	10	”	
Paikan hamlet .. .. .	12	”	
Kara-kul town .. .. .	8	”	
Hodja-daulat hamlet .. .. .	16	”	
Mazar-hodja-Yussuf .. .. .	8	”	
Salt marsh .. .. .	20	”	
Farab hamlet .. .. .	12	”	
	120	”	= 80 miles.

2. Direct road from Bokhara to Burdalyk (surveyed by Major Cherniafky)—

Bokhara—			
Serai hamlet .. .. .	7½	versta.	
Kichik-ob well .. .. .	57½	”	
Tash-ahur well .. .. .	20	”	
Nakhta well .. .. .	18	”	
Tash-kuduk .. .. .	23	”	
Burdalyk .. .. .	19	”	
	145	”	= 97 miles.

3. Karshi to Naruzima (from Maief's hearsay information)—

Karshi—			
Shirin-djui hamlet .. .. .	21	versta.	
Denau .. .. .	22	”	
Alang well .. .. .	18	”	
Tali-pakta bitter well .. .. .	32	”	
Utch-oguz ” .. .. .	24	”	
Naruzima .. .. .	40	”	
	157	”	= 105 miles.

## 4. Direct road from Karshi to Kerki (from Maief's hearsay information)—

Karshi—	
Nishan bitter well .. .. .	3½ tash.
Sansulak „ .. .. .	6 „
Kerki town .. .. .	4½ „
	14 „ = 112 versts
	= 75 miles.

## 5. Road from Karshi viâ Kuzar to Kerki (Maief's hearsay information)—

Karshi—	
Yanghi-kent hamlet .. .. .	3 tash.
Kuzar town .. .. .	2 „
Kerkinchak well .. .. .	4 „
Gurchak „ .. .. .	4 „
Sansulak „ .. .. .	2 „
Kerki town .. .. .	4½ „
	19½ „ = 156 versts
	= 104 miles.

## GEOGRAPHICAL NOTES.

**Mr. Leigh Smith.**—Up to the moment of going to press no news has been received of our adventurous Arctic yachtsman. It is now thought by those whose experience of navigation in the Spitzbergen seas gives their opinion great weight, that it is probable he reached Eira Harbour in Franz-Josef Land in the month of July, the drift of the ice at that time being favourable, and that the pack afterwards closing in on the south, he has been prevented from returning. If this be the case no apprehension need be entertained, at least for the present, concerning him. The *Eira*, on starting from Peterhead, was furnished with provisions for at least fourteen months, the bread and flour being enough to last two years. Captain David Gray, of Peterhead, informs us that Mr. Leigh Smith took with him two sledges, with a quantity of gear for tents, and a wooden house capable of holding all his crew; he was prepared, therefore, for wintering and sledging northward in the spring.

**Visit of the 'Thomas Corwin' to Wrangell Land.**—Details of the Arctic voyage of the United States revenue steamer *Thomas Corwin*, commanded by Captain C. L. Hooper, have been received since our last issue. She left San Francisco on May 4th, on her regular annual cruise along the coast of Northern Alaska, and with instructions to search for the *Jeannette* Expedition, and also for the missing whalers *Vigilant* and *Mount Wollaston*. Passing through Behring Strait unusually early in the season, Captain Hooper proceeded to the northern coast of Siberia, and rounding Cape Serdze Kamen on May 21st, reached the Chukche village of Tapkan. Here he obtained news of the wreck of the whalers, and having procured sledges and dogs despatched Lieutenant Doty to examine the vessels, which were found near Cape North. After coaling