Navigational Atlas of the Selenga River section within Mongolian People’s Republic, 1925

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Abstract. The article provides information on the manuscript atlas of the Selenga and Orkhon rivers within the Mongolian People’s Republic (MPR), compiled on the basis of data from 1924-1925. It was developed for the Selenga Technical Section of the Ministry of the River Fleet to guide navigation along the rivers of Mongolia. The shooting was carried out on a steam boat “Shilka”. The atlas is of interest for the dynamics of river channel processes in northern Mongolia. The materials provide information on where and how to carry out technical work to improve navigation. In addition to information on navigation, it provides economic and geographical information on the north of Mongolia in the 1920s.

1. Introduction
A manuscript atlas of the Selenga River within the MPR boundaries, compiled according to data from 1924-1925, is kept in the funds of the Baikal Institute of Nature Management SB RAS. The attribution of the atlas states: “The Ministry of the River Fleet of the Selenga Technical Section. Technical department. R-1763. Archive Inventory 1, Case 15. The originals of the Navigational charts of the MPR from the survey made on 1925”. There are 52 sheets in the atlas [1].

The 1948 inventory provides a list of sheets:
- pp 1-17  – the Selenga River within the MPR boundaries;
- pp 18-24  – the Orkhon River from the mouth up;
- pp 28-37  – the Orkhon River from the confluence with the Selenga River up to the mouth of the Tola River;
- p 38  – route from the mouth of the Egiin river at the mouth of the Tool River;
- pp 39-40  – route along the road from the mouth of the Egiin River at Murin-Khure;
- p 41  – route from Van-Khure on the road to the mouth of the Egiin River;
- pp 42-43  – route from Murin-Khure along the road to the intersection of the Khanui River; and road, and further along the Khanui River to the confluence with the Selenga River;
- pp 44-45  – the Egiin’ section from the mouth of the Uri River up to the confluence with the Selenga River;
- pp 46-52  – the Uur River section from Terchen-Khur to the confluence with the Egiin.
The atlas is of interest both from the perspective of river channel dynamics in northern Mongolia and from a historical perspective. Moreover, there are practically no maps of that time on a scale of 1 cm/200 m of the northern Mongolia (there are only overview maps, for example – [2]). The manuscript contains a lot of information concerning the socio-economic aspects of life at that time, the analysis of which we present in the article.

The Soviet government was interested in the development of the economic strength of Mongolia, providing material and technical assistance in organising communication lines [3].

A D Simukov, a famous geographical researcher of Mongolia, wrote: “There is steamship traffic on Khubsugul, on the Selenga and in the lowest part of the Orkhon River. There is a possibility of shipping along the Selenga to the mouth of the Egin, i.e. at a distance of about 200-250 km; along the Orkhon to the mouth of the Khara, i.e. at a distance of 80 km” [4]. It should be noted that Simukov was not working in the north of Mongolia at that time and was not familiar with the results of expeditions in that part of the country.

According to the decree of the Council of People’s Commissars of the RSFSR of November 21, 1924, the Selenga State Shipping Company was created. During the navigation in 1927, regular cruises on the Orkhon (for 180 km) and the Selenga up to the mouth of the Egiin were established; and test cruise for 300 km within Mongolia. Along the rivers of Mongolia, two docks are equipped: at the Shara River and the Egiin with residential buildings and warehouses [5]. The newspaper “Buryat-Mongolskaya Pravda” published a whole series of articles on the topic of the river shipping company: ”The increase in cargo turnover of the Selenga water transport is becoming significant”. Due to navigation on Mongolian rivers, the distance of cargo transportation by water has almost doubled in comparison with 1925.

If one asks about economic benefits of water transport within Mongolia, it is as follows: the Orkhon line reduces travel time by 120 km, reduces freight costs by 30 to 40%, and decreases travel time by 20 to 30%. The Selenga line reduces the horse-drawn route in the direction of Muran-Khure, Dzaim-Shabi, Ulyasutai and other western regions by 400 km, reduces the cost of transportation from 30 to 40% and reduces travel time from 20 to 30%.

The jetties are to be located in the following places: 1) a little above the inflow of the Khara into the Orkhon, in 145 km from the Russian-Mongolian border, to completely service the Urginsky district on the Selenga near Erdyn-Van-Khura; 2) the final jetty on the Selenga at the inflow of the Khonui to the Selenga, in 412 km from the Russian-Mongolian border, to service the Muren-Khure-Dzaim-Shabi, Gigetui Kurei and Ulyasutai districts” [6].

"In 1927, 4 steamboat voyages were made along the Mongolian part of the Selenga and the Orkhon Rivers” [7]. “The State Shipping Company intends to launch two shallow-draft steamers in the new navigation along the rivers of Mongolia and two shallow-draft barges specially adapted for sailing along Mongolian rivers. The Leningrad Ship Trust has been ordered two motor boats with a draft of 10 vershoks (vershok – an obsolete measure of length equivalent to 1.75 inches). For the non-steam fleet, two barges with a carrying capacity of 4,000-5,000 poods (an obsolete Russian measure of weight = 16.38 kg) are being built in Irkutsk with a total cargo siege of 10 vershoks” [8].

2. Models and Methods

In Mongolia, a team of technicians made common survey with compass and theodolite. The notes to the sheets state:

1. Marks of benchmarks and contour lines conditional from the benchmark – the dome of the main shrine in Murin-Khura, the mark of which is taken as 1,000 meters.
2. The route is not linked due to the lack of astronomical points.

The fairway was marked according to the course of the steam boat “Shilka” during navigation in 1925. The steam boat “Shilka” was manufactured in 1894 at the Finnish shipyard with a capacity of 45 h.p. The draft was 0.44 m, the crew was 6 persons [9]. The maps were overlaid on the 1925 theodolite mainline, and supplemented in the part of the coastal and bottom relief according to the compass-route inventories of 1919 and 1923. (the Selenga river within Mongolia’ boundaries, 103-125 km, sheet No. 1). A part of the map sheet is shown in Figure 1.
Figure 1. Part of sheet No. 1: the Selenga River within Mongolia (103-125 km).

The atlas contains the notes of three technicians: M G Nazarov, G I Pritupov and F P Shubin. The latter is mentioned on the website “Bessmertny barak” [10], and the website “The Open List” – the most complete database of victims of political repression in the USSR (1917-1991) [11].

Shubin Feodosy Petrovich (born 1898), head of the Angarsk reconnaissance topographic party (1930), a complex party of the Siberian Bureau of Hydroenergoproekt (1933-1935). Arrested on March 13, 1937 in Murmansk, pos. Rosta, Plateau, 18. He was convicted under article 58, clause 10 of the Criminal Code. He was shot in Leningrad on November 18, 1937. Rehabilitated on April 27, 1989 by the Murmansk Regional Prosecutor’s Office.

Each sheet of the atlas is numbered and contains the following information: text indication of the site, scale (linear and named), north arrow, who carried out the adjusted compass’ and theodolite survey, signature of the head of the expedition. It is interesting to note that domes of datsans (Buddhist temples) were used as landmarks for adjusted compass’ survey. The symbols given on the map are presented in Table 1.

3. Results and Discussion
The atlas indicates the measures that need to be taken to improve shipping:

“The Tsulkhynogolsky bendway (67 km) is formed by an underwater streamer passing through the entire width of the channel. The exit speed is up to 6 km per hour, the depth is 90 cm. To deepen the crossing, straightening work is required” (Sheet No. 8, Selenga River in Mongolia (44-67 km). “The 75 km bendway is formed by underwater shallows extending from both the right and left trees, while the shallows of the left bank are close to the right, due to which the fairway is very narrow. For the expansion of the fairway, it is absolutely necessary to set up stream-guiding dams”. (Sheet No. 9, the Selenga River in Mongolia (68-97 km).
Table 1. The symbols are given on the map.

| Hydrological:                          | Relief:                      |
|----------------------------------------|------------------------------|
| stream and river;                      | island;                      |
| fairway;                               | pebble- or sandbank;        |
| direction of flow;                     | sand or pebbles;            |
| gauging post;                          | cobblestone;                |
| water’s edge;                          | above-water stone;          |
| submerged shoal;                       | underwater stone;           |
| kilometres along the fairway;          | rock;                       |
| bendways (perpendicular lines start and end) | horizontal line after 20 meters in height; |
|                                       | channel edge;               |

| Survey marks:                          | Vegetation:                 |
|----------------------------------------|-----------------------------|
| unexplored duct;                       | ‘РХЛ’ – rare coniferous forest; |
| benchmark, its number and elevation above the water’s edge; | ’ЛЛ’ – deciduous forest; |
| theodolite and menzula stations and their numbers; | ’К’ – bushes; |
| kilometre marks.                       | ’ХЛ’ – coniferous forest;   |
|                                       | ’МЛ’ – a mixed forest;      |
|                                       | ’ТЛН’ – purple osier;       |
|                                       | ’МК’ – small bushes.        |

| Settlements:                           | Road signs:                 |
|----------------------------------------|-----------------------------|
| settlements (including datsans);       | road;                       |
| Mongolian yurts;                       | ferrying;                   |
| abandoned Chinese fanzas (peasant houses); | ford.                     |
| arable land, etc.                      |                             |

“On the 49 km bendway in the navigation of 1925, the wattle stream-guiding obstacles were installed, due to which by the end it was possible to notice a slight deepening of the roll” (Sheet No. 30, the Orkhon River from the mouth up to the mouth of the Tola River (37-63 km).

“Kamenistiy” (“Rocky”) bendway (166 km) is an obstacle to navigation on the Orkhon, especially with low water, when the depths above the stones drop to 35-40 cm. For the safety of shipping, it is necessary to remove the stone. Due to the absence of significant stones, they can be cleaned manually” (Sheet No. 33, the Orkhon River from the mouth up to the mouth of the Tool River (163-187 km).

“The fast current on separate rifts up to 9 km per hour makes it difficult for low-power vessels to approach. In addition, one of the obstacles to navigation is rock ledges into the river (25 and 28 km) and 5-6 pitfalls. Therefore, to create favourable conditions for the development of the exploitation of this section of the river, minor stone removal works are required, which does not exclude the possibility of navigation under these conditions” (Section of the Selenga River from the mouth of the Khanui to the mouth of the Egiin (125 km).

The atlas presents economic and geographical information, which is still of considerable interest (spelling has been preserved):

“The Chinese live in the valley of the Usun-Ser river and are engaged in agriculture and divert the river through irrigation ditches for irrigation of fields. They mainly sow wheat, which is processed here at horse mills into grains and sold to the Mongols at 3 Mexican dollars 50 cents (about 4 roubles) per pood” (Sheet No. 33, the Orkhon River from the mouth up to the mouth of the Tool River (163-187 km) Mexican dollars (pesos) were legal money in China from the middle of the 19th century until 1933. China adhered to the silver standard in the monetary system, i.e. all monetary settlements were carried out in silver money and bullion, the same thing happened in Mongolia.
“The vast meadows of the valley are quite densely populated by Mongols - cattle breeders. Closer to the Egiin, there are plowed plots on which (shara-buda) are sown” (Sheet No. 6, the Selenga River within Mongolia (0-20 km) Shar-buddaa (Mongolian) – millet (or as it is also called proso). Grain (called millet) is used for making soups, porridge and other culinary products; it is a valuable feed for poultry.

On sheet No. 8, the Selenga River in Mongolia (44-67 km) abandoned Chinese buildings and a former Chinese trading post are indicated. After the proclamation of independence, Chinese trade in Mongolia was curtailed.

“The Iben River, about 15 kilometres from the bank of the river Orkhon is the Buddhist monastery Undur Gegen Hit. On the slopes of the mountains the Iben River grows a coniferous forest (mainly larch) suitable for harvesting firewood” (List - Up to the mouth of the Tool River).

Several sheets mention transportation on “ongats” (in Buryat, Mongolian – “Ongoso” means boat). Transportation was carried out on flat-bottomed river vessels (bots) of people and cargo with animal draft along the shore.

“Section of the Selenga river from the mouth of the Khanui to the mouth of the Egiin (125 km). The valley is usually a gently rising meadow with bushes near the river bed (bird cherry, apple, willow, poplar and occasionally elm). The coniferous forest is found only on the northern slopes of the mountains. The vast meadows of the valley are quite densely populated by Mongols - cattle breeders. Closer to the Aegin, there are plowed plots where (shara-buda) are sown”.

“Mogoy arshan (mineral spring) is a healing spring. According to polling information, except Mongols, Russians and Buryats come to Mogoy Arshan to be treated for stomach diseases” (Sheet No. 12, the Selenga River in Mongolia (142-164 km).

“The village Shamara is a Russian colony of 27 households. Residents are engaged in agriculture, the main help to which is haymaking. Up to 500,000 poods of hay heats up annually” (Sheet No. 29., the Orkhon River from its mouth up to the mouth of the Tola River (10-37 km).

“The slopes of the mountains along the Usun-Ser River are abundantly overgrown with coniferous forest (larch), thanks to which it is possible to collect firewood for steamer here.

7-8 kilometers from the bank of the Orkhon on the Usun-Ser lives a Russian. (Sheet No. 33 the Orkhon River from the mouth up to the mouth of the Tool River” (163-187 km).

“Erdyn-Van-Khure is a Buddhist monastery with a population of up to 3,000 lamas. Trade is poorly developed, there is only a branch of the Mongolian People’s Central Cooperative (in Tamagan, 2 km from Erdin Van Hure) and two or three Chinese merchants. There is no post office, why communication with other points is carried out by couriers or fellow travellers” (Sheet No. 14, the Selenga River within Mongolia. 192-217 km).

4. Conclusion
In conclusion, we note that the friendly assistance of the USSR helped in organizing navigation along the Selenga River from the border to the mouth of the Khonui River at a distance of about 500 km, and along the Orkhon River for 280 km. The materials of the atlas show that this required only minor and uncomplicated straightening and submerged tree stump-stone removal work.

The Atlas is of greater interest to hydrologists who study channel processes, as well as those interested in the history and geography of Mongolia. In addition to information on navigation it contains water velocity and discharge values, etc., and provides detailed economic and geographical information on the north of Mongolia in 1923-1925.

References
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