



THE AMU DARIA BRIDGE

THE NORTHERN BORDER AND THE OXUS RIVER: ITS CHARACTER, TRIBUTARIES AND FORDS

THE Amu Daria the more modern rendering of the name of the classic Oxus serves, along the north and north-east of Afghanistan for a distance of 330 miles, as the frontier between Afghan territory and the dominions of the Amir of Bokhara. Rising in the region of the Pamirs this river, which is among the most historical in Asia, falls into the Aral sea after traversing more than 1400 miles. The area of its basin is estimated at 308,804 square kilometres, while for a space of 200 miles it flows through Bokharan territory after which, for a further 200 miles, it acts as the frontier between the Syr Daria province and the Khanate of Khiva.

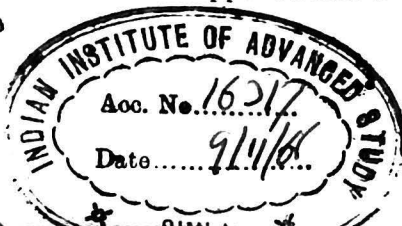
Contributing to the volume of its upper waters are two principal streams, the Pamir and the Panja. The latter is the name by which the Upper Oxus is known. The word Panja, which is somewhat generic, is believed to refer to five streams existing in this region. It is related also to the names of the well-known Afghan forts of Kala Panja and Kala Bar Panja. It denotes the five fingers. It will be admitted that the existence of a sacred edifice

erected over a stone, bearing the imprint of the hand of Hazrat Ali, son-in-law of Mahommed and situated in the vicinity of Kala Panja, is presumptive evidence of an affinity between the existence of the five streams and the shrine. Further down the river, in Shignan, at Kala Bar Panja which means "The fort over the Panja," a fort has been constructed above a similar mark to that defining the position of Kala Panja. There is, therefore, little doubt that some numerical quantity is expressed by the region.

In this wilderness, which in winter is a world of snow and ice, there is another river, the Ak-su, so that there are three streams, the Pamir, Panja, and the Ak-su. This trio drains the Pamirs, the Ak-su passing to the east and north, the others flowing into the Oxus at Kala Panja. The Pamir and the Ak-su rise amid the Nicholas glaciers which drain into Lake Victoria and Lake Chakmaktin; and, while neither of these lakes can be identified positively as the sole source of the Oxus nor the Pamir river be said to represent its origin, rivers, glaciers and lakes are associated very closely with its head-waters. The larger lake, known as Lake Victoria, and discovered in 1838 by Wood, is situated on the Pamir river; the smaller lake, Lake Chakmaktin, is on the Ak-su. The Pamir Daria flows through the Great Pamir. It possesses direct connection with the Oxus at Langar Kishit. The Ak-su flows through the Little Pamir. Lake Chakmaktin, lying on the Little Pamir and situated 400 feet lower than Lake Victoria, is 13,000 feet above sea-level. Panja, the third stream, rises in the congeries of glaciers which lie immediately below the Wakh-jir Pass—indisputably separate from the Nicholas glacier and without any connection with the two lakes. The five rivers which make up the waters of the Panja or Oxus are the Pamir, Panja, Ak-su or Murghab, Shakh Daria and the Ghund. Many of these streams bear two or even three names, this engaging variety of description springing from the fact that the several parts of the same stream are differently described by the various natives—Afghans, Chinese, Tajiks and Kirghiz—who frequent the Pamir region. In some cases, too, explorers have added names derived from imperfect interpretation of local information, until it may be said that few rivers in the world bear so many names as does the Oxus in its higher reaches.

If we take the upper stream and follow it from its source

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NEAR THE SOURCE OF THE OXUS



THE VALLEY OF THE OXUS



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in the glaciers which lie below the Wakh-jir Pass, it will be found that in its immediate descent from this field, but without taking its name from the adjacent pass the waters of the Amu Daria in their higher reaches are styled the Panja. This title extends along the Upper Oxus until, at Bozai Gumbaz, it is joined by the first contribution from the Nicholas glaciers. This affluent is described indifferently by the name Burgutai, Little Pamir Daria and Kuntei-su; a little before the meeting of the Burgutai with the Panja this stream divides east and west, the eastern arm passing into the channel of the Ak-su above Lake Chakmaktin so that the Burgutai stream feeds equally the Ak-su and Ab-i-Panja rivers. The Burgutai is narrow, shallow and inconstant; from its start to its junction with the Panja it possesses a course of only ten miles and is solely of interest as indicating one of the tributaries which go to swell the volume of the Oxus. Below Bozai Gumbaz the stream which rises in the Wak-jir glaciers bears the five names Ab-i-Wakhan, Wakh-jir, Sarhad, Wakh-su and Ab-i-Panja, the several variations of the name Panja.

The fall of the Panja from its source to its junction with the Sarhad has been estimated at 1247 mètres in 75 kilomètres. It will be gathered, accordingly, that it is a very rapid stream until it reaches the Sarhad. At Bozai Gumbaz and for a short distance along the Wakhan valley, the river slackens until, turning northwards beyond Ishkashim, it recovers and tumbles swiftly forward. Before leaving the Wakhan valley it receives, on the right bank, the stream which rises in Lake Victoria and is known incorrectly as Ab-i-Panja and correctly as Pamir Daria. At one time, in consequence of Wood's error, it was confounded with the head-waters of the Oxus. Neither in volume, length nor through the possession of any requisite characteristic can the Pamir Daria be accounted the parent stream. This river describes from its source in the glacial fields of Mount Nicholas a fall of 153 mètres over the first 20 kilomètres of its course. From Lake Victoria proper to Mazar-tepe, where the Khargosh river flows into it, the Pamir Daria falls 285 mètres in 40 kilomètres. From Mazar-tepe to Langar Kisht, where it unites with the waters of the Panja, Ab-i-Panja or Ab-i-Wakhan, there is a further fall of 831 mètres in 60 kilomètres. From Langar Kisht to Rang the fall is

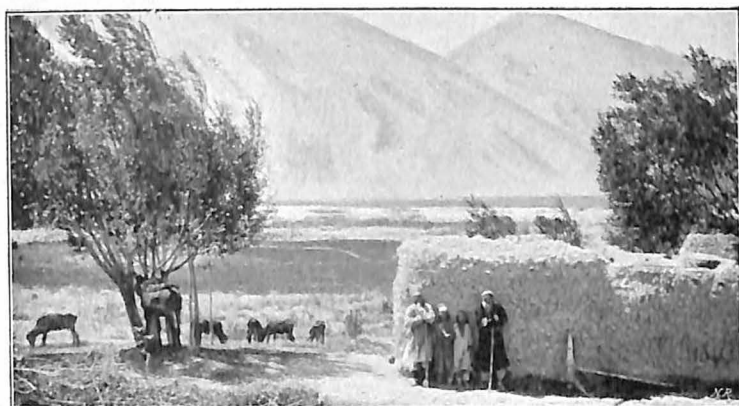
327 mètres in 100 kilomètres, the pace of the river in this stretch of the Wakhan valley being comparatively sluggish. From Rang, which is a little east of Ishkashim, to Khorok in Shignan there is a perceptible increase in the current of the river, its mean fall being 702 mètres in 100 kilomètres.

The main river in its passage through the Wakhan valley presents a number of interesting contrasts. In its higher reaches at first a tumbling mountain torrent, it becomes between Semut which is below Langar Kisht and Shirtar, a slow, lifeless stream, so nerveless and placid that it ceases to carry in its current the masses of suspended matter which hitherto have been swept along with it. At Langar Kisht, the junction of the Pamir Daria with the Panja, there is a deposit of broken rocks and smooth water-borne stones which have been brought down from the glaciers. The wide area, covered by these quantities of *débris* and detritus from the upper valleys, makes the banks and bed of the river resemble a deserted beach, where human life seldom enters and vegetation does not flourish. In places where deposits of sand have been made by the stream, the wind has whipped the loose surfaces into small dunes; in other directions large tracts of this drift sand have been covered by tamarisk; elsewhere there is no vegetation and the tamarisk has not appeared. In mid-summer, when the river diminishes and high winds blow through the gorge, the scattered patches of sand left by the stream are caught up by the gales and swept in clouds of fine dust across the fields beyond.

In the wider valleys, such as those at Langer Kisht and the Zung, the Panja divides into a number of arms. These small channels contain dangerous quicksands. The stream itself is black with mud; the river at this point being charged with a fertilising matter which, where deposited, is followed usually by a growth of luxuriant vegetation. The Pamir Daria similarly breaks up, but its channels are free from quicksand and the water carries little mud in suspension. Between Langar Kisht and Ptuk there is a belt of vegetation. The banks are covered with grass; there are many willows, white poplars and here and there impenetrable copses of camelthorn. Beyond Ptuk, the beneficent character of the river changes and in the valley between Semut and Shirtar the banks reflect a waste of sand dunes and patches of drift sand. The mud deposits of the main stream, too, appear to be exhausted at Ptuk,



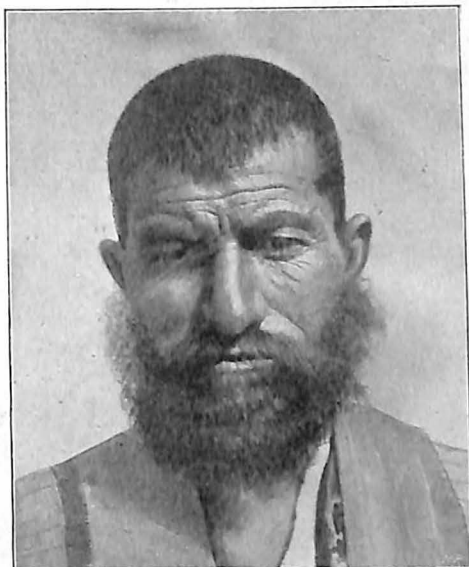
BESIDE THE OXUS



THE WAKHAN VALLEY

where there is a large intake of glacial water from a number of rapid streams which come down from the Hindu Kush. As if the moraines discharged their stones and gravel into these snow-fed torrents there exists at this point a stretch of river-bed, desolate and barren.

The mountains at Langar Kisht and Zung recede considerably on either side from the river and thus give room for a broad valley. But they come together immediately west of Kala Panja forming a narrow ravine through which the Panja can just pass. Beyond this gorge the valley expands to a breadth of several kilomètres



TYPE FROM WAKHAN

and the river divides into arms dotted with little islands which are covered with thorny corses. After this lake-like extension the river, from the village of Shirtar down stream, consists of one channel which, here and there, widens out, making space for further inlets.

From Dersai to Nut the stream contracts to an average breadth of 25, mètres and dashes with such suppressed energy between the steep banks of its rocky bed that the boom of the tumbling waters echoes throughout the valley. From Dersai to Si Khanah the mountains run so close together, north and south, that in most places there is only room for the actual bed of the river, and it is only near the mouths of the small hill-side streams that a few hundred square yards of arable soil may be found. About 3 kilomètres west of Si Khanah there are a number of cata-racts, and immediately south of Rang the sands, brought down by the stream, begin again to form into dunes. From Nut to Samchan, in the province of Ishkashim, the river

valley becomes broader, the Panja dividing into several arms. The banks here are covered with thick copses, the haunt of the wild boar and the home of many birds; but in the province of Gharan, a few kilomètres to the north of Samchan,



BRIDGE OVER UPPER OXUS

the valley of the Panja becomes a mere cleft in the mountains, the river retaining this form until it receives the waters of the Ghund at Khorok. At Darband, on the boundary between Gharan and Ishkashim and before the meeting of the Ghund Daria with the Panja, the stream breaking down a number of cataracts tears through its narrow mountain passage and becomes a most imposing waterfall; indeed, from Darband almost to Khorok the stream of the Panja rushing along its rocky bed is one vast foaming cataract which, dashing against the mountains crushes everything that falls into its whirling eddies.

The bulk of the tributary streams of the Panja river is found between Langar Kisht and Namagut, the presence of the Hindu Kush glaciers being the source of an extensive water-supply draining into the river. The length of these

streams seldom exceeds 15 kilomètres and the more general course is one of 10 kilomètres. Their period of greatest activity is at the time of the summer floods, when the ice melts and the heavy snows are broken up. At such a moment a large volume of water sweeps through their shallow channels carrying with it huge boulders, masses of ice, many tons of snow and running with too great force to present facilities for fording. North from Ishkashim the tributaries of the Panja diminish both in number and size. The rivers flowing from the Badakshan mountains and the streams from the southern valleys of the Pamirs are, save in one or two important instances, flood-water and dependent upon the break-up of the snows and ice. The most important exception is the Bartang, which is known as the Murghab and the Ak-su. This river is certainly the longest tributary of the Panja in Wakhan and Gharan. In the course of its descent from Lake Chakmaktin it receives no less than eight tributaries, three of which approach it from the north—the remaining five rising in small, separate streams in the hilly ground to the south. The Bartang is not the only river of importance which unites with the Panja after the main stream has swung out from the Wakhan valley towards the north. Two others, respectively the Ghund Daria and the Shakh Daria, join their waters at Sazan Bulak, flowing from that point under the name of Suchan Daria to a junction with the Panja. The waters of the Suchan Daria and the Panja meet at Charog, which lies on the right bank of the Panja somewhat south and east of Kala Bar Panja. This place, situated on the left bank, is the capital of Shignan.

Communications through Wakhan and Gharan still preserve their primitive character; but between Kala Panja and Kala Bar Panja, on the Afghan side of the river, there is a serviceable track which, if more a bridle path than suited for the requirements of wheeled traffic, is none the less superior to anything existing between these points on the Russian bank. The Russians have not troubled to make a clearance along the banks of the river, their principal objective having been to connect their military depôts in the Pamirs with the principal fords of the Upper Oxus and to provide first-class communications between their Pamir posts and their bases in Turkestan. The system of Afghan communications on the river-bank arises from the energy and precautions taken by the Amir Abdur Rahman.

Although no longer preserved with the same care, they nevertheless offer to the Afghan patrols a convenient line by which the frontier may be inspected. At many points along this riverside paths have been cleared of boulders,



DIFFICULT "GOING"

streams have been bridged and ramps have been constructed to facilitate the passage of the more troublesome spurs. Difficulties of movement must beset the traveller in Wakhan at all times, as progress through the valleys is dependent on the season. During the melting of the snows, which begins in May, the rivers which draw their waters from the mountain system of the Hindu Kush or from the Pamirs are in flood, the period of flood-water prevailing until the end of August.

From September to March it is usually possible to proceed along the banks; but so soon as the snow begins to break up the Panja in its higher reaches becomes so swollen that the great volume of water passing through the channel breaks its bounds and inundates the valley. At such a time wide détours over the mountains have to be made; from the end of October the streams freeze and it becomes possible to use their frozen surfaces. Certain difficulties attend this practice, as the rapidity of the current interferes with the formation of the ice.

The passage through the river valleys, particularly in the

higher reaches along the Russian border, is always arduous. It is better to secure permission to go round than to endure the labour of clambering up the many steep, mountain slopes where there is no path to guide one and very little foothold. It is practically useless to take animal transport and coolies lightly laden are more reliable a means of effecting the journey. Beyond Ishkashim, as far as the junction of the Suchan Daria with the Panja, a distance of 50 miles, the river valley is so broken and complex that the road, where it exists at all, becomes a mere zigzag, half a dozen inches in breadth. Rugged and lofty, it is barely perceptible on the granite face of the mountain. Frequently, no better footing than the surface roughness of the rocks presents itself, Nature appearing to have gone out of her way in order to raise obstacles against the passing of the wayfarer.

At the junction of the Suchan Daria with the Panja, where the valley widens, there is no longer confusion about the name of the stream. Indisputably it is now the Panja or Ab-i-Panja, and until meeting with the Bartang-Murghab-Ak-su the valley continues to preserve its open character. Beyond the Bartang its dimensions contract once more and the river tears a way for itself through mountain gorges. At Kala Khum it bends to the west and, striking a little south and then a little north-west, runs at right angles to the general trend of the mountains towards the more open valleys about Kulab. Kala Khum may be said to mark the most northerly point of the river. The district surrounding it is in distinct contrast with the desolation of the valleys along the Upper Oxus. The cliffs are no less bold and the precipices no less sheer than in Gharan and Wakhan; but owing to the mildness of the climate of Darwaz a genial warmth permeates the region, encouraging a generous growth of vegetation. The wild vine, the red pomegranate, the apple, pear and mulberry flourish and many varieties of vegetables are freely cultivated.

From the point where the Bokharan province of Kulab becomes separated by the Oxus river from the Afghan districts of Rustak and Kataghan the channel of the stream is contained no longer by the walls of the mountains. Broad streams, from the Trans Ali range in one direction and the highlands of Karategin in another, join the Oxus, the main river at once beginning to adopt an uncertain channel. Numerous feeders appear on both banks at this

part of its course. The Kulab and Surkhab-Waksh-Kizil-su join it in broad muddy streams from the Karategin uplands, until the river, changing its character altogether, divides itself into many channels where the hills fail to confine it. In addition to the two tributaries just mentioned as appearing on the right bank, there are three others, the Kafirnahan, the Surkhan, and the Darban. These are contributed from Bokhara ; while, on the left bank, Badakshan dismisses the Kokcha and the Kunduz-Ghori-Khanabad-Aksarai to a meeting with the main stream. In earlier times, when there were fewer settlements and the demand for purposes of irrigation was not so great, the Amu Daria possessed, both on the north and on the south, other tributaries, the waters of which are now entirely diverted to the fields. In these middle as also in the upper reaches of the river but little of the main stream is utilised by villagers, the inhabitants of the settlements in the valleys threaded by the Oxus supplying their agricultural necessities from the smaller streams. West of Kunduz, for a distance of nearly 700 miles, the drainage of the hills to the south of the river is lost in the plains of Afghan Turkestan ; but on the Bokharan side the extensive canalisation, which is such a prominent feature, causes many of the streams to be exhausted before they have had opportunity to effect a junction with the Amu Daria. It is not until near Pitniak that any important diversion of the waters of the Oxus for cultivation is made. At that point the great division of the stream for the requirements of the Khivan oasis occurs, a general discharge of 125,000 cubic feet per second being deflected in order to supply a system of canals by which over 4000 square miles of fertile alluvial land are kept in tillage.

The bed of the Oxus in its lower reaches is muddy. Taking the course of the river as a whole measurements, which have been made at a series of points, demonstrate that there are no less than 16,000,000 tons of sedimentary matter constantly passing down to form the vast delta that distinguishes its mouth as well as to fertilise its banks or any areas which, from time to time, may be submerged. It is unnecessary to mention all the various channels through which, below the fortress of Nukus, the stream flows. The principal are the Ulkan Daria, the Taldik and the Yani Su. These present the usual features of a delta ; but the triangular space contained within the Yani Su and the

Taldik, its extreme eastern and western channels, is not a true delta, since it consists of an original formation through which the river has cut its way to the Aral and upon which other matter has been deposited. Actual deltas, however,



VILLAGE ON THE LOWER OXUS

have been developed about the mouths of the Taldik and Yani Su, their existence constituting a bar to vessels drawing over 4 feet of water.

The tendency of the Oxus, like that of the great Siberian rivers, is to press continually on its right or east bank. The consequence of this deflection, which is due to the rotation of the earth round its axis from west to east, is that the stream has turned from the Kungrad channel eastwards to the Taldik channel and thence to the Yani Su which, at present, is receiving the main discharge. In former times a far greater deviation took place. No less than twice during its history has the Oxus oscillated between the Caspian and the Aral seas. In the time of Strabo it was a sort of eastern continuation of the Kura route from Georgia

across the Caspian and the Kara Kum to Charjui. Its course across the desert is indicated by the Igdy and other wells dotted over the plains in a line with its former bed, which reached the Caspian in the depression between the Great and Little Balkan hills. Later on Edrisi found the Oxus flowing into the Aral. But in the fourteenth century it was flowing into the Caspian—this time along the Uzboi channel. The bed ran from near Nukus westwards to the Sara Kamish steppe and thence southwards to the Igdy wells, along the original course between the Balkans to the Caspian, close to Mikhailovsk.

The navigation of the Oxus has been the subject of constant inquiry from the time when, in 1875, the steamer *Petrovski*, drawing $3\frac{1}{2}$ feet of water, picked a passage for itself as far as Nukus. Three years later another steamer, the *Samarkand*, with a draught of 3 feet and of 24 horsepower, made the journey from Petro Alexandrovsk to Kelif. Between 1878 and 1880 further attempts were made to demonstrate the navigability of this waterway; but between 1880 and 1887 there was so much conflict of opinion that matters scarcely advanced beyond the experimental stage. At that date the increasing importance of the interests of Russia along the Afghan border made evident the advisability of improving all possible lines of communication to it. With this end in view, the Russian Government equipped a small fleet of steamers for river service and the navigation of the Oxus to-day is controlled by these vessels, which are described as the Government Amu Daria Flotilla. Between Patta Hissar on the middle reaches and Khiva, Petro Alexandrovsk and Kungrad on the lower reaches, these craft conduct a regular shipping business, Farab and Charjui acting as the central depôt to the service—Farab holding the headquarters of the company and Chajui being the principal anchorage.

From Patta Hissar to Charjui the journey occupies between seven and ten days, dependent upon the size of the steamer and the character of the voyage. Sand banks are a perpetual menace to rapid navigation, and the length of time varies according to the immunity of the undertaking from mishap. From Charjui to Kungrad the same amount of time is usually required.

The ports of call between Patta Hissar and Charjui are :

Patta Hissar	Kundalem
Shur Ob	Jishak
Kuyu-Shur Ob	Karki
Chushka Gisar	Bashir
Kuyu Kara-Mazar	Polvart
Kelif	Burdalik
Charshangu	Narazim
Ak Kum	Sakar Bazar
Makri	Charjui

Below Charjui the stations to Petro Alexandrovsk are :

Kavakli	Uch Uchak
Gugerdjeili	Itchkeyar
Ak Rabat	Meshekli
Sartarask	Pitniak

and Petro Alexandrovsk.

The boats are of old construction and only number five in all. They are supplemented by a fleet of barges of large and small capacity, the larger class carrying 12,000 poods, the smaller, of which there are two divisions, carrying 5000 poods and 3000 poods each.

The two principal steamers, respectively the *Tsar* and *Tsaritsa*, were the first to be launched and date back to 1887. The three others, which are slower, smaller and more akin to river tugs than passenger craft, are the *Samarkand*, *Bokhara* and *Kabul*. Their costs was borne by the Government and ran into several thousand pounds apiece. All the vessels are paddle-boats and flat-bottomed. The two larger ships are supposed to be able to make sixteen knots per hour ; their length is 150 feet, with 23 feet beam and engines of 500 horse-power.

Their draught, when laden, is rather less than 3 feet ; while they carry a crew of thirty hands and possess accommodation for 300 men and 20 officers. They take any class of cargo and passengers and are also utilised for towing the freight barges of the military authorities up-stream to the frontier stations at Karki, Kelif, Patta Hissar and Termes. Navigation between Patta Hissar and Charjui continues throughout the year unless prevented by the freezing of the river ; between Charjui and Kungrad the continuity of the down river service is dependent upon the sand banks, their sudden appearance and constant change of position quite upsetting the ordinary schedule.

From April 1 to October 1, the steamers leave Charjui twice a week—on Wednesdays for Karki and on Sundays

for Patta Hissar. During the remainder of the year they leave once a week, on Sundays, for Patta Hissar. On the journey from Patta Hissar to Karki, during the summer, steamers leave on Saturdays and in the winter months on Thursdays; for the journey from Karki to Patta Hissar steamers leave in the summer months on Wednesdays and in the winter months on Fridays. From Patta Hissar to Charjui steamers run every Friday and Sunday in summer and during the winter on Sundays.

In general navigation on the lower Oxus is difficult. The swiftness of the current above Charjui, which averages 5 miles and, in some places, even 6 miles an hour, impedes the up-stream progress of any but the more powerful boats. Unfortunately, the narrowness of the channel above Charjui and its extreme tortuousness makes the employment of steamers of a class that would be really serviceable against so strong a current quite unsuitable. Again, the constant shifting of the proper channel in the lower reaches, the liability of the river to sudden rises between April and August and the irregular falls between August and October—sometimes making within a few hours a difference of 8 feet in the level of the stream—create a further obstacle against the successful organisation of a purely commercial service. The difficulty is much greater down-stream where obstructions to navigation, owing to the diminution of the current as the surface of the stream increases, are more frequent.

In this respect it is interesting to study the fall of the river from Kelif to Charjui, and from that point to the mouth. According to the Russian reckoning between these two points, a distance of 200 miles, there is a fall of 220 feet, the altitude of the several stations along the bank being :

Kelif, 730 feet.	Burdalik, 580 feet.
Karki, 640 feet.	Narazim, 545 feet.
Charjui, 510 feet.	

From Charjui to the mouth of the river there is a fall of only 167 feet in a distance of 500 miles. If the fall in the river between Patta Hissar and Charjui be compared with the width of the stream, the difficulty presented to navigation through the current will be understood. There is a breadth at Kelif of 540 yards which increases to 650 yards at Charjui during the normal flow of the river; but for a considerable distance from the bank the stream is shallow,



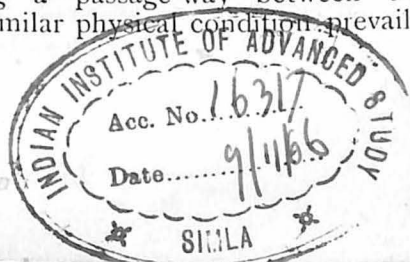
PETRO ALEXANDROVSK

possessing a bare depth of 3 feet with an average of 10 feet in the centre. At the time of flood these dimensions become greatly increased and the Oxus from Farab to its mouth is an imposing spectacle. In places it is fully a mile in width



NATIVE CHURCH AT KHIVA

and a very general measurement is 1000 mètres. The flood channel is usually three-fourths wider than the ordinary stream; in the extremely broad places the average strength of the current per hour is 4 miles, falling as low as $2\frac{1}{2}$ miles per hour when the flood has subsided. The water passing down is in the desert stretches of a yellow hue. In those portions where rocks take the place of sand it shows a grey tone, imparted by the masses of granite, sand and mica which are held in suspension. In spite of its curious colouring the water is used extensively for drinking purposes without apparent ill-effect. In taste it is slightly saline, but it does not possess a sufficient quantity of salt to prevent freezing. The temperature of the river in mid-summer is 73° . In winter the stream above Kunduz freezes regularly, the frozen surface becoming a passage-way between the banks. Below Khiva a similar physical condition prevails,



caravans crossing the ice without risk. At Charjui the river freezes over from bank to bank, but it is only at rare seasons that the ice is of sufficient solidarity to support general traffic. At Karki the surface of the river coats over, but the ice itself is unsubstantial; at Kelif, where numerous floes appear in the stream, the force of the current is sufficient to prevent any general formation of ice.

The banks of the river about Kelif, for a distance of 50 miles above the ferry and particularly on the right bank, reveal considerable agricultural activity. Further along the left bank of the lower Oxus there is a zone, 5 miles in width, in which cultivation has been extensively practised. Wheat and barley, the spreading willow and the luscious mulberry-tree grow in profusion, imparting to the scene an appearance of prosperity in odd contrast with the dreary expanses distinguishing so much of the country through which the river courses. Irrigation is widely employed; water is drawn from the Oxus in long canals, the heads of which are constantly being destroyed by flood and renewed again as rapidly. The scene in these attenuated strips of cultivation is bright and there is a happy note of industry and peace. Small villages, the houses neatly built of stone, stand scattered about the landscape; single, substantial and very comfortable-looking homesteads are numerous. Where cultivation ceases, too, there is usually a narrow tract of jungle between the reeds of the river-bed and the edge of the desert, where admirable cover exists for wild animals and birds.

The passage of the stream by the steamers of the Oxus flotilla is made only during daylight. From Charjui, where there are excellent facilities, the hour of departure is eight o'clock. If overtaken by darkness between the stages the vessels tie up to the bank, resuming the journey at dawn. In calm weather an average daily passage is 50 miles, although down stream a better run is generally recorded. In the event of arriving in advance of the scheduled time, the hour of departure is left to the discretion of the captain. Regular halts are arranged at Patta Hissar, where the steamers stay four hours, and at Karki where, on the voyage to Patta Hissar, four hours are also spent. This interval is reduced to two hours on the return journey and also at Charjui; but elsewhere it is a matter of uncertainty, the duration of the stop merely being governed by the time occupied in loading and unloading the barges. Steamers, as

a rule, start punctually, particularly at Charjui, the vessels leaving their moorings according to Askhabad time. This is the standard on the Central Asian railway.

The custom of granting passages at reduced rates to all and sundry associated with the Government, observed throughout the railway systems of Russia, is adopted on the steamers of the Oxus flotilla. There are three classes of tariffs and two standards of accommodation.

1. Officers and doctors travelling on duty ;

2. Children between the ages of five and ten years ;

3. Non-commissioned officers, soldiers, emigrants with families and prisoners.



TEMPLE ON BANK OF THE OXUS

These are all carried at a reduction of 50 per cent. Soldiers are compelled to show a warrant attested by the authority for the transport of troops by water ; emigrants a permit signed by the local civil authority and the guard in charge of prisoners an order from the local police bureau, before being supplied with tickets. All passengers are entitled to one pood of baggage, free of charge ; but for the unloading and reloading of baggage or of cargo, passengers must pay at the rate of one and a half kopecks per pood ; for the hire of boats for the transportation of such baggage to the steamer or from the steamer to the shore at the rate of one kopeck per pood. Animals of a domestic description, such as sheep, camels, horses, cattle and dogs, bales of merchandise and timber are carried by special arrangement and under a special tariff. This can be supplied on demand at the chief bureau of the flotilla at Charjui and Farab, at the

principal goods office of the company at Karki, by the captains of steamers and the mates of barges. Steamers are permitted to tow private vessels of any description at the rate of half a kopeck per ton of their displacement in addition to whatever other charges may be contracted.

The accommodation is divided between the first and third classes, the cabins being at the disposal of the first-class passengers. Restrictions are not placed on the movements of native passengers who, if they dared to pay for a cabin, would be permitted to berth in the first saloon. Meals are supplied on board by arrangement with the purser; but, while there is no material difficulty attaching to the journey up and down the river, permission to travel by these steamers is very rarely accorded to foreigners.

For the better comprehension of the terms which have been mentioned the following table is given.

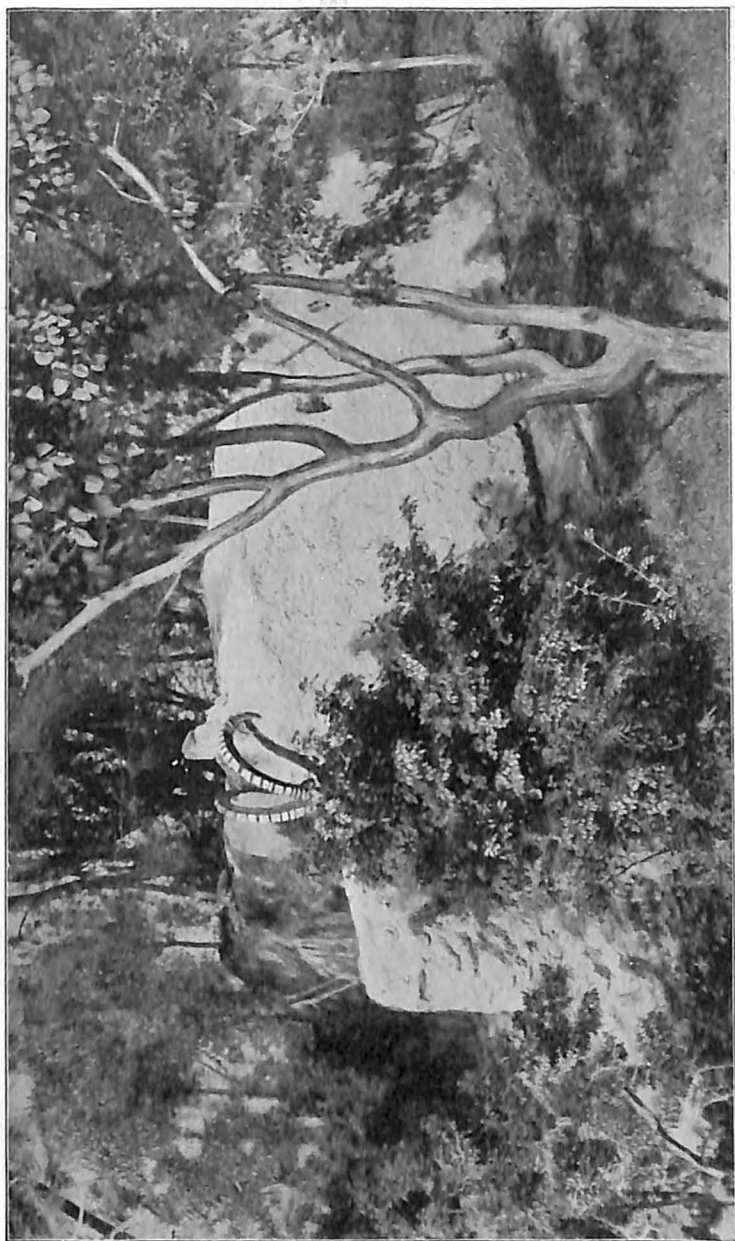
1 ton	=	62 poods
1 pood	=	36 lbs.
1 rouble	=	2 shillings
100 kopecks	=	1 rouble

In addition to the steamers of the flotilla there are 380 native-owned craft engaged in trading along the lower and middle reaches of the stream. These vessels conduct a very flourishing trade in various native commodities—fruit, vegetables, wood, live stock, cotton goods and such minor manufactures as may be required among the native villages. The boats used in this traffic are of rough native workmanship, capacious and damp, but in their way serviceable enough.

Their dimensions are :

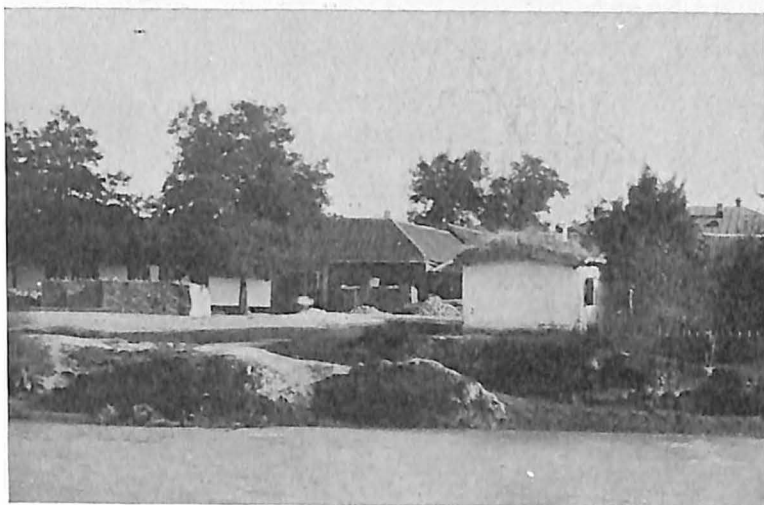
<i>Length.</i>	<i>Beam.</i>	<i>Depth.</i>
50 feet ..	18 feet ..	4 feet

Each boat can accommodate 150 passengers, twenty mounted men and stow twenty tons of cargo—an estimate which may be taken as testing their capacity to its utmost limit. They are flat-bottomed, with a draught of 18 inches and 2½ feet of gunwale above the water; are constructed of square logs of willow or mulberry, 6 feet in length, peeled, clipped into shape and clamped together with iron pins.



THE SHRINE OF HAZRAT ALI

These craft trade principally on the lower reaches of the river although there is nothing to prevent them, save the difficulty of the task, from venturing further up-stream. In this respect a few of the better class do manage to reach Patta



VILLAGE ON THE MIDDLE OXUS

Hissar, whence large floats of timber are despatched to Charjui. The existence of this trade at Patta Hissar is characteristic of the middle reaches of the stream, where white poplar, willows and mulberry trees grow in profusion. The presence of the timber encourages native shipping to tie up to the trees, the several little colonies of vessels thus laid up imparting to the appearance of the river an amount of life and animation not always borne out by actual traffic.

The contrivances used by ferries on the Oxus are in a measure identical with those which may be noticed on the Murghab and along the Helmund. Neither rafts nor inflated skins are in any favour on the lower reaches, although skins are employed by natives in the region of the Upper Oxus, this method constituting the sole means by which a passage of the river is effected. On the middle and lower reaches there are rough boats, similar in design to the trading craft but somewhat smaller in dimension. Rafts are requisitioned only for the transportation of firewood.

Above Charjui, as far as a little east of the mouth of the Kunduz river, a distance of nearly 300 miles, there are fifteen ferries, four of which have been abandoned. Below Charjui, from that point as far as Petro Alexandrovsk, there are nine. The following are the stations between Kunduz and Charjui :

	<i>Fords.</i>	
Sharwani		Takhb-i-Kuva
	<i>Ferries.</i>	
Karawal Tepe		Patta Hissar
Kakul Gusar		Chushka Gisar
Kanda Gusar		Kelif
Khisht Tepe		Khwaja Sala
Mouth of Surkhab river		Karki
Mouth of Kafirnahan river		Burdalik
Kara Kaldar		Narazim
	Charjui.	

Between Charjui and Petro Alexandrovsk they are :

Charjui	Guzhari Tozakar
Ustik	Khandek-li
Ili-jik	Sumpna Bi Baba
Kavakli	Kheradj

Petro Alexandrovsk.

These ferries are provided with two boats, stationed one on either side of the river. The passage is accomplished by punting or through the services of small horses trained to tow the boat while swimming and attached by means of a snrcingle to an outrigger which projects beyond the gunwale. Native shipping relies principally on man-haulage up stream, supplemented by constant poling; down stream the boats drift with the current.

It is characteristic of a large portion of the river that the stream flows within double banks. The inner one is the line of the water at ordinary seasons, while the outer one is the limit of the river in flood. The distance between the banks is as much as two miles in many places and the zone thus formed is laid out in fields and gardens. Moreover, it rarely happens that this interior space is altogether inundated and a portion, therefore, is cultivated permanently. Elsewhere the area available for development is measured by the flood season. Where these intra-spaces occur considerable length is added to the ferry passage. Sometimes the river forms a series of separate channels until its waters

have united beyond the interruption. Such a point is met with at Khwaja Sala, where in certain seasons the stream is divided into three branches, the width of each channel being 295 yards, 113 yards and 415 yards. The average depth there is 9 feet. At Kelif 33 miles up stream, on the other hand, these double banks do not appear, and the river, flowing in a single and very narrow bed, contracts sufficiently to enable a bridge to be thrown across the stream, a project which is to be pushed at once to completion. The Kelif ferry is of interest as a link in the affairs of Central Asia. It was the point where Alexander crossed the Oxus in B.C. 330; while, to-day, it is one of the most important Customs stations on the Russo-Afghan border. At every ferry station small posts of observation, formed of Bokharan levies, have been established. During the prevalence of plague in India and cholera in Afghanistan and Persia orders were issued which closed all ferries against the passage of caravans and travellers. Only at Charjui and Karki was traffic permitted. Lately there has been some relaxation in the execution of these regulations; but a number of the minor ferries are still barred against any description of communication from Afghanistan, India and Persia.

The river does not continue for many miles in the turbulent spirit that distinguishes its appearance at Kelif; at Karki, a few miles to the west, on account of a second channel there is greater width. At Charjui the ferry is nearly 700 yards across at low water, with several branches formed by sand banks. At the time of flood this distance becomes double with a depth of 30 feet in mid-stream; the further dimensions of the river down stream corresponding in proportion with the level of the banks.

