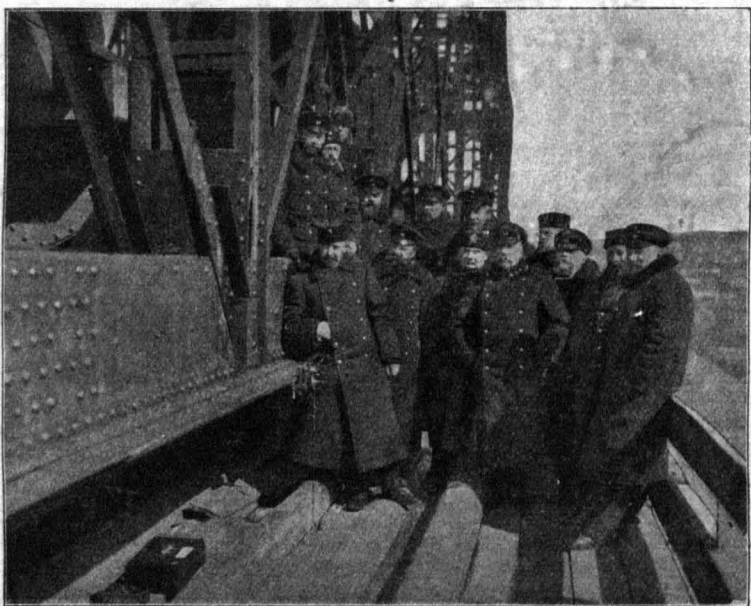


The fagoted iron for the upper structure was supplied by the Vótkin works: everything connected with the construction of the bridge was entrusted to the contractor Engineer Berézin. The river Ob (Tatar: Omár, Surgút-Ostiák: As, and Samoyéd: Kúia (soul) is the largest river of Western Siberia falling into the Ob Gulf of the Arctic Ocean; it is formed by the junction of two large streams the Biya and Katún. The river Biya (Biy means „prince“ in Tatar) flows out of the picturesque Altái lake Telétsk, the Katún (woman of high rank, „queen“ in Kalmyk) is fed by the glaciers of the Altái Mont-blanc, the Belúkha. Its chief affluents are the Tom, watering the fertile Kuznétsk district, navigable to the town of Kuznétsk and serving as a connecting link to the navigable ways, leading from the west to Eastern Siberia and back; the Chulym, by which steamers with some difficulty reach the town of Achinsk (1,000 v.); the Ket, which has a great importance, connecting the extensive Ob and Yeniséi basins through the Ob-Yeniséi canal; the Vakh, navigable for a distance of 500 versts; the Irtysh with its extensive system of navigable ways reaching the confines of Western China and the Urál. The Ob, from the junction of the Biya with the Katún, 15 versts below the town of Blísk, has a total length of 3,200 versts. The immense river is still



Bridge bend tested by the Frenkel apparatus.

more extensive, if the Irtysh be considered as the main branch flowing for a distance of 4,000 versts. The Ob from its junction with the Irtysh (over 1,000 versts) being added to that distance, the total course of the Ob-Irtysh exceeds 5,000 versts. The breadth of the river, within the confines of the Tomsk government, is from 350 to 850 sazhen; at places blocked by islands it amounts to 3 versts; in the Tobólsk government, the river has an average breadth of  $1\frac{1}{2}$  to 3 versts, but where here and there its branches are divi-

ded by islands, this reaches from 30 to 40 versts. Falling into the Ob Gulf, the river has a breadth varying from 5 to 20 versts. The depth of the Ob is from 2 to 20 sazhen. Its bottom is at first rocky, and further on consists of sand and sandy clay. Upon joining its right tributary, the Charysh, watering the Biisk district, the river flows along a narrow valley between steep banks, covered on the right with thick wood. Beyond Barnaúl, the river pursues its tortuous course along a broad valley and making a wide sweep skirts the Salair Chain; its right bank is elevated. Further on the Ob widens, being bordered by low, swampy and scantily wooded banks to the mouth of the Irtysh. Upon its junction with the latter, the river separates into numerous branches, which embrace an immense area. On the average, the Ob freezes at Barnaúl on the 30 October, it opens on the 15 April; thus the river remains free of ice for 146 days. In spring, at the end of April or the beginning of May, the Ob leaves its banks and overflows vast expanses of land. The Ob abounds in many kinds of fish: the muksun (*Salmo muksun*), the nelma (*Salmo nelma*), the salmo thymallus (*Salmo fluviatilis*), the sturgeon (*Acipenser sturio*), the sterlet (*Acipenser rathenus*) and others.

Throughout the entire course of the river, and especially on its lower reaches, fishing is pursued on a large scale by the inhabitants of the river banks. The railway has caused an increase of fish exports to Russia, and will contribute to a further development and improvement of this industry. The preparation of fish conserves in the town of Tobolsk, the establishment in the village of Samárovo of the first school for the preparation of fish products, together with the canning works, established by the firm of Plotnikov on the lower Ob, where cheap conserves are mainly manufactured, shew the beginning of more perfect systems of Siberian fish industry,

Representing the limit of Europe and Asia, the navigable Ob, with its wide stretching tributaries, comprising 15,000 versts, always served as the cheapest means of communication uniting the two vast continents. Previous to the construction of the Perm-Tiumén railway, goods were mainly transported by the Káma, whence they were conveyed by carts over the Urál and further floated along the rivers of the Ob basin. From 1870 to 1884, the total quantity of goods transported by the West-Siberian rivers did not exceed 2,500,000 puds. Since 1885, when the line was opened to traffic, uniting two extensive water basins, local trade was considerably enlivened, and the conveyance of goods on the water ways of the Ob basin much increased by a greater export of Siberian produce to the western markets of the Empire. In 1888, the number of steamers plying in the Ob basin was 56 with 3,486 H. P. while the total of goods transported amounted to 7,799,540 puds; in 1890 their number rose to 63, with 4,332 H. P., and goods transported to 8,371,800 puds. In 1894, at the time of the opening of traffic on the Omsk-Cheliábinsk line of the Great Siberian Railway, the fleet of the Ob basin comprised 103 steamers, with 7,235 H. P. which, during this year, transported 15,433,900 puds of various goods. The conveyance of private goods by the Perm-Tiumén railway, within this period, increased in the same proportion as that on the Ob basin. The quantity of private goods transported in 1888 was 42,816,771 puds; in 1894, it amounted to 59,809,479 puds.

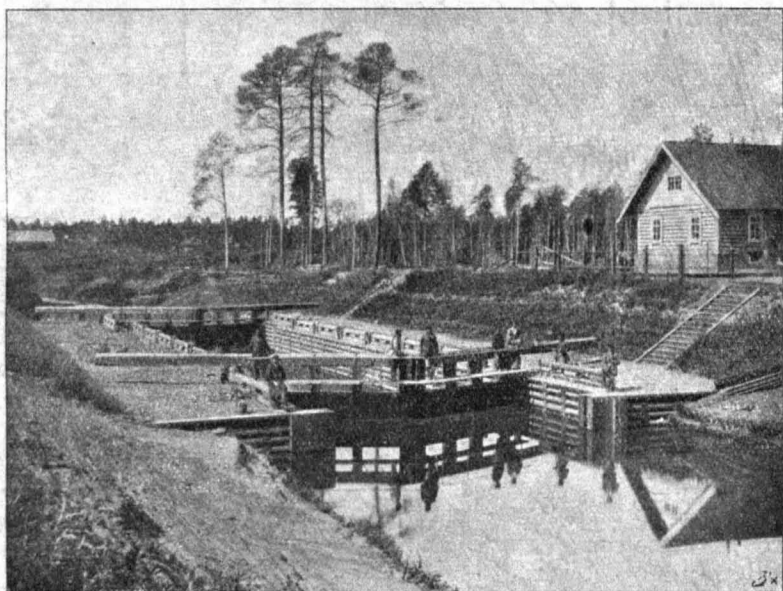
The transport of goods by the chief water ways of the Ob basin, the Irtysh and the Ob proper, during the period preceding the construction of the Great Siberian line (which crosses the middle course of these water ways) maintained almost invariably the same proportion: 25 per cent were

conveyed from the estuary of the Toból towards the upper Irtysh, and 75 per cent towards the Ob.

The traffic on the Siberian main line, having changed the direction of transport, at the same time so much enlarged the productive capacity of Siberia, that the progress of steam navigation on the Ob basin, and the increase of the goods traffic over the Perm-Tiumén line was not stopped by it. The Great Siberian Railway, in 1897, conveyed 24,000,000 puds of various goods from the region where it crosses the navigable basins of the Ob and Irtysh and from Western Siberia; whereas the fleet of the Ob basin transported above 16,000,000 puds of various goods. At the same time, as much as 77,046,083 puds of private goods were carried by the Perm-Tiumén line.

The navigation on the Ob commences at the town of Eñisk, viz. from the junction of the rivers Biya and Katún, whence the goods are carried for a distance of 2,000 to 3,000 versts.

Notwithstanding the competition existing among the shipowners, the



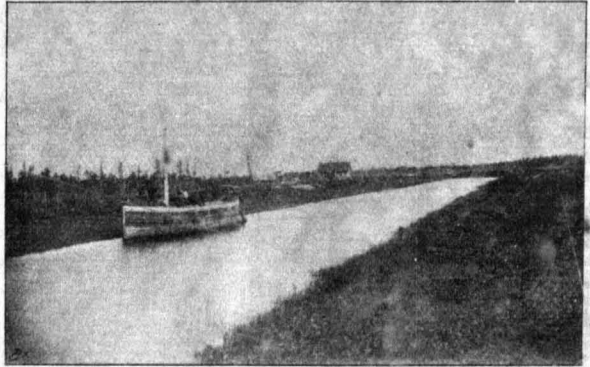
The Ob-Yenisei Canal, sluice at the 15 verst.

rates of transport are much higher than on the Vólga; this partly depends upon the insufficient security of navigation, and partly upon the risk run by the steamers during their passage, from the want of auxiliary measures. The absence of any precise notions regarding the time of freezing and opening of rivers, of the telegraph or any means to obtain information, the scarcity of the population along the chief rivers, especially on the Ob, and the low water level of the Toból and Turá, cause many accidents, loss of goods and much injury to shipowners.

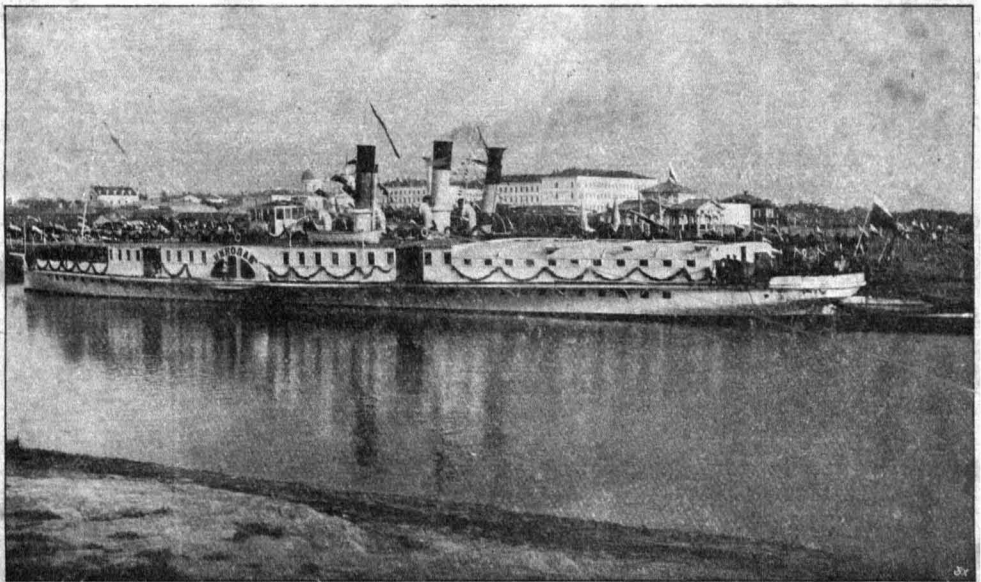
The measures which have been taken by the Government with a view to improve the water system of Western Siberia, feeding the Great Siberian main line and the Perm-Kotlás railway, will undoubtedly contribute to the

further development of navigation and to the lowering of the rates of transport. The increase of navigation, provoked by the lively trade of Siberia with the European markets, clearly point to the future commercial importance of the Ob-Yeniséi Canal.

The connexion of the rivers Ket (tributary to the Ob) and Kass (tributary to the Yeniséi) by a canal, was effected by the engineers, Baron Aminov and Zhbikóvsky. It presents now an immense water way 5,000 versts in length, uniting Tiúmén and Irkútsk. The canal and the nearest rivers are now provided with nine sluices, which are necessary on account of the difference of level between the Ob and Yeniséi basins; to the present day steamers carrying 5,000 puds can pass through the canal only



The Ob-Yeniséi Canal, sluice at the 103 verst.



The steamer „Nicholas“ on which His Imperial Mayesty the present Emperor made his voyage in the Ob basin from the town of Tomsk to Omsk in 1891.

during somewhat more than a month, from the time of the opening of navigation to the beginning of June; after this season, the water falls rapidly and only barges with a cargo of 500 puds can use it. In order to adapt this waterway for the steam transport of goods, two sluices ought to be constructed on the river Kass, two of them on the side of the Ob must be widened, and a bar obstructing the Great Kass within a few versts of its mouth cleared.



We fully share the opinion of Jules Legras, professor of the Dijon university, who, having visited the canal, saw the significance of this enterprise which, together with the Siberian main line, is most important for the progress of the productive capacity of northern Siberia.

The development of navigation on the Ob greatly depends upon the establishment of a regular searoute through the Kára Sea which for a long period remains frost bound. The exploration of Nakhódka Bay in the Ob Gulf made by Captain Sergéev in 1897 with a view to find an anchorage for river steamers, and the attempts of Admiral Makárov to secure a free passage through the Kára Sea with the help of icebreakers, open the prospect of a regular and advantageous trade communication by the estuary of the Ob.

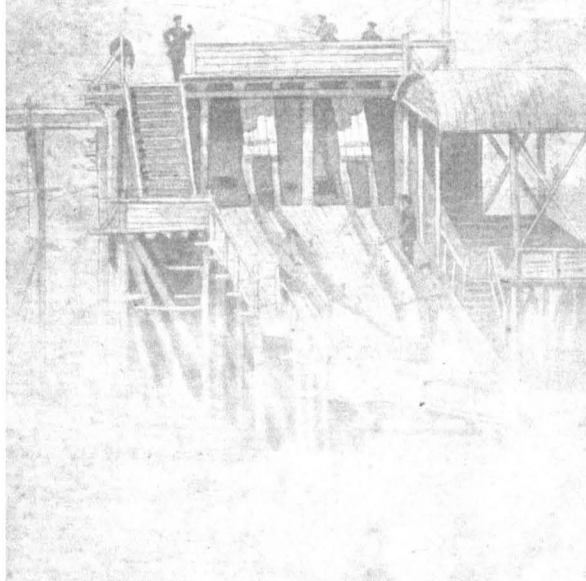
The passage between Tomsk and Tiúmén is effected mainly by steamers of the Trade and Industry Company plying on the rivers of Western Siberia (formerly Ignátov and Kurbátov), of Trapéznikov and Co., of the Bogoslóv Mining district, of Kornílov, Plótnikov, Morózov and the Yermák Company. Steamers belonging to the last reach Krivoshchékovo, Barnaúl and Bfisk. Rapid steamers with a light barge of the Trade and Industry Company leave Tomsk for Tiúmén once a week, all the others ply at irregular intervals. Between Tomsk and Barnaúl regular trips are made by the light steamers belonging to Mélnikov and Eldstein.





Dining saloon (view of the library).

# Tomsk government and Eastern Siberia within the range of the Great Siberian Railway.



Government of Tomsk.—Geographical position and extent.—Configuration of surface.—Altai and Alatau.—Geological structure and mineral wealth (gold, silver, lead and copper, iron ores, precious stones, coal beds, rock-salt, mineral waters).—Hydrography.—Climate.—Flora and fauna.—Altai natives.—Present population.—Ethnographical composition.—Exile.—Colonisation. Industries and occupations of inhabitants (agriculture, cattle-breeding, bee-keeping, fishing, trapping and hunting, cedar-nut gathering, domestic industries).—Factories and works. Trade.—Projected railway lines.—Eastern Siberia.—Review of the Yeniseisk and Irkutsk governments.—Surface configuration and mineral wealth (auriferous gravel, vein gold, silver and copper ores, iron ores and mining industry, green copperas, coal beds, graphite, naphtha, salt deposits, nephrite, precious stones, fire clay, mineral springs).—Hydrography.—Climate.—Vegetation.—Fauna.—Population (natives, exiles, emigration movement).—Land tenure.—Industries and occupations of inhabitants.—Factories and works.—Yakutsk borderland and its gold mining wealth.—Bibliography.



# T

HE middle link of the Great Siberian Railway, traversing the section from the river Ob to the Baikál, runs through the centre of the Tomsk government, and the south-eastern and most populous parts of the Yeniseisk and Irkutsk

governments in Eastern Siberia, spreading its mighty influence all over the vast area of their territory. The Tomsk government, embracing the south-eastern portion of Eastern Siberia, has a superficial area of 15,797.50 sq. miles or 768,663.8 sq. versts, lying between 49° and 61° N. lat. and 45° and 61° E. long. Extending in the direction of the meridian, it is 1,400 versts from south to north, and about 900 versts from east to west, exceeding by 2½ times the dimensions of Great Britain's European dominions, and being 1½ times as large as France.

On the east and north-east it is bordered by the Tobolsk government and the Akmolinsk and Semipalatinsk territories, on the north-east and east by the Yeniseisk government, touching on the south upon Chinese territory,

For purposes of internal administration, this vast government is divided into 7 unequal districts:

Tomsk, inclusive of the Narym region,	246,325 sq. versts	
Káinsk.....	66,061	"
Marínsk.....	65,807	"
Barnaúl.....	114,512	"
Bíisk and Zmeinogórsk.....	169,943	"
Kuznétsk.....	87,171	"

The northern portion of the government, the districts of Káinsk, Marínsk the Narym country and the greater part of the Tomsk district, a total of 402,543 sq. versts, belong to the crown lands and are under the management of the Ministry of Agriculture and State Domains. Its southern part, the Barnaúl, Bíisk, Zmeinogórsk, Kuznétsk and part of the Tomsk districts, form the property of His Imperial Majesty's Cabinet under the name of the Altái Mining District.

The surface of the Tomsk government is very varied: its southern and eastern parts are occupied by mountains of the Altái system and the Kuznétsk Alataú, the western, north-western and northern portion by lowlands representing part of the extensive West Siberian plain. The whole area has a great fall to the north and north-west. The elevation of the Katún mountains, which on the south reaches 11,000 feet above sea-level, does not exceed 200—300 feet on the north. The northern direction of nearly all the rivers, belonging exclusively to the basin of the Arctic Ocean, is due to this inclination.

The Altái (Chinese „Cin-Shan“ or gold mountains) representing an immense highland, coming up to the western boundaries of the Sayán mountain ridge, covers the southern portions of the Bíisk and Zmeinogórsk districts. Its superficial area is 630 versts long by 520 versts wide. The average height of these mountains above sea-level is 5,000 feet, and that of its highest summit, the Belúkha, 11,500 feet.

Several valleys traversing the Altái mountains divide the whole system into many parallel chains and ridges, known under the name of „belkí“ (alps) „stolby“ (columns) etc., running from north to south in the following order:

1) The Kolyván mountains, containing rich silver-lead and copper ores, with picturesque dome-shaped summits, are of no great elevation, rising barely to 4,500 feet at their highest point, the Seniúkha. They are situated between the headwaters of the Aléi and the middle reaches of the Charysh.

2) The Tigeréts Belkí, whose summits have a height of 7,000 to 8,000 feet above sea-level, stand between the rivers Ubá and Charysh, and contain a great number of caves formed by weathering in the dolomite masses.

3) The Korgón mountains, lying between the rivers Koksúk and Charysh, rise to an altitude of about 7,000 feet above sea-level, and abound in beautiful jaspers, porphyries, agates, marbles and breccia.

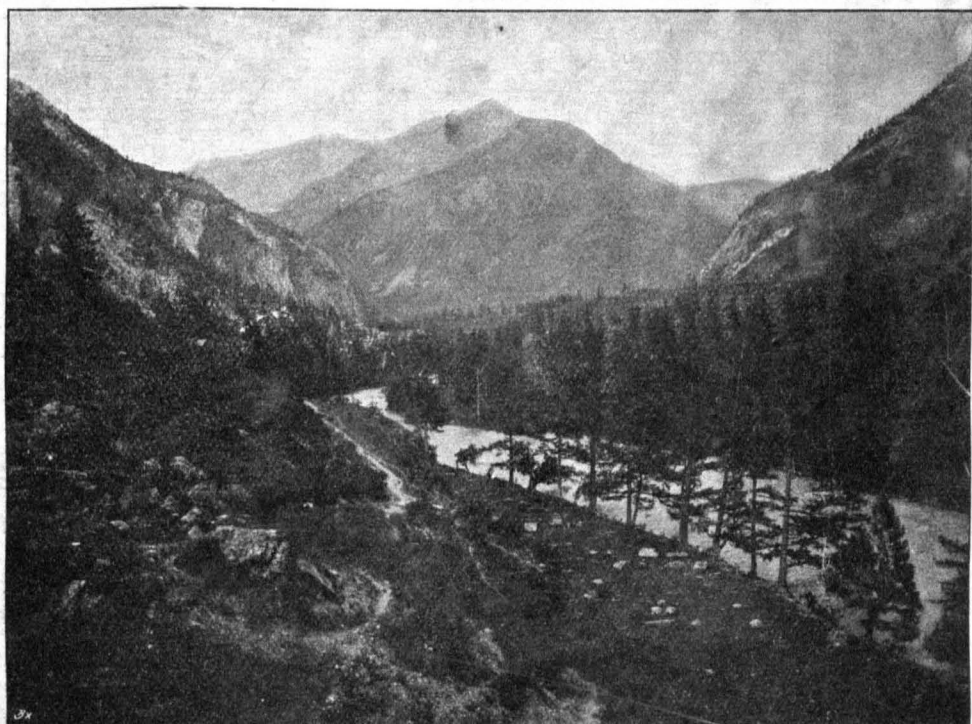
4) The Terektín mountains are situated between the rivers Katún and Ursúl.

5) The Bashehalák, Aniúi and Ursúl Mountains consist of separate cliffs with an elevation of from 4,000 to 5,000 feet above sea-level; they are uninhabited and visited only by hunters.



6) The Ubá mountains which, like the Kolyván, abound in silver lead ores, are situated between the rivers Ubá and Ulbá, and attain an altitude of 5,400 feet above sea-level at their highest points.

7) The Ulbá mountains between the Great and Little Ulbá, rise to an elevation of 7,000 feet.



Altái. The Little Ak-bóm on the Chúya road (phot. by Százónov).

8) The Turgusún mountains lie between the rivers Koksún and Ulbá.

10) The Kholsún mountains, situated between the upper stream of the Katún river and the Bukhtarmá, have peaks covered with perpetual snow of about 8,200 feet above sea-level.

11) The Katún Stolby represent the loftiest group of the Altái system, bound by the river Katún on the north-west and south, and by the rivers Argúta and Koksún on the east. Their highest point is the Belúkha with an elevation of 11,000 feet above sea-level; its glaciers, lying in deep ravines, feed the rivers Katún and Berél. The largest of the Katún glaciers is 11 versts long as measured by Professor Sapózchnikov. It accordingly ranks with the first-class glaciers of Switzerland.

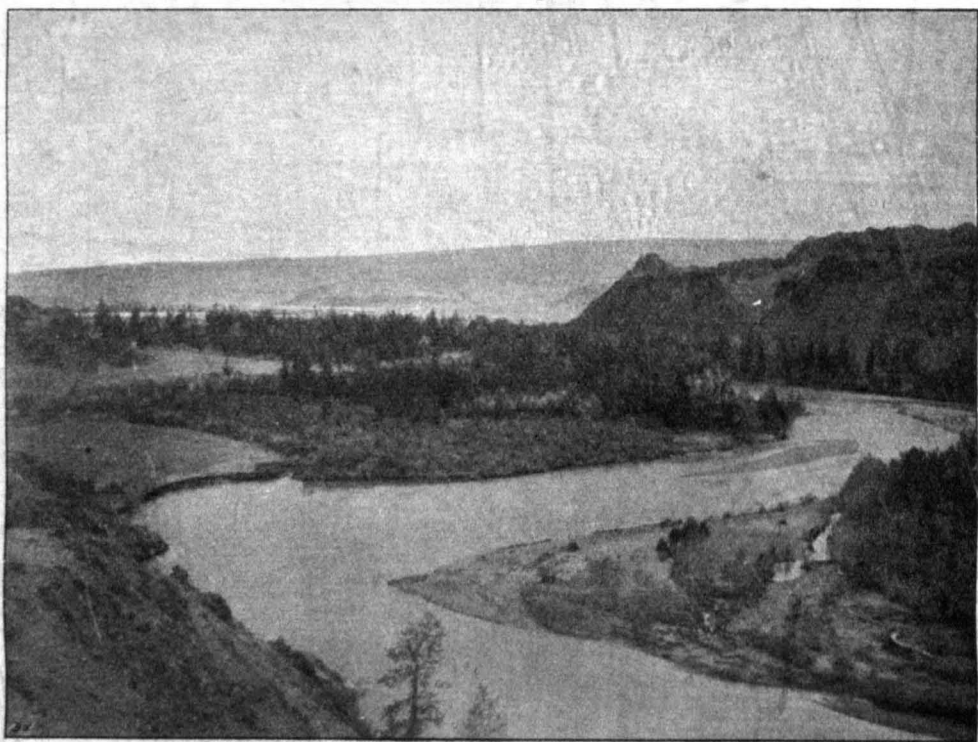
12) The Saldzhár, Aigulík, Kurá and Chúya Belkí have summits called respectively Bózhia and Lysaya Gorá, which rise to a height of 10,000 feet above sea-level.

13) The Telétsk mountains, running parallel to the Kuznétsk Alatáu.

The Alatáu mountain ridge (Kirgiz „motley mountains“) traverses the Kuznétsk district, its branches spreading over the southern part of the Bar-

naul and Tomsk districts. These mountains extend for 600 versts in length and 100–150 versts in breadth and like the Altái consist of separate ridges with snow-clad summits. These snow peaks bear the local name of „Taskyl“ or alps. The most southern extremities of the Altái, rising to an altitude of 15,000 feet above sea level, reach the Sayán mountains and stretch to the N. N. W. under the name of the Abakán; and further under that of Salair mountains. Through nearly their entire course, they form the watershed of the vast Ob and Yeniséi river basins. Chains of inferior size, branching off from the main range, constitute the watersheds of the numerous large and small tributaries. The mountain ridges, falling gradually towards the north, disappear altogether only in the environs of Tomsk.

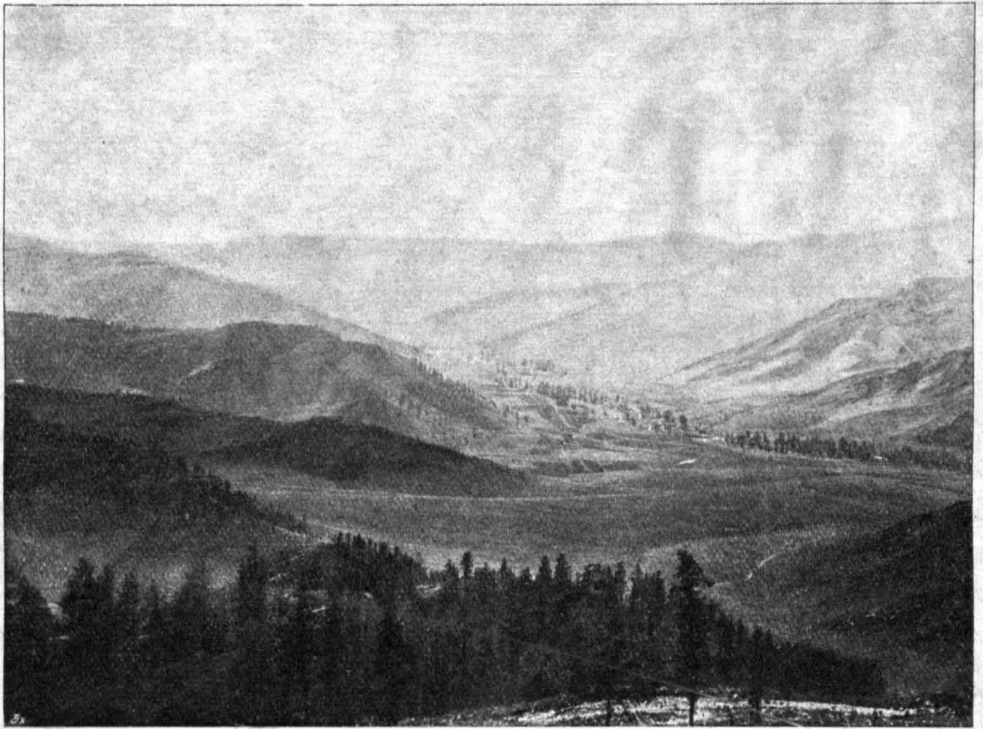
The Great Siberian main line, running through the Tomsk government, from the river Ob to the frontier of the Yeniséisk government, winds for a distance of 544 versts among the foothills of the spurs of the Alatáu, covered with vegetation and in some spots with impenetrable taigá or forest. All the Tomsk mountain region is bordered on the west, north-west and north by vast lowlands: the Kulundinsk Steppe, the Birch Barabá and the Vasiugánsk tundras forming part of the West Siberian plain. The Geological struc-



Altái, valley of the river Chúya (phot. by Szónov).

ture of this government is characterised by the most marked contrast existing between the composition of the Altái-Alatáu highland and the lowlands surrounding it, scantily endowed with mineral wealth.

In its geological structure, the Altái and Alataú upland is similar to all the great Central-Asiatic mountain ridges such as: Tarbagatái, Tian Shan, and others. The crystalline rocks are represented here by granite, syenite, crystalline slates, diorite, porphyry, serpentine and gabbro. Granite and syenite are mostly found in the western Altái. Diorite is scattered sporadically throughout the whole of the Altái, but is most extensively found along the



Altái. The Chúya road from the summit of the Chiki-Tamán pass. (phot. by Sazónov).

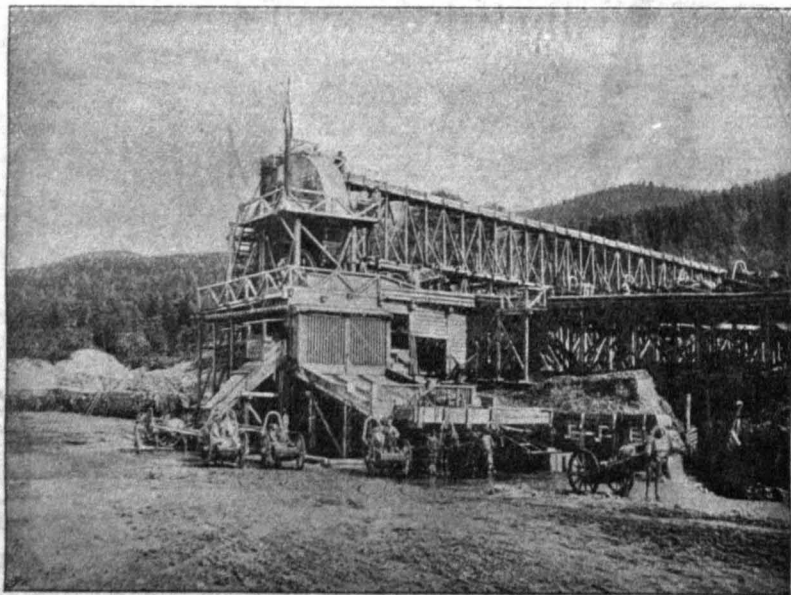
rivers Kondóma, Miás, Tom and in the gold-bearing districts themselves of the Alataú on the headwaters of the Black Yus and the Yáya. Porphyry is found scattered in groups all over this region, serpentine and gabbro, along the river Chúya. The hard sedimentary rocks of the whole of the Altái-Alataú consist of sandstone, slates, limestone and dolomite, belonging exclusively to the most ancient palaeozoic formations. The devonian and carboniferous systems predominate among the palaeozoic formations. The mining district of the Tomsk government holds one of the most important places in the whole Empire on account of its mineral wealth. This wealth was known already in remote times to nations dwelling in this region, as may be seen by the remains of mining works which still exist. In 1726, Akínfi Demídov appeared as the first promoter of Russian mining industry in the Altái, which dates its development from that time.

Gold is worked in the Tomsk government partly in the quartz veins of the Riddersk and Zyriánov mines and the Altái, and partly got in placers principally found in the Kuznétsk Alataú in the Saláir mountains, and in the

Mariïnsk, Kuznétsk, Blïsk and Barnaúl districts. According to the latest information, the Mariïnsk taigá includes 71 mines with an output of 32 puds of gold; the other districts within the Altái region, lying along the rivers Mias, Kondóma, Balyksa, Kazás and Abakán contain 53 mines with a production of 85 puds of gold, belonging to the Cabinet lands of His Majesty. In the same space of time, 16 puds of gold were obtained from the mines of the Tomsk government at the cost of His Majesty's Cabinet exclusive of private exploitation. The proportion of gold contained in the gravel varies from 20 to 30 parts (dólias) of gold in 100 puds of gravel. In the Mariïnsk taigá, the mines are in the hands of small owners and are worked in a rapacious and primitive way. The following considerable gold mining companies work the mines situated on the lands of His Majesty's Cabinet: the Altái gold mining Company, with from 16 to 18 puds per annum; the South Altái gold mining Company getting from 40 to 43 puds annually, Danilov and Company, from 7 to 8 puds, and Kuznetsóv and Company about 8 puds.

The Great Siberian Railway on its way through the mining districts comprising the river system of the Ob, the Mariïnsk and the Altái mining districts, will undoubtedly exert an effect upon the development and the improvement of the gold-mining industry and attract capital and enterprise.

Silver, lead and copper are to be found at many points, 800 of them occurring in the Altái mining district. The ore deposits of the Altái country are divided into two separate groups in respect of their geographical situation: the first, under the name of the Zmeinogórsk country is situated in the southern part of the mining district within the range of the river systems



Two-storeyed barrel machine for the washing of gold gravel, Altái district, Danilov's mine.

of the Ob and the Irtysh; the second, the Salaír country, embraces the north-eastern border of the mining district comprised within the system of the Tom.



The entire silver-lead exploitation was carried on from 1747 at the cost of His Majesty's Cabinet. However, since the year 1880, the Cabinet has obtained silver only at the Suzánsk works, this falling off being due to changes in the economical conditions of the country, and to the reduction in the productive capacity of the mines. The Zyriánov mine with its factory and the Zmeyévsk works, situated in the Zmeinogórsk country, are entrusted to the management of a private company. Mere careful explorations and some improvements in the mining industry will in the future open wide prospects



General view of the Kolyván polishing works in the Altái distr. (phot by Borisov).

for the mines of the Altái. Iron ores are to be found at many points of the Tomsk government, being specially frequent on the slopes of the Salair mountain ridges and on the Kuznétsk Alataú.

Precious stones, obtained in the Bfisk district from the quarries of the Altái mountains, are sent to the Kolyván polishing factory situated in the Zmeinogórsk district, and thence are forwarded to the Imperial Court.

Rich deposits of coal are to be found within the territory of the Tomsk government. The Kuznétsk coal basin, 400 versts long and 100 versts wide, is particularly noteworthy on account of the thickness of the seam and the extent of the bed. Its southern boundary lies within 60 versts south of the town of Kuznétsk, this region being divided by the river Tom. The Kolchúgin coalpit, situated in the northern part of this section, is leased to the East-Siberian Metallurgic Company. Quite recently mining parties have discovered many coal-pits within the range of the Midsiberian railway which, having a most advantageous situation, offer a great practical interest. The coal bed near the Súdzhenska station is specially remarkable with respect to the thickness and quality of the coal. As may be seen from the analysis made, the coal obtained in this district is very similar to that found in the Donéts

basin. In the year 1889, the Ministry of Ways of Communication concluded a contract with Mr. Michelson, who works the Súdzhenska mine, to supply the Siberian railway. At the same time, the Andzhánsk coal-pit, near the Súdzhenska station, belonging to the government, is also to be exploited at the cost of the State and by means of the fund assigned for subsidiary enterprises in connexion with the Siberian railway, and the working capital of the line.

Rock salt is obtained from the Borovói and Burlínsk lakes, lying in the Barnaúl district. The annual production of salt from the Borovói lake is 600,000 puds, 1,250,000 puds being obtained from the Burlínsk lake, both constituting the principal salt producing centres of Western Siberia.

Glauber's salt is got from the Mormyshánsk and Saltpeter lakes in the Barnaúl district, and is chiefly used for the preparation of soda.

The mineral waters of the Tomsk government may be divided into two groups: 1) hot mineral springs, exclusively in the mountainous district, and 2) mineral lakes scattered over the steppe land. The Rakhmánov and Belokúrikha springs are best known among the Altái mineral waters, and belong to the first division; the Solónovka, Karáchi and Ustiantsev lakes to the second. The Rakhmánov spring is situated in the Bísk district, almost on the frontier of Mongolia, lying in the picturesque valley of Arasán at an elevation of 2,034 metres

above sea level, Arasán or Arshansá means warm spring. The temperature of the water is very high, and varies from  $54^{\circ}$  to  $42^{\circ}\text{C}.$ , as stated by professor Sapózhnikov. It is colourless, very clear, has an agreeable taste and contains a considerable quantity of natural carbonic acid. It is reckoned among inert hot springs.

The Belokúrikha spring lies within 63 versts south of the town of Bísk near the village



The Kolyván Factory.

of Nóvaya Belokúrikha. Its temperature rises to  $32^{\circ}\text{C}.$  and, although it has a slight sulphuretted hydrogen smell, it has a good taste, is clear and soft, but totally inert, containing but a small quantity of mineral salts.

The water of the Solónovka lake, in the Barnaúl district, is strongly saturated with salt, and has a high specific gravity; being unfit for drinking on account of a predominating brackish and bitter taste and a slight smell of sulphuretted hydrogen, it is only employed for baths. The Karáchi lake situated in the Káínsk district, within 9 versts of the railway station of Karáchi, contains brackish and bitter water, having but a slight alkaline reaction. A thick layer of greyish and greasy mire with a sulphuretted hydrogen smell covers the bottom of the lake, and is employed for mud baths. The Ustiantsev lake lies in the Káínsk district, within 25 versts of the town. Its water has

an iridescent milky colour, a brackish and bitter taste, a smell of sulphuretted hydrogen and an alkaline reaction.

The rivers watering the Tomsk government belong to the basins of the Ob and the Yeniséi. The Ob basin comprises almost the whole territory of the government and, on account of its size may be separated into the Ob and the Irtysh river systems.

The Yeniséi river-basin extends only over the south-eastern part of the Kuznétsk district, traversed by its left tributary the Abakán.

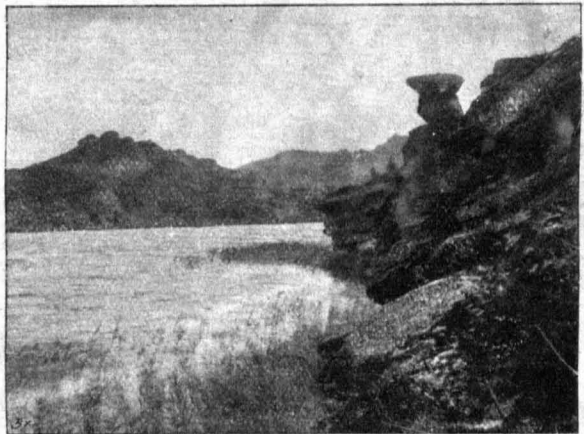
The most important affluents of the Ob after its junction with the rivers Bíya and Katún are: the Chumysh, Berd, Yúya, Tom, Chulym, Ket, Tym on the right, and the Peschánaya, Aniú, Charysh, Aléi, Barnaúlka, Kosmálla, Vasiugán, on the left.

The Ulbá and Ubá crossing the southern part of the government and the Om and Tára flowing through the Káinsk district, within the limits of the West Siberian lowland, belong to the Irtysh river basin.

The government contains about 1,500 lakes. In its mountainous part, the following are specially noteworthy. Lake Telétsk (Altynka or Golden Lake) about 70 versts long, is picturesquely situated at an altitude of 1,702 feet. Lake Talménsk lies at an elevation of 5,000 feet above sealevel; according to Helmersen, one of the finest lakes in the world. It has a circumference of 12 versts and is surrounded by the peaks of the Katún alps. Lake Kolyván has a circuit of 7 versts and is situated at the foot of the Altái at an elevation of 1,180 feet in the midst of huge piles of boulders.

The northern section of the Tomsk and Marínsk districts and the entire Narym region, occupying one-fifth of the whole territory of the government, present a continuous swamp covered with forests, where dry and elevated points are most exceptional.

The climate of the Tomsk government is just as varied as its surface. In the northern portion of the government it is severe, changeable and damp, on the south-west, in the steppes and on the southern slopes of the Altái, it is warmer and of an essentially continental character. At Tomsk, the average annual temperature is  $-0.74$ , at Káinsk  $-0.34$ , at Narym  $-1.98$ , at Barnaúl  $+0.34$ . At Narym, the winter is  $3^{\circ}$  colder than at Tomsk and Barnaúl. The average summer temperature is higher in the steppe region of the government. Southerly and south-westerly winds prevail. The greatest quantity of rainfall (383.7 mm.) occurs in Tomsk, situated in a country abounding in forests and water. A lesser quantity (256.8 mm. in Barnaúl, 249.1 mm. in Káinsk) belongs to the south-western part of the government. Upon the

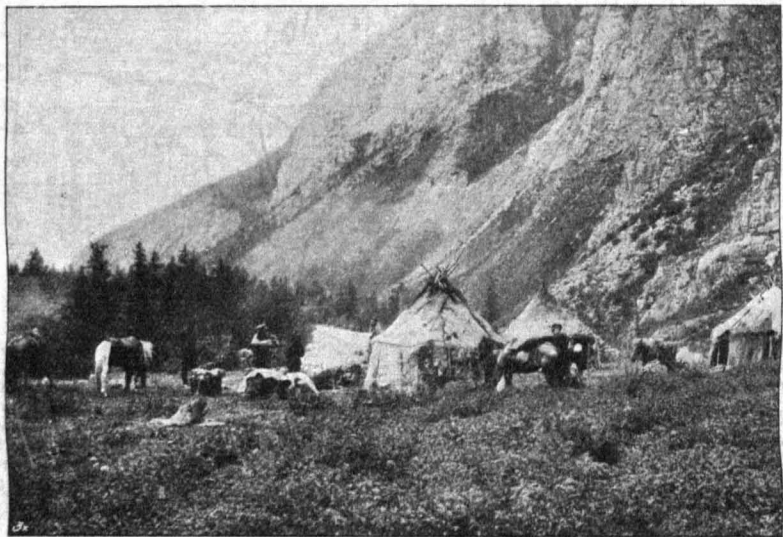


Altái. Lake Kolyván. (phot. by Borisov).

whole, the climate is very severe, as may be seen from the long period during which the rivers remain frost-bound: from 165 to 218 days. On an average, the ice breaks up about the 13 April and sets again on the 19 October.

The flora of the Tomsk government, characterising the region of the plains, forming a continuation of the West-Siberian lowland, and also found on the southern and south-western sides of the Altái in the neighbourhood of the Kirgíz steppe borderland, is similar to the flora of the Tobólsk government and of the Aralo-Caspian depression. Most characteristic is the Altái mountain flora, found at a height of 2,000 feet above sealevel, and represented by some peculiar species of vegetation common to the whole of the elevated mountain region of the central Asiatic highland. The Tatar honeysuckle (*Lonicera tatarica*), the robinia (*Caragana arborescens*) and others, are to be found here. The greater part of the Altái vegetation corresponds to that of the middle European zone, which however boasts of a greater variety of species. This comparative scarcity is however compensated by the luxuriant development of the existing species. The arboreal forms of the Altái forests have, on an average, twice the size of those growing in the forests of the Atlantic coast; and the flowering plants have remarkably large and bright coloured blossoms; as for example the aconite, the larkspur and others, surprising the traveller, coming from the west, by their sturdy growth and deep blue flowers rising high above the bushes.

The rich vegetation of the Altái stretches to the utmost border of the forest zone, which covers the northern slopes of the Altái to a height of from 5,000 to 6,000 feet and reaches 6,000 feet on its southern side.



Altái. Station of Aigulák on the Chuya road (phot. by Sazónov).

The zone of alpine herbs and bushes succeeds to the forest belt, the first including many kinds of plants which are also to be found in the European Alps. Among the wild plants, may be mentioned a nettle (*Urtica cannabina*) whose fibres in the Narym region are made into thread and yarn. The „che-



remshá" or „kólba" (*Allium ursinum*) occurs in coniferous woods and is important as food. Different kinds of rhubarb grow on the Altái mountains.

The „kandyk" (*Erythrotium dens canis*) frequently found in the Kuznétsk district, is a very nutritive plant, employed by Tatars and Russians as a substitute for farinaceous food. Its perennial roots are gathered in May and are eaten raw or boiled in milk, when they are converted into a kind of sweet jelly.



Altái. Station of Kuréi on the Chüya road (phot. by Százónov).

The Kondóm natives use this plant for the preparation of an intoxicating beverage called „abyrtka". The root of the plant „karandys" (*Inula helenium*) is gathered in the Altái, and exported as a medicine to Mongolia. The „kyrlyk", which is a kind of oat, grows on the slopes of the Altái, and is sometimes employed by the natives as food for themselves and as fodder for cattle and fowls.

Forests cover an immense area in the Tomsk government. They are particularly abundant in its northern part, the Naryn country, and also in some parts of the neighbouring Tomsk, Marfinsk and Káinsk districts. The predominating trees are: pine, red fir, larch, fir and „cedar". The Kuznétsk, the southern part of the Tomsk, and the eastern side of the Büsk districts are also thickly clothed with forests, which in the mountainous sections present a dense jungle and bear the name of „taigá". Fir and red fir predominate in the first, the second contains foliage trees, represented by birch and aspen slightly mixed with pine and red fir.

The fauna of the Tomsk government, within the limits of the West Siberian plain is very much like that of European Russia. Assuming a great variety of shapes, it is represented on the Altái by both Alpine and Mongolian species. The Altái is inhabited by the common bear and a kind of Syrian

bear (*Ursus sureanus* var. *lagomyarius* Sévery), having long and curly hair of a lighter colour. Besides the lynx and the steppe cat, there are panthers, common and red or alpine wolves (*Cyon alpinus*. Pall.), common foxes and the „karagán“ (*Vulpes melanotus*. Pall.) which is like the steppe fox, but easily known by its black ears, mountain and other skunks (*Putorius alpinus*



Altai. The station of Kuyaktonár on the Chúya road (phot. by Sazónov).

Gelb. *Putorius altaicus*. Pall). *Putorius Eversmani*. Among the hoofed animals, besides the common elk, the reindeer and the mountain sheep, there are the Altai black goat „tak-teke“ (*Aegoceros ibex*. Pall. *Capra Sibirica* Mayer), Siberian roebuck, the marál (*Cervus maral*), muskdeer, pishchúkhá (*Lagomys alpinus* L. *minutus*; Pall.) marmot (*Arctomys bobac* Schreb).

The bird species are represented by gigantic lammergeyers (*Gypaetus barbatus* L.) Altai mountain turkeys, alpine partridges, mountain capercaillies and partridges, alpine daws, hoopoes, cormorants and others. Among the reptiles, there are vipers and five-toed tritons (*Ranodon Sibiricus*) peculiar to Siberia.

The characteristic feature of the ichthyological fauna is that it contains only salmonoid species. Pike, gremille, carp and bream, which are frequent in other parts of the government, do not exist in the central Altai. The waters of this region abound mostly in grayling, taimén, uskúch (*Brachymystax coregonoides*. Pall.) There are few insects in the Altai; although many different forms of grasshoppers (*Oedipoda*) are to be found in the steppe regions. Some varieties of vertebrated animals are in particular abundantly represented in the Tomsk government.

As stated by Professor Káshchenko of the Tomsk university, the country is specially characterised by the following large mammals: elk, reindeer, marál, roebuck, bear, fox, lynx, glutton, otter, and others.

„Our country affords shelter to all“ says Professor Káshchenko, „we are here living in a time which in Europe has long since passed away. Central

Europe, with respect to its fauna, held a similar position about 2,000 years ago, at the time of Julius Caesar, and the central zone of Russia, 800 years ago, at the time of Vladimir Monomakh. At present, however, evolution is more rapid, and the time is drawing nigh, when the primitive, but rich conditions of our country, which now seems to the stranger to belong to far distant days, will in fact exist no more. Special attention must be given to this rapid transition from past to present, which is now going on in order that it may not deprive us of the many advantageous of our wild nature, possessing a charm of her own. All her living creatures should be carefully preserved, not only because they are useful, but also because they adorn nature equally with ourselves“.

Population. The Chud, belonging to the Finnish race, were the original inhabitants of the Tomsk government; numerous barrows, standing along the Altái and the fertile valleys of the Katún, Charysh and Alél rivers, testify to their presence there. In course of time, the Chud mingled with Turkish races; the first inhabited the northern and north-western slopes of the Altái



Altái. Pinewood on the way to the Zyriáncv mines.

and Sayán mountain groups, the second settled on their southern side. Both occupied themselves with mining industry, employing the ore obtained for their own use, and for trade with the neighbouring people. In this way, the gold and silver of the Altái reached the Greeks and the Scythians, as confirmed by Herodotos and some of the Chinese chroniclers. The Mongols, who became famous from the XIII century A. D., united under their dominion the Turko-Finnish races of the Tomsk government, and contributed to dislodge the purely Finnish tribes from their original dwelling places towards the north-west, and to the mixture of their representatives, remaining in the Altái region, with the Turkish races. In the XV century, when the Golden Horde was already in its period of decline, the Turko-Finnish

tribes, inhabiting at that time the south of the Tobolsk and the greater part of the Tomsk government, were already free and divided into several smaller states. Upon meeting with the intrepid Russian emigrants and the first Slavonic settlers of Siberia, they very soon submitted to the Russian power.

With respect to population, the Tomsk government holds the first place among all the other governments and territories of Siberia; the census of 1897 gives a population of 1,929,092 (970,780 males, 958,312 females) which,



Town of Barnaul (phot. by Borisov).

when compared with the statistics of 1890 (1,299,729), shews an increase of 626,363.

Number of inhabitants in the respective districts:

DISTRICTS.	TOTAL POPULATION.			per sq. verst in 1897.	per sq. verst in 1890.
	Male.	Female.	Total.		
1) Tomsk and Naryn region..	139,912	135,577	275,489	1.0	0.7
2) Barnaul .....	292,104	293,240	585,344	5.1	3.0
3) Bisk .....	166,104	167,217	334,042	3.4	2.2
4) Zmeinogorsk .....	122,554	120,936	243,490	3.4	2.2
5) Kansk .....	95,443	91,118	186,561	2.8	1.9
6) Marinsk .....	72,023	67,843	139,866	2.1	1.5
				2.57	1.7

The greater number of inhabitants falls to the Barnaul, Bisk and Zmeinogorsk districts, containing tracts of very fertile arable land, belonging to the Imperial Cabinet of His Majesty. The ethnographical divisions of the population are very numerous in this government. The original inhabitants of the country belong to different tribes of the Urálo-Altáic races, representing  $4\frac{1}{2}$  per cent of the total population; outlanders, chiefly of the Slavonic race, form  $93\frac{1}{2}$  per cent, leaving  $2\frac{1}{2}$  per cent to other nations of the Indo-European



stock. The Urálo-Altáic race is divided into 4 different tribes: Finns, Turks, Mongols and Samoyéds.

The Finnish tribe is represented by the Ostiáks, who are the original natives of the land, and by the Mordvá, Zyrián, Chuvásh descendant of the former settlers. The Ostiáks of Tomsk are the last representatives of the Finnish stock in the east; they inhabit only the northern part of the govern-



Town of Bisk (phot. by Borisov)

ment, and occupy themselves with hunting, fishing, and gathering cedar-nuts. Their winter abode is a log-hut with a *chuvál* or hearth; in summer they dwell in conical huts made of stakes covered with birch bark. The total number of the Ostiáks in the government does not exceed 2,000.

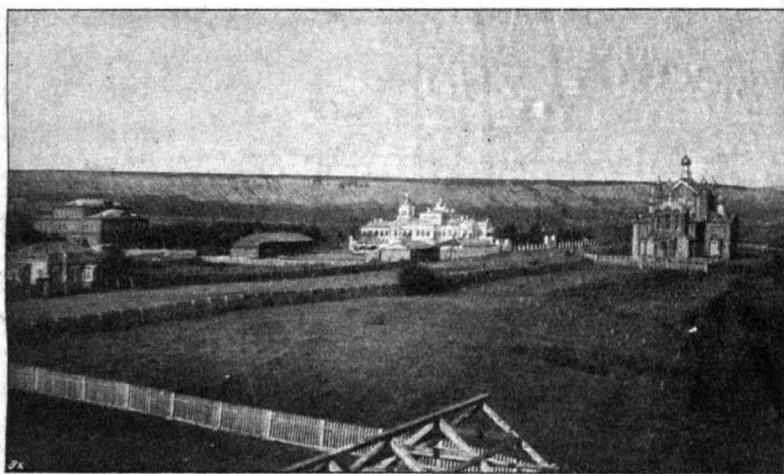
The Chulym Barabá, Kuznétsk and Chernevý Tatars and the Bukharians belong to the Turkish tribe with an admixture of the Finnish and even the Mongolian stock. Most of these natives lead a settled life; many of them closely allied to the Russians have adopted the orthodox faith. Others, as for instance the Chernevý Tatars refuse to give up their nomad life. There are few Christians in the country, where Shamanism is the predominating religion. The total number of the representatives of this tribe throughout the vast territory of the government does not exceed 30,000 or 35,000.

The Mongolian race is represented by the Teleúts or Telengúts inhabiting the Altái. The Telengúts wandering about the valleys of the river Chulyshmán, Bashkaús, Chüya and the headwaters of the rivers Anúi, and Charysh, are called Uriankháets.

Leading a nomad life, these tribes occupy themselves with cattle-breeding and hunting. They are Buddhists and belong to the Mongolian type. The Telengúts mostly live in movable tents called „*kereché*“ composed of latticed wooden frames covered with felt. On the northern slopes of the Altái, wooden and birch-bark huts (*yúrta's*) are met with. The total number of Telengúts is 40,000.

The Samoyéd tribe occupies the Naryn region being settled along the Ob and its tributaries the Tym, Kétia, Parabél and the lower reaches of the Chulym. With respect to their mode of life, the Ob Samoyéds differ from their countrymen dwelling in other river regions. They have huts which are constructed like the Russian *izbá*, while those living on the tributaries of the Ob have *yúrtas* like the *Ostiáks*, with whom they follow a similar mode of life. The number of Samoyéds in the government is 6,500.

Among the other nationalities, Poles hold the first place, being followed by Jews, Finns and Germans. The increase of the population of the Tomsk government was effected by natural growth and by means of immigration of exiles and free settlers from European Russia. The Káinsk, Marínsk and the northern portion of the Tomsk district are selected throughout the Tomsk government for the settlement of exiles, who are not admitted to the Altái mining district containing land belonging to the Cabinet of His Majesty. The exiles distributed in the localities of the Tomsk government are of the same kind as those settled in the Tobólsk government. Within the last ten years 17,659 exiles, inclusive of those who voluntarily accompanied them, have been settled within the confines of the three northern districts. The considerable



Bishop's house in the town of Blísk (phot. by Ovchin).

increase of the population, which within the last five years has given, in this respect, a foremost importance to the Tomsk government, is due to the great influx of free settlers, principally colonising the Altái mining district.

Up to the year 1865, settlers having received formal permission from the Government, occupied exclusively Crown lands in the northern parts of the Tomsk government; those who fixed their residence on the Altái lands, belonging to the Cabinet of His Majesty, did so at their own risk, without any licence from the Chief Office of the Altái district which strove carefully to protect the country from the intrusion of settlers. Since 1865, when the Altái district opened its confines to colonisation, the movement to this region has been ever on the increase. By the year 1889, 143,751 colonists had settled on the lands belonging to the Imperial Cabinet. The rush to the Cabinet lands of His Majesty

was particularly remarkable within the last ten years of the past century. The number of settlers during this period exceeded 300,000. For the present, no new grants of land will be made in the Altái mining district until the former settlers are properly established. Until a new order, newcomers can only settle in already regulated communes, upon receiving permission from their representatives, without however obtaining any assistance or subsidy, such as are granted to peasants emigrating to Siberia with formal permission to



The town of Kuznetsk.

localities specially allotted them. The opening of traffic on the Great Siberian Railway effected a considerable increase in the voluntary colonisation of the Crown lands lying along the railway line in the Káinsk, Marínsk and partly in the Tomsk districts, where the land along the railway was soon allotted. Hence arose the necessity for finding lots which, although lying at a greater distance from the railway, would yet be available for cultivation.

Besides the Barabá lands of the Káinsk district bordered by the west Siberian section of the main line, State Secretary Kúlomzin on his journey to Siberia in 1896, with the object of a thorough investigation of the emigration movement, has allotted to future settlers the land situated along the Mid Siberian railway in the Tomsk, Chulym and Chulym-Marínsk taigás. Vast areas called „yelán“ once covered with ancient forest subsequently burned down, are now dotted with fine birch; these lands have been found fit for settlement, although requiring the application of stubborn and continuous labour on the part of energetic settlers. These wooded sections situated in the Tomsk and Marínsk districts, contain Crown lands free to be colonised.

Several medical and feeding stations, which are the places of residence of the emigration officials, are situated along the railway line at stations and towns (Tatárka station, Káinsk, Kargát station, in the Káinsk district, Ob stations, Tomsk, (Tomsk district), Marínsk, Bogotól station (Marínsk district). Here settlers are registered and directed to the unoccupied lands of the Tomsk government. Within the last five years, the greater number of emigrants came from the governments of Kursk, those of Chernígov, Oriól, Poltáva and Khárkov having contributed to the movement in a somewhat less proportion.

The following erections have been made at the cost of the fund of the Emperor Alexander III in the Tomsk government in order to satisfy the religious needs of the entire population dwelling within the range of the Great Siberian main line:

1) Three wooden churches at the Ob, Taigá and Bogotól stations.  
2) Four wooden churches in the settlement of Alexandrovsk and in those of Oboyán, Bélgorod and Belovódsk (Marińsk district).

3) The Nóvo-Rozhdéstvensk settlement (Tomsk district), and Sviatoslávsk (Marińsk district), contain two wooden churches with schools.

4) A stone church is in process of construction in the Novo-Nikoláevsk settlement on the Mid-Siberian Railway.

5) Eighteen churches (9 of wood and 9 of stone) are being erected in the following settlements: Constantínovo, Mokhovóe, Mikháilovo, Nikoláevo, Novo-alexándrovka, Poltávka, Kulikóvo, Ivánovo, Mikháilovsk, Nóvo-Nikoláevo, of St. Alexandra, Mírgorod, Gromachévsk Mikháilovska (Semilúzhensk volost), Ulánovsk, Kazánskoe, Nekrásovo, Preobrazhénskoe.

6) Six schools have been built in the settlement of Oboyán, Belovódsk, Bélgorod, Oriól-Rozóvsk, Ivánovsk, Kursk (Marińsk district), Novorozhdéstvensk, Mikháilovsk, Kazánskoe, Nekrásovo (Tomsk district).

7) Five schools in the settlement of St. Alexandra, Ulánovsk, Konstantínovo, Mokhovóe, Gromachévsk are in process of construction.

Agriculture, cattle-breeding, bee-keeping, hunting, forestry etc. are the main sources of the prosperity of the inhabitants of the Tomsk government.

Agriculture is the predominant occupation of the inhabitants of the Tomsk government, exclusive of the swampy Narym region, the northern portion of the Marińsk district and the hilly parts of the Blísk and Kuznétsk districts. The Barnaúl, Blísk and Zmeinogorsk districts present large areas of corn-land.

The system of husbandry adopted here is the same as in the Tobólsk government, characterised by the fallow land system; it can, however scarcely be considered as a settled one, as it depends upon the quantity of arable land, the condition of the soil and many factors, and above all upon the economic prosperity of each householder. The predominating type of „sokha“ or primitive plough is called „kolesiánka“. The administration being chiefly occupied with the improvement of husbandry, is propagating more rational systems of agriculture and has established for this purpose agronomical schools with farms and apiaries, stores of agricultural machinery and various kinds of seeds.

The efforts of the West-Siberian Agricultural Society tend towards the improvement and progress of husbandry in the government.

The following statistics for the years 1894, 1895 and 1896, shew the quantity of grain sown and the total crops raised in the government during this period:

	1894.		1895.		1896.	
	Sown.	Raised.	Sown.	Raised.	Sown.	Raised.
Winter wheat.....	47,375	223,739	24,991	127,354	11,182	62,117
Winter rye.....	216,735	1,204,071	234,482	1,256,886	180,855	627,110
Spring wheat.....	508,836	3,198,503	556,704	3,414,406	621,521	2,910,387
Spring oats.....	422,154	2,421,551	531,559	2,648,514	595,544	3,218,257
Spring barley.....	74,702	455,931	78,291	434,347	72,014	411,786
Spring buckwheat....	21,313	109,724	12,973	74,605	12,988	61,280
Various corn crops...	159,382	796,726	145,125	457,085	170,110	890,466
Potatoes.....	98,409	676,936	135,908	868,384	242,159	880,234
<b>TOTAL.....</b>	<b>1,545,906</b>	<b>9,086,781</b>	<b>1,730,033</b>	<b>9,281,781</b>	<b>1,905,373</b>	<b>9,061,637</b>



The quantity of grain sown and the crops raised shewed no falling off during the following three years. As may be seen from the above figures, the quantity of grain sown in the government and especially in the districts of the Altái mining region, lying within the range of the Great Siberian Railway, not only suffices for the public supply, but also yields a surplus of grain, which can be exported into the interior of the Empire and abroad, to the amount of some millions of puds. According to the statistics of the Altái mining region, the grain surplus is 22,000,000 puds per annum, obtained in the region from the 1,000,000 desiatins of land sown which is only  $\frac{1}{20}$  part of the total arable land.

Cattle-breeding is also an important element in the husbandry of the Tomsk government, constituting indeed the sole resource of the wandering Telengúts and Tatárs. The extensive pastures and abundant hay crops, which are frequent in this region, contribute in a great measure to the development of this feature, as is testified by the noteworthy increase in the number of cattle throughout the region. The following statistics from 1891 and 1896 illustrate the gradual progress of cattle-raising in the country.

	1891.	1896.
Horses .....	1,297,813	1,746,633
Cattle .....	867,330	1,627,848
Sheep .....	2,227,455	1,317,102

On the average, a peasant household owns: 6.1 horses, 4.1 head of cattle and 10 sheep.

With respect to the number of horses and other kinds of cattle, the Barnaúl district occupies the first and the Bísk the second place.

For the improvement of horse-breeding, the administration of the State studs has organised stables in Tomsk, the stallions being sent in summer to different parts of the government.

The considerable quantity of meat required in Eastern Siberia for the mines and gold-works also serves as an inducement to extend cattle-breeding.

The rearing of the domesticated „marál“ or mountain deer (*Cervus maral*) is one of the local industries practised exclusively in the Bísk district, which contains about 2,000 tame maráls. Their horns are particularly valuable. Taken from the male and sawn off at the root at the end of June, they are boiled in salt water in order to prevent decay, and are sold at the rate of R. 5 to 7 a pud. The wholesale merchants sell them in China for R. 20 to 25 a pud. The Chinese prepare a vivifying remedy from the extract of these horns.

The extensive development of beekeeping in the Tomsk government characterises this country among all others in Siberia, which in this respect surpasses all the governments of European Russia. This industry is practised in the Altái mining region, more especially in the Bísk and Zmeinogórsks districts, which reckon 577,169 beehives and 14,163 apiaries, producing yearly over 3,000,000 pounds of honey and above 10,000 puds of wax.

Model apiaries with framed beehives belonging to new systems are already to be found in the Kuznétssk district. A beekeeper, living in the town of Barnaúl and editing the journal called „Northern Apiculture“, is appointed by the Government for the instruction of the population and the propagation of rational systems.

Fishing is the chief occupation of the Narym natives and of the inhabitants of the northern portions of the Tomsk and Mariinsk districts. It is of

prime importance as a source of revenue in the central zone of the government only for the inhabitants along the river Ob. The fish taken in summer are salted and dried, while the winter catch is frozen. In summer, so called „pozióm“ is prepared from sterlet, syrók and muksún. The fish is split open, freed from bones, salted, dried in the air and slightly smoked.

Hunting and trapping are on the decrease every year in proportion to the increase of the population. This industry is still practised in the Narym country, in the taigá parts of the Kuznétsk and Marfinsk districts and in that of Bísk. About 1,000 people are so occupied in the Narym country. Squirrel, kolónka, sable, fox, ermine, bear and otter, and wild duck, swan, geese, capercailzie and hazel-hen among birds, are the principal objects of the hunter. On an average, 100,000 squirrels are annually taken by Ostiák men and women. Next in importance come: 3,000 kolónkas, 1,500 sables, 1,000 foxes, 500 ermines, about 50 to 100 otters and about 30 bears. Every year a great number of ducks are taken in this region; a hunter sometimes gets some 300 of them in one night. The Narym region abounds in lakes; in the autumn before their migration, the ducks gather in immense flocks and in the evening fly from one lake to another. The fowlers, availing themselves of this habit, select two lakes and, making a clearing between them, stretch a net across the opening. The ducks, frightened from one lake, fly by the clearing to the other and get entangled in the net. They are then removed one by one and killed by biting through the back of the head. Part of these ducks are sold and part salted, smoked or dried and stored for the coming year. About 300,000 squirrels, 100,000 striped squirrels, 15,000 hares, 10,000 „kolónka“, 3,000 skunks, 1,200 sables, 1,000 ermines, 350 foxes, 300 deer, 150 roebuck, 50 bears, 20 gluttons and as many otters are killed in the Kuznétsk district, where 2,000 people are engaged in this industry. The approximate number of birds taken in the same district are 50,000 hazel-hens, 1,000 capercailzie, 10,000 blackcock, 10,000 duck and 5,000 partridges. The Marfinsk district numbers only 300 trappers, the industry there being practised on a smaller scale. In the Bísk district, there are at least 2,500 people engaged. Besides all the above mentioned animals, this southern and hilly district contains in addition various kinds of roebuck, mountain sheep, kabargá and marál. The average annual yield in this district is 20 maráls, 500 roebuck, 60 bears, 400 foxes, 100 badgers, 50 lynxes, 20 gluttons, 1,700 „kolónkas“, 100,000 squirrels, 200 sables, 400 ermines, 50 otters, 1,000 hares, 7,590 blackcock, 5,000 hazel-hens and 1,000 magpies, whose feathers are sent abroad to adorn ladies' hats. The law restricting hunting has not yet been introduced in the Tomsk government.

The cedar-nut trade is carried on in the Narym region in the northern parts of the Tomsk and Marfinsk districts and in the mountainous localities of the Kuznétsk and Bísk districts. Tomsk is the chief market for the sale of these nuts. From 300,000 to 400,000 puds of nuts are gathered in a good year; they are sold at the rate of R. 1-50 k. to R. 2-50 k. a pud. Nut gathering in the forests begins on the 10 August and ends on the 15 September. The cones are got by climbing or shaking the trees; in more remote spots, huge trees centuries old are ruthlessly felled with the same object.

The greater part of the nuts are sent by the rivers Chulym and Ob to Tiúmén and thence to European Russia, while a part is conveyed by the Siberian Railway. In 1898, 132,306 puds of cedar-nuts were brought by the Midsiberian Railway to different places in the West.

The domestic industries carried on in the Tomsk government include the making of various articles of wood such as axles, wheels, „dugás“ or yokes, sledges etc., the manufactory of felt boots, pottery, the dressing of skins, the tanning of hides and the smith's handicraft. These industries are not developed in the Barnaúl district, whose sheepskin shúbas dyed black are well known under the name of „barnaúlki“.

Factories and works make but little progress in the Tomsk government, although agriculture, cattle-breeding, and the forest and mining industries yield abundance of raw materials. According to official information, there are 2,031 factories and works and 4,139 flour-mills in the government. In 1896, industry in towns and districts was represented as follows:

DISTRICTS.	Manuf- actories.	Workmen employed.	Output in rubls.
Tomsk.....	497	3,196	2,778,275
Káinsk.....	1,929	2,158	263,856
Mariïnsk.....	231	469	218,953
Barnaúl.....	659	1,058	400,441
Bísk.....	1,000	1,575	394,366
Kuznétsk.....	749	1,121	77,821
Zmeinogórsk.....	1,105	1,591	259,541
	6,170	11,168	4,393,253.

The chief industries represented are: 15 distilleries, with a revenue of R. 1,199,290; 12 breweries, yielding R. 558,045; 291 tanneries, yielding R. 427,833; 48 wheat-flour-mills, giving R. 401,630.

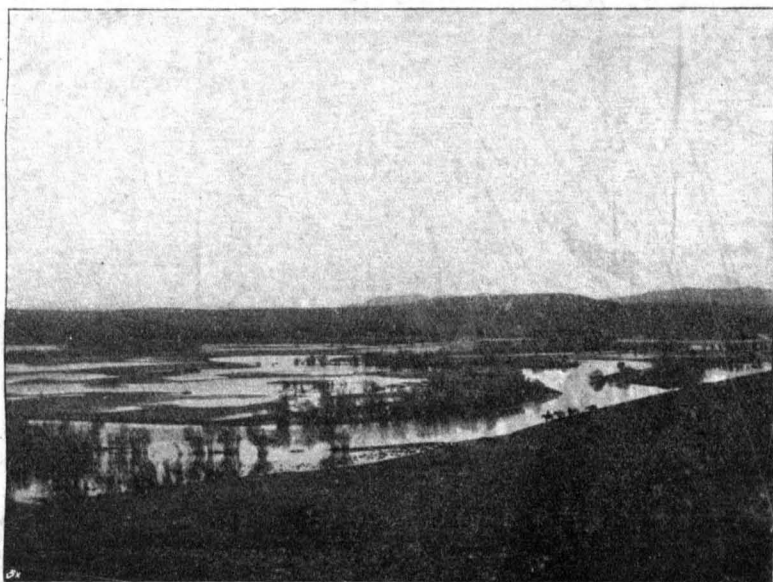
The following manufactories are particularly noteworthy on account of the technical processes employed: 1) 2 glass-works in the Barnaúl and Bísk districts, producing glass and glass vessels, mainly for vodka. The material required is obtained within the government. The annual output amounts to R. 165,000. 2) The soda works of Mr. Prang, situated in the Barnaúl district, dates from 1864, and was the first of the kind to be established in Russia. The soda is obtained from the Glauber's salt of the Mariïnsk Lake in the Barnaúl district. The annual production amounts to R. 40,000. 3) 51 wax bleach yards and taper manufactories sending most of their produce to Irbit. The value of their annual production exceeds R. 200,000.

Trade. A considerable quantity of raw products is sent from the Tomsk government to the home markets in the West of the Empire as also to Eastern Siberia. All colonial goods, groceries and drugs, almost all manufactured goods are imported. Buying and selling is carried on at the fairs, held in different districts, whose number exceeds 70 for the whole government. The most important among them are: the Suzúnskaya, Krutkhinskaya, Bérdsкая, in the Barnaúl district; the Zmeinogórsкая, Antónievskaya in the Zmeinogórsk district; the Smolénskaya in the Bísk district; the Briukhánovskaya in the Kuznétsk district and the Spas fair in the Káinsk district; the yearly business of the fairs amounts to about R. 6,000,000 to R. 7,000,000.

The Great Siberian main line, by bringing new life into the governments of Siberia, is already producing considerable changes in the trade, which is particularly noticeable by the towns and large villages situated along it.

The former dependence of the small trading firms on the town of Tomsk is little by little disappearing; in the shops of district towns and large settlements, are now to be found Vienna furniture, sewing machines, various instruments,

and other goods obtained from the capitals, formerly—known only by hearsay to the country population, who had to be satisfied with the trash from the Irbit fair and the spoilt groceries of Tomsk. The foreign trade of the Tomsk government, which on the south is bordered by the frontier of the Chinese Empire, is carried on, in insignificant proportions, by the merchants of Biisk by the highway for pack-animals through the Russian frontier settlement of Kosh-Agách, whence there is a carriage road to the Chinese town of Kobdó.



Altái. The river Chúya on the Kosh-Agách plateau (phot. by Százónov).

The articles of export are manufactured and millinery goods, iron and copper wares, tanned leather and marál horns. In exchange, the Russian merchants get brick-tea, furs, silk stuffs and small wares of Chinese manufacture. This foreign trade, with a value of only a few hundred thousand rubls, has not yet attained its due development, on account of the difficulties of the communications with Kosh-Agách.

Little profit is yet got from the natural mineral wealth, hitherto scarcely explored, of the Tomsk government and the Altái mining district. New railway-lines however are projected to join the Grand Trunk, through the fertile lands lying at the foot of the Altái and Alataú, with a view to promote the economical growth of the country. The most important direction of these contemplated lines will join one of the stations of the Mid-Siberian railway with Tashként, passing through the towns of Barnaúl, Semipalátinsk and Vérny.

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## E a s t e r n S i b e r i a .

Eastern Siberia, in respect of its administration, is subjected to a Governor General, and comprises the Yeniséisk and Irkútsk governments and the territory of Yakútsk. It covers a superficial area of 132,600 square geographical miles, and contains a population of 1,328,150 as shown by the census of 1897, principally concentrated within the range of the Great Siberian highway which, as the chief commercial artery of the country, ever attracted the economic life of Eastern Siberia. The Great Siberian mainline, running from the boundary of Eastern Siberia across the Tomsk government to Lake Baikál, has chosen its course through localities contiguous to the Siberian trade route, thus extending its mighty influence not only throughout the Yeniséisk and Irkútsk governments, but also over the more distant Yakútsk territory.

The Yeniséisk government, lying between  $52^{\circ}33'$  and  $77^{\circ}$  N. lat. and between  $47^{\circ}$  and  $80^{\circ}$  E. long., comprises the western portion of Eastern Siberia. Having a greater extension from south to north (2,800 versts) than from west to east (1,300 versts), this government is only inferior in size to the Yakútsk territory, thus holding the second place in the Empire. It covers an area of 14,542 square miles and is for purposes of administration divided into 6 districts: Yeniséisk with the Turukhánsk region, Achinsk, Krasnoyársk, Kansk, Minusínsk and Usínsk situated on the border of the government.

The Irkútsk government, lying within  $51^{\circ}$  and  $62^{\circ}30'$  N. lat., and within  $66^{\circ}$  and  $86^{\circ}30'$  E. long., comprises the south-eastern part of Eastern Siberia, and has a superficial area of 14,542 square miles. It is divided into 5 districts: Nizhneúdínsk, Balangánsk, Kirénsk, Irkútsk and Verkhólénsk.

With respect to its superficial configuration, the Yeniséisk government is very varied and may be divided into two sections: one lying to the north and containing the Turukhánsk region and the northern part of the Yeniséisk district characterised by a scarce population and stony and swampy districts unfit for cultivation; the other stretching southward and comprising the Achinsk, Krasnoyársk, Kansk, Minusínsk, Usínsk and part of the Yeniséisk district with stretches of steppe land and mountain ranges fit for agriculture and cattle-breeding.

The Irkútsk government is essentially mountainous; plains and river valleys occupy only a small part of its area. Alpine mountains cover the

south-western, the south and south-eastern part of the government and skirt the western and south-eastern shores of Baikál. The grand Sayán mountain-chain occupies the southern borders of both governments. A line of posts, representing the frontier dividing Russian territory from China, runs along the top of the mountains, following the direction of the Nérchinsk highway.

The Sayán chain stretches in a solid mass across the territory of Yeniséisk and through the western part of the Irkútsk government, putting out branches which run far into the interior of the territory. The Sayán system is more intricate on the southeast of the Irkútsk government, where it separates into parallel ridges broken by perpendicular valleys, among which the numerous left tributaries of the Angará wind their course towards the plateau of Eastern Siberia. The Sayán chain, after joining the Altái mountains west of the river Yeniséi, bears the name Shabín-Olá or Belogórie, and is called Ergík-Targák-Taigá east of the Yeniséi. Towards the south, there is a wide plain within the limits of the Chinese Empire which, being surrounded by mountains, was the cradle of the Turkish tribes which thence spread all over Asia. The highest mountain group of the Sayán chain rises at the south-eastern corner of the Irkútsk government; its summits, covered with perpetual snow, reach an altitude of 11,430 feet at their most elevated point, Munkú-Sardyk or Silver Mountain which, feeding considerable glaciers, stands on the frontier of the Chinese Empire. Numerous ridges stretch north of these peaks, the Biriúsinsk mountains rising to a height of 6,200 feet at the south-western corner of the Irkútsk government, being the most considerable among them. Further are the Idínsk mountains, the Kitói Alps and the Tunkínsk belt following to the north the valley of the Irkút.

The Baikál mountains, the Khamár-Dabán, the Littoral and Okótsk ridges leaving the Sayán in detached parallel lines, skirt the wide valley, which yields shelter to the Baikál, one of the grandest fresh water lakes in the world.

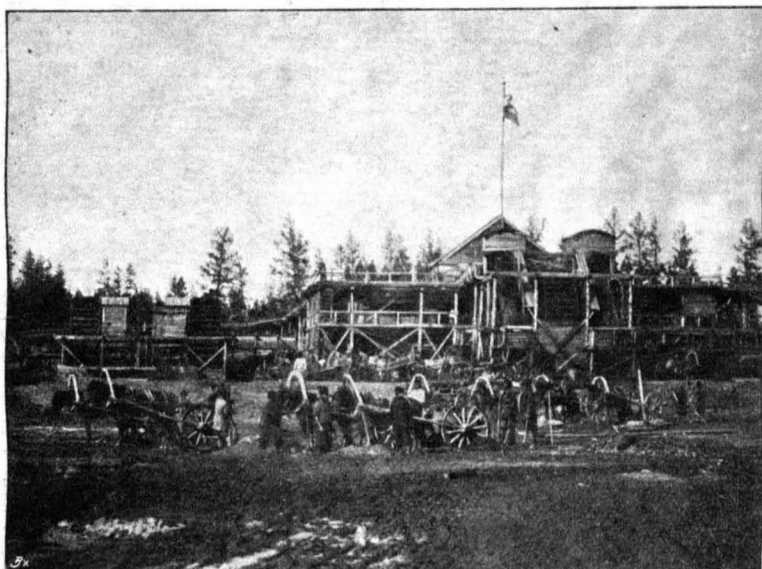
The chief range of the Sayán and its branches consist mainly of crystalline rocks, such as granite, syenite, porphyry, diabase, diorite, gneiss and crystalline slate. Basalt and dolorite are to be found on the slopes of the Munkú-Sardyk at the Khangínsk Military Post and near the Túнка, along the river Irkút close to the south-western shore of the Baikál, and also between the rivers Sliudiánskaya and Tálaya, on the lower reaches of the Ilím, along the course of the Angará, while volcanic tufa, obsidian and pumice occur on the banks of its affluents. The deep Túнка valley contains lava hills; the currents of lava on the Yelóvsky branch testify that this region in former times contained numerous volcanos, of which the earthquakes occurring somewhat frequently in Irkútsk bear evidence to the present day. The slopes of the Sayán mountains are covered with sedimentary rocks consisting of sandstone, slate and limestone of the silurian, devonian and carboniferous formations. At some distance from the Sayán ridges, sandstone predominates among the sedimentary rocks.

Eastern Siberia is endowed with very great mineral wealth; alluvial gold was first found in the year 1830, afterwards it was discovered throughout the vast territory of the government. Gold is mostly found in the sand of rivers and small streams.

The geological formation of the deposits is various, but shews a predominance of slate rocks. The thickness of the goldbearing strata varies from

2 to 3 sazhen, and their extent from 1 to 50 versts. The proportion of gold is also different according to the depth of the deposit. The gold strata are usually covered by a layer of alluvium, called the „turf“.

The gold mining regions of the government are administered and managed by the two mining departments of Tomsk and Irkútsk. All the gold-mines of the Yeniséisk government pertain to the Tomsk departments, with the



Goldwashing machine in the South Yeniséisk district. Mine of Mr. Cheremnykh.

exception of those which, included in the Biriúsin'sk group are divided into three mining districts: Achinsk-Minusín'sk, comprising the mines of the Achinsk, Minusín'sk and Usín'sk districts; South Yeniséisk, containing the southern part of the Yeniséisk district, the Krasnoyársk and Kansk districts; and the North Yeniséisk, with the northern part of the Yeniséisk district. The mining district of Biriúsin'sk is under the management of the mining department of Irkútsk.

In the Achinsk district, most of the gold mines occur in the valleys of rivers and small streams belonging to the basin of the Chulym, and along the unimportant rivers falling into the Yeniséi.

The mines with richest annual output belong to Ivanítsky (4—6 puds) and to Múkhin and Co. (3—4 puds). The Krasnoyársk district is not so rich in gold; it is found on the small rivers taking their rise in the Kemchúzh'sk mountains, and in the mountains on both sides of the Yeniséi.

The gold mines of the Minusín'sk and Usín'sk districts form one system, comprising the tributaries of the rivers Yeniséi and Abakán, which do not contain any rich deposits. The gold-mining company of Usín'sk, obtaining from 5 to 7 puds per annum, and the mines of Okúlov, which at the beginning of 1899 were purchased by a Belgian joint stock company, are the most important in this region.

In the Yeniséisk district, the gold mines are situated on the right side of the Yeniséi, between the rivers Angará and Podkámennaya Tungúska, and

throughout the basin of numerous small rivers falling into the two above mentioned tributaries of the Yeniséi; gold is also to be found along the valleys of the affluents of the Pit, which crosses the gold-bearing region and divides it into the two almost equal, North and South Yeniséisk, mining districts. The gold mines situated in the Yeniséisk district on the rivers Uderéi and Mamóna have been worked since 1839, and soon became famous on account of their rich output. Within the period of the first ten years, the amount of the annual output was represented by 1,000 puds; since that time, the quantity of extracted gold has been decreasing from year to year, and now scarcely amounts to a few puds.

The total quantity of gold obtained up to the present time is 27,000 puds, with a value of R. 350,000,000. These mines, among all others in the Russian Empire, yield the greatest quantity of metal. Moreover, the following mines, situated in the South-Yeniséisk mining district, have some importance on account of their production: the mines of Perepléchnikov, where 20 puds were obtained in each of the years 1894 and 1895; those of the Udréi gold mining company of Cheremnykh and Co., (from 10—14 puds per annum), Cheremnykh and Rátkov-Rožhnóv (5—8 puds per annum), Sharypov (4—5 puds annually). The mines of the Vostrótin Association (7 puds), of Kytmánov (9—10 puds) and of Khárenchenko (3—4 puds). are the most important in the North-Yeniséisk



Getting gold from tailings (phot. by Arnold).

mining district. The richness of the mines and the inadequate methods applied in washing the gravel are well illustrated by the fact that mines long since abandoned which were considered already exhausted, are now being worked afresh by new owners.

The Biriúsinsk mining district, watered by the river Biriúsa, comprises the Kansk and Nizhneúdinsk districts of the Irkútsk government. In respect of its gold production, this group is now much inferior to others, whereas formerly it contained the richest mines of Eastern Siberia.



In 1842, the quantity of metal obtained during the summer was 204 puds; but, since that time, the annual output has diminished to a few puds. This fact is due not to the exhaustion of the mines, but to their inadequate prospecting. It may therefore be supposed that the Great Siberian Railway traversing this gold-bearing region will bring with it new and more rational systems of working, and thus secure the prosperity of the Biriútsinsk mining group.

Deposits of vein gold are worked in the Yeniséisk government only in the mines of Cheremnykh and Rátkov-Rozhnóv, and by Khilkóv in the Yeniséisk mining district. The metal is found in quartz rocks. The Irkútsk government is not so abundantly provided, and includes only a few mines distributed along the valleys of rivers falling into the Baikal, in the Nizhneúdsinsk and Irkútsk districts, and also in the district of Verkholénsk and Kirénsk; the valley along the upper reaches of the Léna contains but poor gold gravels.



Church at the mines.

Silver and copper ores occur frequently in the valley of the Yeniséi river, and were known to the natives of the country, the ancient Chud. Silver ore is often found in connexion with copper pyrites. The first copper foundry of Lúgovsk, which has long since ceased to work, was established in Eastern Siberia in the Minusínsk district on the site of the old Chud mines, towards the end of the XVIII century.

Another foundry, which however soon stopped its operations, was established in 1874, in the Achinsk district; the copper produced, in respect of its quality, rivalled that of the Urál.

Eastern Siberia is especially well off for iron-ore; rich deposits of this metal occur in the Yeniséisk and Irkútsk governments and also throughout all the other districts. The Minusínsk district abounds, in particular, in rich beds of magnetic iron ore, and contains a foundry and iron-works, situated on the river Abakán, which belong to Rátkov-Rozhnóv and produce puddled, rolled, high-furnace and machinery iron.

The Irbínsk State lands, comprising an area of 124,000 desiatins, are situated within 100 versts to the north-east of the town of Minusínsk and 30 versts from the Túba, a tributary of the Yeniséi; this locality, watered by numerous rivers and provided with rich beds of iron, once contained an iron-foundry, which has however been idle for some 50 years. The estimated amount of ore in this region is 65,000,000 puds. Iron-ore has been found on the banks of the rivers Yeniséi, Kuskún and Buzyk, in the Krasnoyársk district, near the village Ozernáya, where it has been worked since the end of the XVIII century.

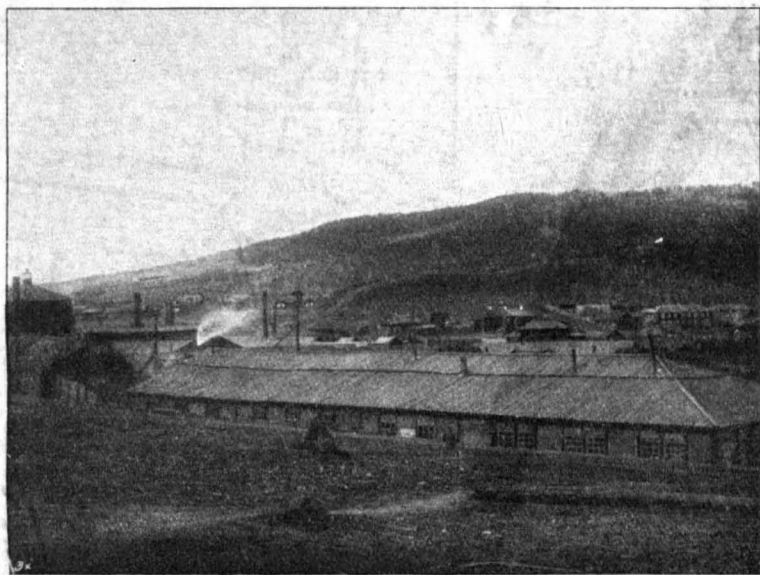
Rich deposits, which to the present time are worked in a most primitive way by the peasants, have been discovered in the Yeniséisk district at a short distance from the town of the same name, near the villages of Potápovo and Zaledéevo.

Although very abundant throughout the Irkútsk government, iron is worked only on the lower reaches of the Oká, an affluent to the Angará, where stands the Nicholas cast-iron foundry, iron works and rail-rolling mill belonging to the company organised by Mr. Mámontov. Mining parties, which have been at work along the line of the Great Siberian Railway, have made remarkable discoveries of rich deposits of magnetic iron-ore on the rivers Kasiánka, Korshunkha and Zhelézny Kliúch in the Irkútsk government. Numerous beds of iron are also situated round Lake Baikál. At the beginning of 1899, the Irkútsk merchant Glótov organised the Mining Company of Irkútsk, with a capital of R. 1,000,000 divided into 4,000 shares, to work these mines.

Green copperas occurs in the Irkútsk government, near the village of Ziminskoye, on the right bank of the Oká. The alum copperas soil contains green copperas in thin streaks of crystalline salt of a greenish colour, while at some points green copperas is represented by a yellow and reddish-brown sediment.

Deposits of the same formation are imbedded in the Shelun-Tong mountain above the source of the Táгна.

Coal deposits have been discovered throughout the vast territory of Eastern Siberia, and recently along the Great Siberian railroad, by geological parties specially despatched to explore this region.



The Nicholas foundry and iron-works.

The following deposits in the Yeniséisk government have a special importance:

- 1) in the Achinsk district, near the village of Antrópovo,
- 2) 30 versts from Krasnoyársk, near the village of Kubékovo,
- 3) along the river Kácha, near the village of Zaledévo, and on the river Kemchúga, 100 versts from the town of Krasnoyársk,

4) in the Minusínsk district, along the right bank of the river Abakán, within 55 versts of its junction with the Yenisei at the mountain Izykh. A joint stock company has been organised by the Marquis de Vassall Montiel and Engineer Devi to work the coal deposits along the basin of the Yenisei. Other coal regions with a kind of coal similar to anthracite, lie much further to the north, along the Nízhniaya Tungúska. Many coal seams have been discovered along the highway from the town of Kansk to Nizhneúdínsk, situated in the environs of the latter on the river Oká. Quite lately deposits of coal lying in the Balagánsk district, near the village of Cherenkóvo on the railway line, have been carefully explored. According to the analysis of Professor Alexéev, it belongs to the genuine coal formation.

Engineer Bogdanóvich classes this coal with the fatty dull kind found in the Lúnievsk pits. The basin of the river Great Bélaya and its tributaries also contain coal measures.

In connexion with the geological investigations conducted along the middle and lower reaches of the Angará, deposits of this mineral have been found along its banks, among which special attention is claimed by those near the village of Selenginskaya. There are also deposits of coal in the region of the Angará and Léna, on the Irkút, southwest of Lake Baikál, and in the environs of Irkútsk.

Extensive beds of graphite, amounting to about 10,000,000 puds, are scattered over the Yeniseisk government, specially in the Turukhánsk district along the lower reaches of the Nízhniaya Tungúska and its tributaries. On being subjected to numerous tests, this graphite proved to be of excellent quality, comparable to that of Cumberland and Ceylon. The Irkútsk government also abounds in graphite deposits: within its confines, in the Tunkín mountains, graphite of excellent quality was found in 1842 by the merchant Aliber, and has been worked for a long time for Faber's pencil manufactory.

Naphtha has been discovered in small quantities within the range of the Irkútsk coal-bearing region called Idán, situated on the right bank of the Angará, 40 versts from Irkútsk. As stated by Engineer Bogdanóvich, coal containing such a large percentage of hydrogen points to the possibility of finding naphtha in connexion with it.

Salt beds are especially numerous in Eastern Siberia. In the Yeniseisk and Irkútsk governments, salt is obtained from brine. In the Yeniseisk government, it is produced in the Tumanshétsk works, situated in the Kansk district on the Biriúsa river, and in the Tróitsk works of the same district, on the river Usólka, tributary to the Taséeva. In the Irkútsk government, the valley of the Népa river, flowing on the left into the Nízhniaya Tungúska, abounds in saline springs; the brine flows from red sandstone, marl and clay, which evidently belong to the sub-devonian geological system. Salt is obtained at the Ust-Kutsk saltern, situated on the river Kut, a tributary of the Léna. The famous salt spring Usólia is situated within a small distance of Irkútsk, 70 versts from the Angará and is worked by the Irkútsk works. Salt marshes, which represent a transition from the salt lakes, are to be found in various parts of the Yeniseisk government, along the course of the rivers Yus, Abakán and many others. Moreover, there are many brackish lakes in the Yeniseisk government, among which Lake Minusínsk, covering an area of  $2\frac{1}{2}$  square versts, is the most important.

Nephrite is found in large clusters at a distance of 50 versts from Irkútsk along the valleys of the rivers Bélaya, Kitói, Urik and Onóta.

Various coloured stones occur more plentifully in the southeastern part of the Irkútsk government.

Lapis lazuli is to be found on the Sliudiánka; garnet, on the Little Bystraya; serpentine, talc, chandrolite, lavrovite are scattered along the river Tálaya; while blue lime, spar, pink quartz, salite, bakalite, trenolite, aphanite and others are to be found on the Sliudiánka; and green apatite and black mica, near the Uluntái.

Fire-clay (kaolin) predominates on the banks of the Bélaya, close to the villages of Badáiskaya and Uzky Lug.

The Irkútsk government contains many mineral springs: the Turánsk springs having a temperature of about 30°R., situated near the Nílov hermitage on the river Ukhé-Ugún, at a distance of 250 versts from Irkútsk; Arshán-Su, a carbonic acid spring, situated within 40 versts from the Turánsk military post; the Okinsk springs on the Oká river, 500 versts from Irkútsk; the Barnaúl soda springs, near the village of Bólshe-Mamyrky, situated in the Nizhneúdínsk district.

Eastern Siberia is just as abundantly watered as its western part. The Yeniséisk government is watered by the great Yeniséi water system. Navigable throughout its entire course, the Yeniséi receives on the east its most important tributary the Tungúska or Angará which, affording a navigable way to Irkútsk, Lake Baikál and the Transbaikál, possesses a great importance for the trade of Eastern Siberia. The rivers Great Pit, Podkámennaya-Tungúzka are also important tributaries to the Yeniséi. Among the rivers flowing into the Arctic Ocean, the Abakán, bordering the Yakútsk territory, is deserving of notice; as yet scarcely explored, it flows through the government for a distance of 900 versts.

Numerous lakes occur in the government, but exclusively in its southern and most northern parts. The Ingól and particularly the Shiro lakes, containing mineral water, and situated in the Minusínsk district, are from year to year becoming better known. More lately, the department of State Domains has paid special attention to the properties of the lakes in the Yeniséisk government and has undertaken the organisation of a health resort with a hospital for out-patients.

The Irkútsk government, which on the south-east is bordered by Lake Baikál for a distance of 600 versts, contains also numerous rivers and streams belonging to the basins of two large rivers, the Angará and Léna. The Angará represents the chief waterway of the government; along it is gathered the greater part of the population and it affords an easy communication by which the produce of the Irkútsk government is conveyed to the gold mines of the Yeniséisk government.

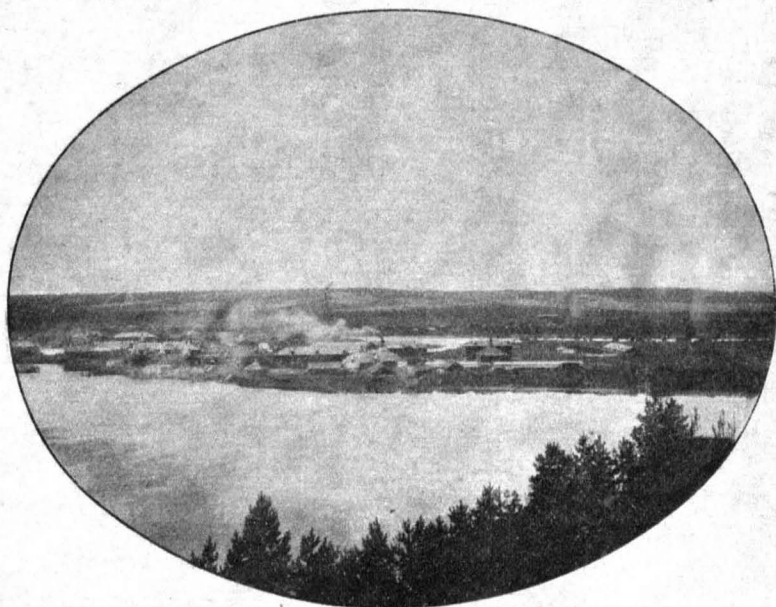
The Irkút, Kitói, Bélaya, Oká and Taséeva are the chief left tributaries of the Angará, which on the right receives the Kuda, Yánda, Ilím, Chadobéts and Irkátseva. The Léna, taking its rise on the northwestern slopes of the Baikál mountains, within 20 versts of Lake Baikál, waters the government for a length of 1,600 versts. Its slow current is raftable from the village of Kachúg, which is situated 200 versts from its estuary. This waterway is specially used for the transport of grain and manufactured articles to the Yakútsk territory. Its course is dotted by settlements belonging to the Verkhólénsk and Kirénsk districts.

The climate of Eastern Siberia is raw and strictly continental. The influence of the sea is only felt on the extreme north of the Yeniséisk government,



where it has little effect upon organic life. The average temperature at Krasnoyársk is  $+1.0$ , at Kansk  $-1.6$ , at Yeniseisk  $-2.4$ , at Minusinsk  $+0.7$ .

The middle zone of the Yeniseisk government is open to all the western



The Khaifin china manufactory of Pereválov (Irkútsk gov.).

winds blowing from the plains and steppes of Western Siberia, while northern winds prevail in the Minusinsk district, which to the south and west is sheltered by mountains.

The thickness of the snow cover, which has a great importance for agriculture, depends upon the wind. The unsheltered steppe lands are often subject to droughts; but little snow falls and it is easily blown away.

The climate of the Irkútsk government, which is more distant from the sea and has a high elevation, is still more continental than that of the Yeniseisk government and is characterised by a considerable annual range of temperature and continued cold. In the town of Irkútsk, the mean temperature during the year is  $-0.9$ , in the village of Kultúk on the Baikál,  $-1.5$ .

The minimum temperature in January is  $-45.6$ , the maximum rises to  $+34.6$  in June shewing a range of  $80.2$ . Summer is the dampest season; the small quantity of precipitation in winter is due to the scarceness of clouds caused by an almost total absence of wind and to the prevailing anticyclone.

The vegetation of Eastern Siberia is similar to that which covers the surface of its western part. Forests, containing the same tree species as in Western Siberia, are uninterrupted by any centres of population and stretch over immense areas representing an impenetrable virgin „taigá“, in which firtrees predominate. Not with standing this extreme abundance of forests, the banks of the Yenisei and other rivers which were once covered by a thick vegetation, are now quite bare. A regular system of forest management was only introduced into Siberia in the year 1895.

The fauna of Eastern Siberia is also the same as in its western part, represented by species of the tundra and of the Altai plateau. It may be mentioned as a remarkable phenomenon that the river Yenisei forms the line on the east which is never passed by the beaver.

Population. The census of 1897 shewed a population of 1,066,419 (559,075 males, 507,344 females) in the Yeniseisk and Irkutsk governments. The former numbers a total of 559,902 (291,555 males, 268,347 females), while the latter contains a total of 506,517 (267,520 males, 238,997 females). In the Yeniseisk government the proportion is 92.0 women to 100 men, and in the Irkutsk government—85.6 women to 100 men. There are 0.24 inhabitant to every square verst in the Yeniseisk government.

The population is distributed according to districts in the following way:

#### Yeniseisk government.

DISTRICTS.	POPULATION.		
	males.	females.	total.
Achinsk .....	56,877	53,936	110,813
Krasnoyarsk ..	49,409	44,904	94,313
Kansk .....	51,432	42,217	93,649
Minusinsk .....	92,558	90,091	182,649
Yeniseisk .....	34,245	30,969	65,214
Turukhansk region ....	5,905	5,212	11,117
Usinsk region .....	1,129	1,018	2,147
Total .....	291,555	268,347	559,901

#### Irkutsk government.

DISTRICTS.	POPULATION.		
	males.	females.	total.
Nizhneúdinsk .....	49,916	33,687	80,603
Balagansk .....	75,227	68,509	143,736
Irkutsk .....	81,155	77,582	158,737
Kirénsk .....	28,324	26,039	54,363
Verkholensk .....	35,898	33,180	59,078
Total .....	267,520	238,997	506,517

The greater part of the population, represented by 865,600 inhabitants forming 81 per cent of the total number, is concentrated within the range of the Great Siberian Railway in the territories of the Achinsk, Krasnoyarsk, Kansk, Minusinsk (Yeniseisk government), Nizhneúdinsk, Irkutsk (Irkutsk government) districts, comprising an area of 456,753 square verst. The average proportion of the population in the region is 1.89 inhabitant to the square verst.

In the Yeniseisk government, the natives form almost 10 per cent of the total population; in the Irkutsk government, they are still more numerous, representing 21 per cent.

Upon settling in the Yeniseisk government, the Russians took possession of its best central portion driving one part of the natives towards the polar tundra in the Turukhansk region and into the northern part of the Yeniseisk district, and the other, towards the steppe lands of the districts of Minusinsk Achinsk and partially to the Kansk district. There is a well marked difference between these two native tribes evidenced by their type, life and pursuits.

Castrén includes the ancient and present population of the southern part of the Yeniseisk government in one Altái group, which he divides into five branches: Finns, Tungús, Mongols, Turks and Samoyéds.

The Finnish tribe was represented by the ancient, now extinct, Chud who have left some archaeological monuments at the foot of the Altái und Sayán mountains.

The Tungús people form the most numerous native tribe, throughout the territory of Eastern Siberia from the river Yenisei to the Eastern Ocean and southwards to China. They are divided into settled, nomad and roaming or forest and reindeer Tungús.

They are mostly nominal Christians but, being ignorant of the Russian language, and living at a great distance from Russian settlements, osit my profess Shamanism.

The Yeniseisk government contains a total of 3,500 Tungús.

The Mongolian stock is represented by the Kalmyks who, at a remote date, were a mighty race. Now they are entirely fused with the Turkish tribes.

Towards the end of the XVIII century, the Kalmyks emigrated in great numbers to the Chinese Empire; those remaining in Siberia are partly nomads, roaming over the highland bordered by the Sayán and northern Altái.



Museum of the Khaftin manufactory.

The Turkish tribes which are numerous fall into Tatar clans, known under the names of Méletsk, Kizylsk, Sagái, Káchinsk and Túbinsk Tatars.

The Melétsk Tatars dwelling in the Achinsk district along the river Chulym, are administered by a separate native local board. They ore quite russified, have adopted the Russian language and lead a settled life; their villages, called „ulús“, with a population of 1,853 do not differ from true Russian villages.

The Kizylsk Tatars, numbering 5,825, occupy the south-western portion of the Achinsk and part of the Minusinsk districts; they are administered by

their own local board; like the Melétsk Tatars they are russified and belong to the orthodox religion.

The Sagáís, wandering along the river Abakán, are chiefly occupied with cattle breeding. They are all baptised but, as nomads, are still under the influence of their Shamans and retain a great attachment to heathen rites, which keep them in a condition of comparative savagery. They number 14,002 and are administered by the board of Askízsk.

The Káchinsk Tatars, (12,175) being nomadic cattlebreeders, dwell in the Káchinsk steppe bordered by the Abakán and Yus, and are under the management of the board of Abakán. A population of 12,175 Túbinsk Tatars, living on the Abakán and Uibát rivers, are reckoned to them.



Type of shamán of the polar tundra.

The Achinsk and Minusínsk districts contain about 33,855 natives; their number far from diminishing, has increased by 45 per cent during the last 50 years.

The eventual passage from Shamanism to the Orthodox religion was effected gradually, together with the transition to more civilised conditions and the whole process of Russification; at the points where Russians entertained close relations with the Tatars and lived nearer to them, this transition was effected more quickly, while the same process was slow to penetrate to those

tribes dwelling at a greater distance. A great number of natives openly professing the shamanistic faith are settled in the Minusínsk district, where various shamanistic figures, amulets or „toe“ are to be found in the corner of each „yúrta“ or tent.

The Samoyéd branch of the southern natives is far less numerous, being represented by only about 2,000 Koibáls and Matórs, wandering along the river Abakán; by 3,000 Bentírs settled on the middle reaches of the Abakán; by 400 Kamasíns, dwelling in camps in the Kansk district along the river Kan; and by 400 nomad Karagáses, dwelling in the Minusínsk district.

Besides the Tungús people, Ostiáks and Samoyéds, the Yuráks and Yakúts belong to the northern tribes of the Yeniséisk government, while the native population of the Irkútsk government is represented by Buriáts, Tungús, Tatárs, Ostiáks and Soyóts.

The class of exiles, playing an important part among the population of Eastern Siberia, comprise the following divisions: 1) convicts, 2) exile-settlers deprived of all civil rights, 3) persons banished for a certain period, deprived of all personal and civil rights, 4) exiled by the administration



without trial. From 950 to 1,000 convicts are annually forwarded by the Tiúmén exile board to Eastern Siberia, to the penal settlements of the Irkútsk government, where they are kept in the Alexander Central Prison, in the Nicholas Iron Works and in the salterns of Irkútsk and Ust-Kútsk. The daily contingent of hard labour convicts varies from 1,400 to 2,000 in the Alexander Prison; from 50 to 200 in the Nicholas Works and from 45 to 50 in the Irkútsk State saltern.

The Irkútsk private saltern employs from 25 to 30 convicts and the Ust-Kútsk from 40 to 50.

In 1894, a considerable number of them were employed in the construction of the sixteenth section of the Midsiberian Railway, comprising a distance of 36 versts between the rivers Bélaya and Kitói. This experiment was attended by marked success.

The exile settlers who have passed the stage of hard labour, and those exiled by the administration retain their criminal propensities, and are a heavy burden upon the local population of Siberia, which they constantly demoralise.

According to the statistics of the Tiúmén exile board, among the total number of 908,266 convicts exiled to Siberia from 1823 to 1898, 500,000 were forwarded during this period of 75 years to the government of Eastern Siberia and mainly to the Yeniséisk and Irkútsk governments.

Emigration. The Yeniséisk government, next to the favourite Tomsk region, is subject to the greatest pressure of emigration. The Russian peasants move especially to the Minusínsk district, where a great number of them have settled at their own risk, without any assistance from the Government.

From the year 1892, the Yeniséisk and Irkútsk governments have been occupied till quite lately with the choice of the localities to be colonised and with the regulation of the settlement system. Since the opening of traffic on the Great Siberian Railway, the pressure to the East has been gradually increasing; on this account, the Committee for the construction of the Siberian Railway, organised in the year 1896-1897, four medical and feeding stations within the confines of the Yeniséisk government: at the Achinsk station, for the assistance of the settlers in the Achinsk district; at the station of Krasnoyársk, which is the meeting-point of emigrants bound for the Krasnoyársk and Minusínsk districts; at the stations of Olgino and Kansk, for those bound for the Kansk district, where the greatest number of grants were made in 1895.

Before the opening of traffic on the Great Siberian Railway, cases of emigration to the Irkútsk government were quite a rarity, but now the organisation of medical and feeding stations has become most necessary. They



Dress worn by shamán during the performance of religious rites.

are established at the station of Taishét for settlers moving to the western parts of the Nizhneúdinsk district; at the station of Tulún, for the colonisation of the Nizhneúdinsk district; and at the station of Irkútsk, which is a forwarding point whence the settlers move further east, towards the Transbaikál and Amúr.

Immense areas of untilled land suitable for colonisation, covering several millions of desiatins, are now being regulated with a view to future colonisation, which will bring new life into the region, and open wide prospects to the export of agricultural produce.



Idols of natives from the polar tundra.

The following buildings have been erected at the cost of the Emperor Alexander III fund, within the confines of the East-Siberian governments in order to meet the religious wants of the settlers and of the general population:

- 1) 3 wooden churches have been erected near the stations of Olginskaya, Petrúshkovo in the Yeniséisk government, and Zimá, in the Irkútsk government.
- 2) one wooden church in the village of Nóvo-Beriózovskoe, in the Minusinsk district.
- 3) 2 are in process of construction at the stations of Khánskaya and Polovina, in the Irkútsk government.
- 4) four are being built in the Achinsk district in the New-Alexander, Timónino, Yélnik and Gorby settlements.
- 5) two schools are being built in the New-Alexander and Iliá settlements in the Achinsk district.

Land tenure had never a regular character either in Eastern or in Western Siberia, a fact which has caused frequent abuses. Each peasant measured off for his use as much land as he wanted from the property of the community and, having cultivated it for some time, considered it as belonging to himself and his family.

According to the law regulating peasant land tenure, which since 1896 was put in force in the Tobólsk, Tomsk, Yeniséisk and Irkútsk governments, each peasant received a grant of 15 desiatins.

Beekeeping and cattle breeding are the chief sources of prosperity of the population in Eastern Siberia.

Agriculture in the Yeniséisk government reaches 59°30' N. lat. and even 61° N. lat. (for springcorn and barley). The entire Irkútsk government, exclusive of the Kirénsk district, is cultivable. Systems of husbandry vary in accordance with the locality and soil.

In the central zone of the Yeniséisk government, comprising the Krasnoyársk, Kansk, Yeniséisk and northern part of the Achinsk districts, the land is divided into two and even three parts, which are sown in rotation. However, the fallow land system also occurs.

In the forest regions, the trees are cut down, piled up into heaps and burnt on the spot. The land is then ploughed up (without the stumps being first drawn) and sown. After two or three rich crops have been raised, the land is allowed to lie waste for several years according to the nature of the soil, after which it is again brought under cultivation. In many places, spring-

corn is sown on winter-rye stubble fields without fresh ploughing. The two-field system is the predominating form of husbandry in the Irkútsk government, sometimes varied with the fallow land system practised in Nizhne-údinsk or with feeble attempts at the introduction of the more intensive threefield system, adopted in the Irkútsk district. The implements employed are of a primitive type: the „sokhá“ (Russian plough) and, more to the south, the „sabán“ (Little-Russian) and the „sokhá-kolesiánka“. At the present time, new systems of husbandry are being introduced by the emigrants, and stores of agricultural machinery opened, chiefly from the Vótkinsk works.

Rye is mostly cultivated as a winter-corn; wheat, oats, „yáritsa“, barley, buckwheat and millet are sown in spring, this season being preferred on account of the snowless winter, during which the corn is not sufficiently protected. The crops are very variable. The long continued early frosts in the autumn and the severe morning frosts are injurious to the spring corn.

Part of the working class being attracted to the gold mines and other profitable pursuits in the two old government of East Siberia, the quantity of grain sown and harvested scarcely suffices for future sowing and to supply the population for the year.

In 1896, which may be taken as an example for an average year, 1,992,461 chétverts of all kinds of grain were raised in the Yeniséisk, and 1,778,200 chétverts in the Irkútsk government, the population being 1,066,419. With such an insufficient extent of the cultivated area in Eastern Siberia, it is necessary to import grain and its products from the contiguous government of Western Siberia, especially for the maintenance of the local distilleries and to supply the people employed in the numerous gold-mines.

Besides agriculture, cattle-breeding is also a very important occupation of the population, representing the sole resource of the nomad natives of the Minusínsk and Achínsk districts, of the roaming population of the Turukhánsk region in the Yeniséisk government, and of the natives of Balagánsk and Verkholénsk in the Irkútsk government.

According to recent information, the Yeniséisk government possesses approximately 1,792,850 head of live stock, inclusive of 488,931 horses, 432,149 cattle, 714,570 sheep, 95,511 swine, 32,689 goats and 29,000 reindeer. At the same time, the Irkútsk government contains 1,000,464 head, represented by 264,856 horses, 335,549 cattle, 265,379 sheep, 85,862 swine, 48,045 goats and 773 reindeer.

The proportion of live stock to the total population of Eastern Siberia is very small and does not meet its wants, this important branch of husbandry being but very insufficiently developed throughout Eastern Siberia. Considerable droves of cattle are brought every year to the Yeniséisk and Irkútsk governments to supply the population, from the Tomsk government, the Semipalátsk region and Mongolia.

The Soyót cattle, driven from China, are worthy of attention, being very fleshy and fine (about 2—2½ arshins high) with a weight of about 25 puds; but the cows do not give much milk. This cattle is brought from China by two different ways: one begins at the upper reaches of the river Kemchik and reaches the sources of the Kantegír and further the river Abakán; the other traverses the valley of the river Usa and comes to the upper reaches of the Oi. The Soyót cattle receive an admixture of the local stock and are forwarded by rafts along the Yenisei to the north, mostly to the Krasnoyársk and Yeniséisk districts.

Beekeeping is much practised in the households of the Achinsk and Minusinsk districts, containing about 45 thousand bee-hives. Little Russian settlers, who are more experienced beekeepers, are introducing new and more rational systems.

**Fishing** The natives of the northern part of the Yeniseisk district and of the Turukhansk region and those settled on the shore of the Baikal in the Irkutsk government are chiefly engaged in the fishing industry.

The peasants and native population dwelling on the Yenisei and its well watered and abundant tributaries depend upon a few important fish-traders, who however do not at all contribute to the development of this profitable industry. The fish is salted in a most primitive way on the bank of



Town of Yeniseisk (phot. by Kytmánov).

the rivers, and although the Yenisei basin is most abundantly provided with fish, which is not inferior to that of the Irtysh and Ob basin, it is not exported from Eastern Siberia, which is supplied from the adjacent Tomsk and Tobolsk governments with salted and dried fish.

**Hunting** is an important industry in both governments of Eastern Siberia practised on a considerable scale by the natives especially in the Kirensk district of the Irkutsk government, in its southern part on the spurs of the Sayán, and in the Turukhansk country, in the Yeniseisk government.

The birds and animals and the modes of hunting them are the same as in the the Tomsk government. The annual value of the industry is about R. 300,000.

**Cedar-nut gathering**, which is a great help for the natives and Russian peasants, is carried on throughout Eastern Siberia in all the places touching the taiga, in the same manner as in the neighbouring Tomsk and Tobolsk governments.



In the southern part of the government, nut-traders also collect larch-tree „sulphur“, which is chewed by the natives and older inhabitants of Siberia.

Domestic industries have a second-rate importance in Eastern Siberia, being but imperfectly developed. Carpentry, coopering, the blacksmith's art, tarburning, earthenware and brick manufacture, knitting, thread spinning, weaving rough wool, cloth and worsted mittens and tanning sheep and other skins are the industries practised by 4 per cent of the total male population.

Although this region is richly endowed with natural wealth, the manufactures and industries do not meet the local demand, and are insufficiently developed, on account of the scarcity of the population, the high rate of wages and the attraction of capital to the goldmining industry. In 1896, the Yeniseisk government reckoned 485 factories and works with an output of R. 2,158,131, while the Irkútsk government contained 135, with R. 2,810,439.

There are 19 distilleries (R. 1,607,568), 168 tanneries (R. 576,832), 2 foundries and works (R. 508,000) and 5 salterns (R. 190,000).



Town of Yeniseisk. Nunnery of the Virgin of Iberia (phot. by Kytmánov).

The following manufactories are to be mentioned:

1) The first and only sugar refinery established in Siberia (in 1889) is situated in the Minusinsk district.

Experiments conducted over several years have shewn that the climate and soil are favourable for the cultivation of beetroot; hence the enterprise is being gradually extended. The refinery has an output of R. 85,000.

2) The china and earthenware manufactory, belonging to the Siberian China, Glass and Pottery Company of the Irkútsk merchant Pereválov, situated in the Irkútsk government.

The work in the mines is carried on in a perpetually frozen soil, wood fuel being employed for melting it. In these mines the underground works are usually conducted by means of the pillar system, the worked spaces being faced with stone.



Town of Viliúisk.

The mines now being worked are situated at a distance of 1,700 versts north-east of Irkútsk, in the Olekminsk district, and are divided into the Olekminsk and Vitim groups under the management of the Irkútsk Mining Department. The working of the mines dates from 1851, the annual output of gold during

30 years varied from 419 to 939 puds. The maximum percentage of gold is 8 zolotniks 19 dólias to 100 puds of gravel, obtained by the Alexándrovsk mining company of the Vitim group.

The richest mines are: the Barabá mines of the goldmining company of the Olekminsk district, yielding from 72 to 85 puds per annum. Those of the gold mining company of the Olekminsk district yield from 84 to 129 puds per annum. From 160 to 180 puds are annually obtained in the mines belonging to the Lensk gold mining company of the Olekminsk district, and from 169 to 229 by the Vitim company in the same district.

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## The Midsiberian Railway.

Direction of the line.—Character of the country.—Cost of construction.—Description of stations and localities traversed by the line.—Station of Ob.—Nóvo-Nikoláevsk settlement.—Sokúr.—Oyásh.—Bolótnoye.—Polomóshnaya.—Litvínovo.—Taigá.—Súdzhenka.—Izhmórs-kaya.—Berikúlskaya.—Town of Marińsk.—Súslovo.—Tiázhin.—Itát.—Bogotól.—Krás-naya.—East-Siberian frontier.—Town of Achinsk.—Tarútino.—Chernoréchenskaya.—Kemchúg.—Kachá.—Mínino.—Town of Krasnoyársk.—Basin of the Yeniséi.—Station of Yeniséi.—Zykovo.—Sorókinó.—Kamarchága.—Balái.—Olginskaya.—Tróitsko-Zaoziórnaya.—Tyrbyl.—Petrúshkovo.—Town of Kansk.—Ilánskaya.—Ingásh.—Tínskaya.—Kliuchínskaya.—Yúrty.—Taishét.—Bairónovka.—Razgón.—Alzamai.—Zamzór.—Kamyshét.—Uk.—Town of Nizhneúdínsk.—Khingúii.—Khudoyelánskaya.—Kurzán.—Tulún.—Azéi.—Sheragúl.—Kui-tún.—Kimeltéi.—Zimá.—Tyrét.—Zalarí.—Golovínskaya.—Kulutk.—Cheremkóvo.—Polo-vína.—Málta.—Télma.—Sukhóvskaya.—Innokéntievskaya.—Town of Irkútsk.—Irkútsk-Baikál branch.—Tomsk branch.—Town of Tomsk.



THE Midsiberian railway commences at the right bank of the river Ob, at  $55^{\circ}$  N., and proceeds north-east to the town of Marińsk and, running parallel to the  $56^{\circ}$  N. lat., reaches the town of Kansk ( $56^{\circ} 13'$  N. lat.); from this point, the line abruptly turns south-east, following this direction to the town of Irkútsk ( $52^{\circ} 16'$  N. lat.). From Irkútsk the line descends south-east to Lake Baikál and terminates somewhat south of the 52-nd parallel.

The line runs through the Tomsk and Marińsk districts of the Tomsk government, through the districts of Achinsk, Krasnoyársk and Kansk in the Yeniséisk government, through those of Nizhneúdínsk, Balagáńsk and Irkútsk, in the Irkútsk government and passes through the towns of Marińsk Achinsk, Krasnoyársk, Kansk, Nizhneúdínsk, Irkútsk, and the town of Tomsk by the Tomsk branchline. The country traversed by the railway is essentially mountainous and woody, and is intersected by spurs of the Altai, Alatau and Sayan mountains. The mixed forest flora, alternating with meadows and at times cultivated fields, gradually passes into taigá and dense

growths of fir. The mountain spurs offer a series of picturesque panoramas, but present great difficulties for the construction of the railway.

The country traversed by the railway may be divided into the following sections, according to the nature of the locality: the Ob-Achinsk section, 550 versts, is level land; Achinsk-Nizhneúdinsk, 698 versts, mountainous; Nizhneúdinsk to Zimá, 239 versts, hilly; from Zimá to Polovína, 138 versts, the country is mountainous; Polovína to Irkútsk, 90 versts, elevated land; from Irkútsk to the Baikál, 64 versts, also an elevated section; the Tomsk branch, 89 versts, mountainous.

From the town of Marińsk, the line runs in proximity to the Siberian highway crossing several times its sinuous course.

The Krasnoyársk-Kansk section alone is more distant from the highway sometimes running at a distance of 30 versts from it, across a country offering easier technical conditions for the construction of the railway. The preliminary surveys for the construction of the Midsiberian railway were conducted in 1887—1888 by Engineer N. P. Mezheninov, who was also entrusted with the construction of the line itself.

The construction of the Irkútsk-Baikál branch was carried out under the direction of Engineer Púshechnikov, chief constructor of the Transbaikál railway.

The total length of the railway from the Ob station to Innokéntievskaya, near the town of Irkútsk, representing the main line, is 1,715  $\frac{1}{2}$  versts. With the Tomsk branch line, the total length of Midsiberian railway amounts to 1,868  $\frac{1}{2}$  versts.

The estimated cost of the Ob-Krasnoyársk section, inclusive of rolling stock and rails was R. 36,257,171, or R. 50,994 per verst.

The cost of the construction of the Tomsk branch line was estimated at R. 2,494,198 or R. 27,917 per verst.

The estimated cost of the Krasnoyársk-Irkútsk section was, inclusive of rails and rolling stock, R. 71,779,464, or R. 71,493 per verst. The total cost of the whole Midsiberian railway from Ob to Irkútsk, inclusive of the Tomsk branch line, was R. 110,530,833.

The cost of the section from Innokéntievskaya to the Baikál 64 versts long was, without rolling stock, R. 3,626,336, or R. 56,660 per verst.

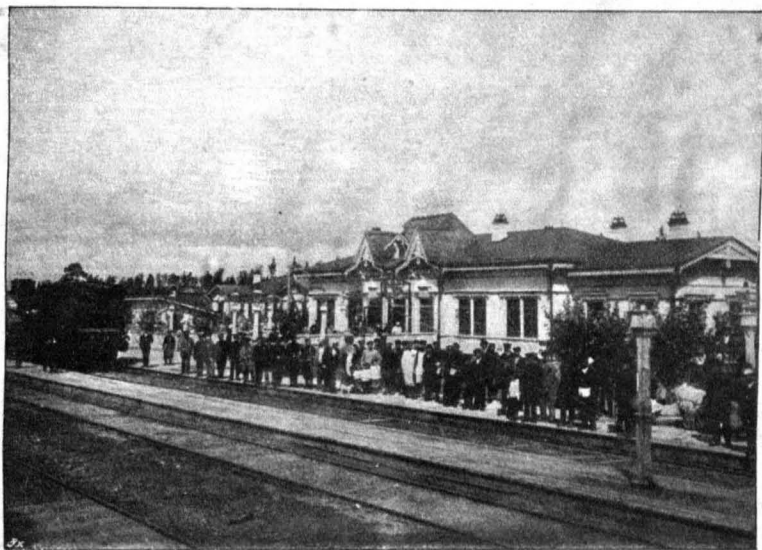
1) **Ob**, III class station. Buffet. (8 versts from Krivoshehékovó, 1,332 versts from Cheliábinsk.)

The station is situated on the lofty and picturesque right bank of the river Ob. Previous to the construction of the line, this hilly bank was covered with a dense virgin forest of fir, descending by abrupt cliffs to the edge of the broad waters of the river. The station buildings stand on a plot of land bordered by fir wood. As the starting point of the Midsiberian railway, the station is provided with a spacious brick enginehouse and workshops with fitting and waggon shops, a smithy and foundry, and locksmith and turner's shops, employing a total of 450 workmen.

A wooden church in honour of the Holy Prophet Daniel has been erected near the station at the cost of the Emperor Alexander III fund. A spacious wooden building containing a two class school for the children of railway employees stands on the other side of the station nearer to the Ob. This building contains a large room with a stage for amateur theatricals organised for charitable purposes by the railway employees; it is also used for Sunday lectures given to the workmen. Classes of sacred choral music are

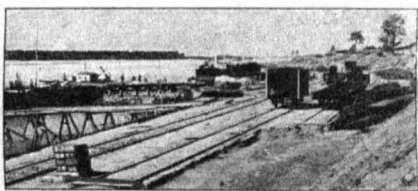


held in the school. With a view to encourage the singing and public lectures, the Managing Director of the Siberian Committee, State Secretary Kúlomžin presented the school with a harmonium and a magic-lantern. Close to it, stands a railway hospital with a reception room for the sick. From here a branch line runs to the river Ob, 3 versts in length and connected



Station of Ob.

with the saw-mill belonging to the Cabinet of His Majesty. This branch was constructed for the transport of goods brought by water to supply the demand of the Midsiberian and Transbaikál railways. In connexion with the increasing export of grain and animal products, from the Altái mining district, enlarging the operations of the Ob station, the branch line and the landing stage on the river will acquire great importance; the goods bound for Eastern Siberia and of the western markets of the Empire will be brought from the Barnaúl and Bísk districts by river, the right bank of the river Ob being particularly well adapted for the anchorage and unloading of rafts, steamers and barges. These favourable conditions explain the preference shewn by senders of goods conveying them to the station of Ob instead of that of Krivoshchékovo, although it makes a difference, if they are sent west, of 1 R. 53 kop. per waggon loaded with grain. There are yet no arrangements at the landing-stage for storing and keeping grain and other water-carried goods; this is why the goods are kept on the barges or unloaded on the river's bank, the railway administration assuming no responsibility for possible damage.



Landing-stage on the Ob.

This unsatisfactory state of things greatly injures the interests of the owners and senders of goods and a better organisation of the landingplace is imperatively required, such as the construction of warehouses and elevators. The total quantity of grain conveyed from the station of Ob to Irkútsk, which receives the largest stream of grain from the fertile Altái, remains so far unascertained, on account of the recent opening of traffic on the main line, viz. in autumn of 1898. According to certain commercial data and information regarding the stock of grain within range of the station awaiting conveyance, the annual transport of goods from the Ob station may be estimated at 5,000,000 puds. Upon the opening of traffic to the east, towards the end of the year 1898, the amount of grain transported from the Ob station was 1,387,087 puds; half of this quantity was sent to Eastern Siberia: 869,562 puds to Krasnoyársk, 187,878 to Irkútsk, 41,288 to Tulún and 30,673 to Kansk.



View of the landing-place on the Ob.

One of the most important and best fitted medical and feeding stations for the benefit of the settlers bound for Tomsk, the Altái mining district and for the lands of the Cabinet



The settlement of Nóvo-Nikoláevsk.

of His Majesty is situated near the station, on the right bank of the Ob, and is the residence of an emigration official. Previous to the construction of the railway, a small peasant settlement Gúsevka, belonging to the volost of Krivoshechékovo in the Tomsk district with 24 houses and a population of 104 inhabitants, stood near the station. These peasants were furnished with land from His Majesty's Cabinet. From the year 1893, upon the construction of the Ob-Krasnoyársk section, the future commercial importance of the Ob station and its environs became apparent; peasants long settled in

the Tobólsk, Tomsk and Yeniseisk governments, and a great number of fresh emigrants from European Russia, streamed to this small settlement and even occupied without permission the adjacent Cabinet lands of His Majesty.

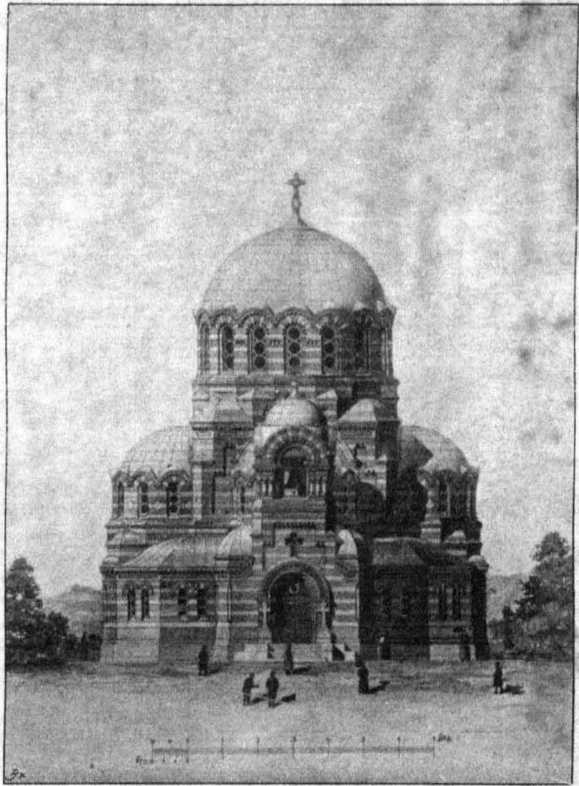
With a view to regulate the pressure and to meet the demands of the population, the Administration of the Cabinet lands allotted a piece of land watered by the small stream Kámenka, a tributary of the Ob, for permanent settlement by the emigrated households. It bears the name of Novo-Nikoláevsk settlement and contains a population of 15,000.

An area of 16,000 desiatins and 2,682 sites for building houses were granted to the population by the Administration of the Cabinet lands. Of these, 1,732 are already occupied and 1,130 are still free. They are leased for 30 years to all comers irrespective of class, for an annual rent of from R. 2. 50 kop. to R. 10, according to the situation of the spot chosen. The Administration reserves the right to raise

the rent 10 per cent. after the lapse 6 years. Each building plot is 15 sazhen along the street and 17 on the yard side. The peasant population, having received additions of burgesses and representative of the official class, has assumed the appearance of an industrial town.

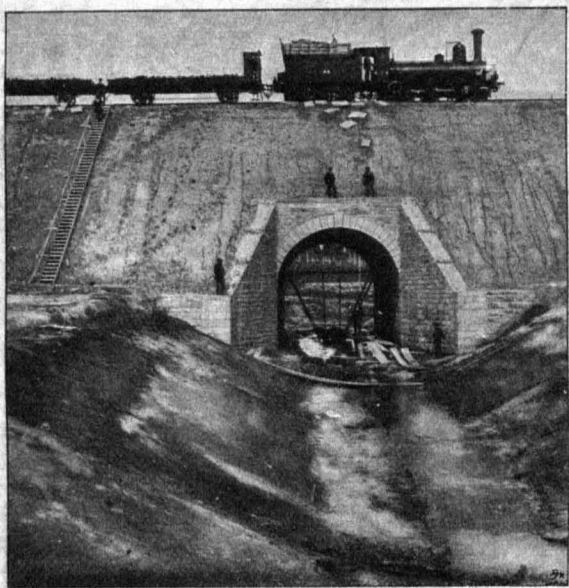
In the centre of the settlement, stretching for ten versts along the banks of the Oká and its affluent the Kámenka, a fine brick church is being erected in honour of St. Alexander Névsky at the cost of His Imperial Majesty and some private individuals. This edifice will serve as a monument to the Tsar Pacificator, the initiator and founder of the Great Siberian Railway. Pending its completion, divine service is held in a prayer-house. So far the settlement possesses but two two-class schools, one a parish school, the other founded by the Administration of the Cabinet lands. There is no hospital, the sick being attended to as outpatients at the emigrant station.

All branches of industry are practised in the settlement. There are 113 shops and stores, a beer cellar, 4 beer shops, 2 wine cellars, 2 taverns, 7 bakeries, 1 confectionary shop, an hotel with coffee-rooms, furnished rooms and



Church in the settlement of Nóvo-Nikoláevsk.

50 inns. The bazaars do a brisk business in agricultural produce which, especially in winter, is brought a considerable distance as much as 200 and 300 versts from the Barnaul and Blisk districts. According to the cart-duty paid



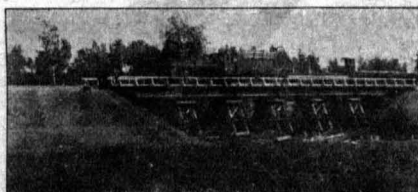
Embankment at 28 verst.

on the imports of local produce, the total business of the markets amounts to about R. 2,000,000. The settlement possesses a volunteer fire brigade. A hundred common hackney coaches without springs ply according to tariff: 20 kop. a drive, 30 kop. an hour, 50 kop. for passenger with luggage to the market place, and 70 kop. for a drive beyond the river Kámenka. There are several offices for the transport of goods, and an intelligence office giving information on the prices of goods etc.

After having crossed the river Ob, the railway line ascends to the watershed of the rivers Ob and

Tom along the valley of the small river Yeltsóvka, and reaches the Sokúr ridge traversing a picturesque and woody country.

2) **Sokúr.** V class station (42 versts from Krivoshchékovo, 1374 from Cheliábinsk). The village of Sokúr (Barlákskoye) with a population of 700, in the Tomsk district, is situated within 12 versts of the station. A small quantity of rye and ryé-meal is forwarded hence eastwards. From this point, the line descends to the valley of the river Oyásh, and after twice crossing the Bálda, its upper tributary, ascends through a mountainous country to the watershed of the rivers Oyásh and Inia falling into the Ob.



Bridge over the Krutáya Bálda.

3) **Oyásh.** V class station (84 v. from Krivoshchékovo, 1416 from Cheliábinsk).

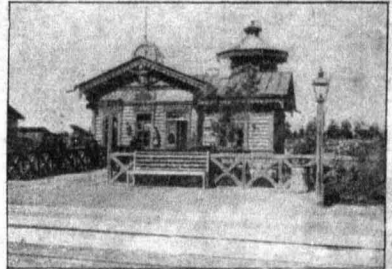
The village of Oyásh, with a population of 654, possesses a local village board, belongs to the Tomsk district, and is situated on the Siberian highway, within 10 versts of the station. The population forwards grain to the East. In the year 1898, about 63,188 puds of wheat-meal were conveyed from here to Achinsk, Krasnoyársk and Irkútsk. Leaving the station, the line descends to the rivers Sarbayázh and Oyásh, spanning both by bridges 15 sazhen in length. Further on it passes through a swampy country.

4) **Bolótnoye.** III class station. Buffet. (126 v. from Krivoshchékovo, 1458 v. from Cheliábinsk).



The village of Bolótinskoye having a population of 590 belongs to the Tomsk district. It contains a wooden church to St. Nicholas and a parish school. Oats and wheat meal are forwarded east.

Reaching the river Lebiázhia, the line crosses it at the 140 verst, by a wooden bridge of 20 sazhen. Ascending futher to the upper reaches of the river Yurgá, the line following the valley of that river crosses the Tom with its high banks at the 161 verst, near the village of Polomóshnoye by an iron bridge with 6 spans of 40 sazhen, and road-way upon the lower-chord girder of the semiparabolic system, supported on stone piers and abutments.



Station of Oyash.

5) **Polomóshnaya.** IV class station (165 v. from Krivoshechékovo, 1497 v. from Cheliábinsk) is situated 4 versts from the bridge over the river Tom and near the trading village of Polomóshnoye belonging to the Tomsk district. It contains a population of about 500 and has 2 shops for manufactured articles, 4 other shops, 2 mercery shops and a wine-cellar.



Bridge at 98 verst.

The Engineer Knorre, owner of the vast railway workshops established for the construction of the bridge over the Tom, built at his own cost a church for the workmen which, now that the work is completed, will be removed to the station of Polomóshnaya.

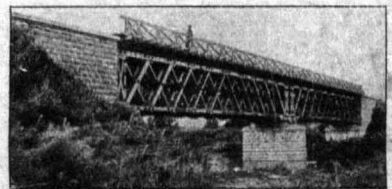
A certain quantity of oats, rye and wheat-meal is forwarded from the environs of the station towards the

east. From this point, the line ascends and crosses the small river Sosnóvka at the 185 verst over a culvert having a breadth of 3 sazhen laid under an embankment 8 sazhen high.

6) **Litvínovo.** V class station (191 v. from Krivoshechékovo, 1523 v. from Cheliábinsk). The line reaches the next station running through a level country and continuous taigá.

7) **Taigá.** III class station. Buffet. (222 v. from Krivoshechékovo, 1554 v. from Cheliábinsk).

It received its name on account of its situation on a desert and desolate spot, amidst a virgin forest or taigá. From this point, a branch line runs to Tomsk. The station of Taigá, although surrounded by a desolate and inhospitable country poorly supplied with water, occupies an important place on the Great Siberian Railway as the junction of two branches. A numerous population, formed of settlers and the former inhabitants of the country, established a settlement on the line. At the present time, the number of inhabitants exceeds 2,000 exclusive of workmen employed on the line and in the workshops. A church in honour of St. Andrew of Crete was erected near the station, at



Bridge over the Lebiázhia.

the cost of the Emperor Alexander III fund, in commemoration of the 17-th October, 1888; there are also a house for the clergy and a school. The station has no importance as a centre of commerce; the inhabitants principally earn their living from the railway, which traverses a thinly populated country.

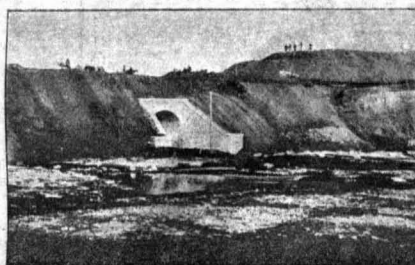


Bridge over the Tom.

It must be said that this point of junction was inconsiderately chosen. There are only a few small hollows in the vicinity, poorly provided with water; for this reason, to supply the engines and the numerous class of workmen and station employees, water is brought to the station in large reservoirs.

Further east, the Great Siberian Railway runs through a level country covered with a dense and impenetrable virgin forest composed of pine, fir, aspen and birch.

8) **Súdzhenka.** V class station (259 v. from Krivoschékovo, 1591 v. from Cheliábinsk). Stands at the head of the river Chendát, tributary of the Yáya and is better provided with water than the station of Taigá. Within a range of 20 versts, there are nine important settlements, some of them being recently established by the emigrants. The station is situated amidst rich coal deposits and is very important as a centre supplying the Midsiberian railway with fuel. Coal deposits, which are partly worked, have been discovered near the station close to the line and in its environs, in the settlement of Lebedínskoe and along the rivers Mazálovsky-Kitát and Achledát. At the 246 verst, a mine belonging to the Government lies within 600 sazhen of the main line; near by, two mines belong to private concerns, one to Mr. Michelson, the other to the Lebediánsk Company. The coal which is obtained from the Government mine is loaded at a terminus with 12 cars; from the mines belonging to Michelson, coal is conveyed by a branch line. According to investigations made in 1896 and 1897 by Engineer Krasnopólsky, all the carboniferous strata within the range of the Midsiberian railway, and those lying southwards along the river Borzás, form the continuation of deposits scattered throughout the neighbouring Kuznétsk district. Special attention must be paid to the Anzhér coalmine on the Anzhér river, tributary of the Alchedát. According to some existing data, a brilliant future lies in store for the mines of Súdzhenka. The coal occurs in thick seams and is considered fit to serve as fuel for engines; this is why the exploitation of the shafts laid by the Mining Department is left to the administration of the Midsiberian railway. Out of the fund for auxiliary undertakings connected with the construction of the Siberian railway, R. 82,000 have been appointed for this work, the additional outlay being provided by the capital assigned for the exploitation of the line.



Culvert on the river Sosnóvka.

The village of Súdzhenko with 794 inhabitants is situated within 9 versts of the station; it belongs to the Tomsk district and contains a village board.

Previous to the construction of the railway, the country within the range of the line lying east of Súdzhenska, was thinly populated; at present grants of wooded land in the taigá have been allotted to the emigrants on both sides of the line, some of which are already occupied while others are being settled. From the station of Súdzhenska, the line descends to the valley of the river Yáya and crosses it near the settlement of Shegárka by a bridge (at 279 v.) with an opening of 50 sazhen, having two spans supported by stone piers. At many places along the Yáya, outcrops of gabbro have been employed for engineering work on the line and for the casing of the bridge over the Kíya.

Porphyries occur on the right tributary of the Yáya, the Alchedát, beyond the Iversk settlement, and are used for the foundation of railway buildings. Gold mines are found southward of the line, throughout the basin of the Yáya and its tributaries the Golden Kitát, the Kelbés, the Borzás and others.

It may be stated as a fact that almost all the valleys which abut on the rivers contain a certain quantity of auriferous gravel occurring not only in valleys, but also on hills. The mines which are now worked on the tributaries of the Yáya yield about 5 puds of gold annually.



Station of Taigá.

9) **Izhmórskaya.** IV class station (293 v.) (from Krivoshchékovo, 1625 v. from Cheliábinsk).

The village of Izhmórscoe (pop. 650) is near the station, in the Marínsk district. It contains a wooden church. A considerable quantity of grain is forwarded to the east from this region. In 1898, the export amounted to 22,778 puds of rye, 53,903 puds of oats, 5,013 puds of barley, 10,500 puds of rye flour.

From here, the line runs parallel to the Siberian highway, along the watershed of the rivers Yáya and Kíya, where a thin birch wood alternates with pastures and fields.

10) **Berikúlskaya.** V class station (329 v. from Krivoshchékovo, 1661 v. from Cheliábinsk). A village of the same name with a population of 949 is