

CLASSIFICATION CONFIDENTIAL CONFIDENTIAL
CENTRAL INTELLIGENCE AGENCY REPORT
INFORMATION FROM
FOREIGN DOCUMENTS OR RADIO BROADCASTS CD NO.

50X1-HUM

COUNTRY USSR DATE OF INFORMATION 1949
SUBJECT Scientific - Geophysics
Geographic - Hydrology
HOW PUBLISHED Bimonthly periodical DATE DIST. 5 May 1950
WHERE PUBLISHED Moscow NO. OF PAGES 3
DATE PUBLISHED Nov/Dec 1949 SUPPLEMENT TO REPORT NO.
LANGUAGE Russian

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SOURCE Izvestiya Akademii Nauk SSSR, Seriya Geologicheskaya, No 6, 1949.

REVIEW OF M. M. DAVYDOV'S ARTICLE,
"THE OB' RIVER WILL FLOW INTO THE CASPIAN SEA"

V. A. Obruchev

The problem of eliminating the sharp variations in the level of the Caspian Sea has recently been studied in connection with the problem of irrigating the lands of Central Asia. The first steps in this direction -- i.e., the construction of the Fergana and Golodnaya Steppe canals and the Zeravshanskiy reservoir and the passage of water through the Kelifskiy Uzboy into the Kara Kum desert of Turkmen SSR -- along with others, substantially increased the area of irrigated land in Central Asia. There is still much to be done in this direction, but it has become evident that the water resources of the main river systems of Central Asia, the Amu-Dar'ya and the Syr-Dar'ya, are not sufficient for the vast areas which must be irrigated.

Thus, hydrologists and economists began to look toward the higher latitudes of Central Asia in their search for additional water resources for irrigation purposes. At 48 degrees north latitude, they noted the rivers of the Irtysh River basin which, rising in Kazakhstan and even in the Mongolian People's Republic and the Sinkiang Province of China, carry their valuable water stores to the far north and empty them into the Arctic Ocean. The possibility of turning part of the Siberian waters back to the south and using them to irrigate the lands of Central Asia and Kazakhstan and to serve as a source of power along their courses in Central Asia and Siberia was recognized by these researchers and many projects and suggestions were advanced. However, all these projects and suggestions dealt only with special problems and none reached the stage of technical economic formulation.

Engineer M. M. Davydov attempts to weld all these disconnected projects and schemes into a unified whole and discusses the technical measures which would make it possible to divert part of the flow of the Siberian rivers, the Ob' and the Yenisey, into the Aral and Caspian basins. He points out that the droughts which destroy harvests over considerable areas of the steppe zone of the USSR are formed mainly in the desert spaces of the Turan and Caspian lowlands. The historic decree of the party and government of 20 October 1948 concerning the plan for forestation to protect fields outlined a number of necessary and timely measures aimed at

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securing high and stable harvests in the steppe and forest-steppe regions of European USSR. The implementation of these measures has greatly improved physico-geographic conditions and it would be very desirable to extend the forest belts into the Turan lowland in order to eliminate the drought source. Consequently, water must be found for Kazakhstan and Central Asia to prevent droughts in European USSR as well as to recover the desert areas of these former regions.

Having indicated the necessity for diverting certain Siberian rivers from the north to the south, Davydov analyzes the problems involved in this process.

A dam 78 meters high will be raised on the Ob' River below the mouth of the Irtysh at the village of Belogor'ye. This will create a water reservoir four times larger than the Aral Sea in the trough of the Ob' River and its right and left tributaries. About 90 percent of the area which would be flooded by the reservoir is swamp and swampy stretches of forests and brush, only 10 percent being suitable for agricultural utilization. Through the Tobol River, the water will drop to the bottom of the water divide between the Turgay and West Siberian lowlands, i.e., to the so-called Turgay gateways. The canal which would have to be dug here would be the largest hydrotechnical construction in the world and would recreate the conditions of the Ice Age when the Ob' River, deflected downward by the Ural and Taymyr ice covers, overflowed into the West Siberian lowlands and discharged to the south through the Turgay meridional depression which extends along the eastern foothills of the Urals. Even earlier, however, i.e., in the Tertiary Period, a wide strait which discharged the waters of the Tertiary Sea to the south into the Aralo-Caspian depression passed through the same Turgay depression. Thus, the proposed Turgay canal only re-establishes the hydrographic network which existed in this period.

After crossing the Turgay divide, the water would enter the Aral Sea from the Turgay River and Lake Chelkar-Tengiz and raise its level. The water would then pass through the dry bed of the Dar'yala into the Sary-Kamysh basin, fill it, and flow into the Caspian Sea through the bed of the Uzboy. A system of dried-up river beds and basins in the Kara-Kum. The proposed Belogor'ye dam is about 4,000 kilometers from the Caspian Sea; about 1,800 kilometers of this route are over the Aral Sea and through existing or extinct lakes (Chelkar, Sary-Kamysh, Uzboy) and about 950 kilometers are through the dry beds of former rivers where hardly any excavation work would be required.

However, about 300-350 cubic kilometers of water per year are needed to irrigate the lands of Central Asia and Kazakhstan and maintain the Caspian's level. This is approximately the yearly flow of the Ob' River itself, and therefore Davydov proposes that the Yenisey River also be included in the project. Water will be diverted from the Yenisey into the Ob' through the Kas River and the canal after the dam is built. This will raise the Yenisey to the level of the Ob' and create a large reservoir on the Yenisey from the town of Yeniseysk on the north almost to the mouth of the Kan River on the south.

After the Yenisey and the Ob' are joined, the water resources in the Ob' reservoir will be sufficient to irrigate the vast land areas in Central Asia and Kazakhstan and to maintain the water level in the Caspian. This will also guarantee normal operation of the power stations, which will provide electric power to industrial and agricultural regions of the Urals, West Siberia, Kazakhstan, Turkmen, and Uzbekistan.

The proposed project cannot be executed immediately. It must be conducted on a priority basis with consideration of the urgency for constructing the separate links.

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The author establishes three stages that differ from each other by the amount of water which would pass through the Turgay water divide canal into Central Asia. Each of these stages specifies a definite area for irrigation, the power of hydro-electric stations, the capacity of canals, and the amount of water entering the Caspian. The first stage would not call for the construction of the canal from the Yenisey into the Ob' and would give Central Asia and Kazakhstan about 1,000 cubic meters of water per second; the second stage would require up to 5,000 cubic meters and would include the Yenisey; and the third stage would call for 10,000 cubic meters of water to carry out the entire set of measures for irrigation, power engineering, and navigation facilities.

In the last part of his article, Davydov lists the accomplishments to be gained by carrying out his project: (1) the area of irrigated land in Kazakhstan and Central Asia will be increased by more than five times; (2) more than 80 billion kilowatt-hours of electric power will flow to industrial regions; (3) the level of the Caspian would be held at an optimal height and the region where droughts originate would be attacked; (4) a deep-water transportation route connecting the Kara Sea, the Caspian Sea, and Lake Baykal would be established; and (5) the climate of Kazakhstan, Central Asia, and West Siberia would be substantially improved.

Material benefits from the proposed project will include increased agricultural production, mining and mineral gains due to use of the electric power made available by the project, expanded forestation and livestock raising, and improved living conditions. Although tremendous in scope, the project can be accomplished without excessive difficulty and enormous expenditures.

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