

PEOPLE

CONTRIBUTION OF PROFESSOR Ya.Ya. DODONOV TO THE DEVELOPMENT OF OIL SHALE SCIENCE (120 YEARS SINCE HIS BIRTH)

Ya.Ya. Dodonov (1882–1970), professor of the Saratov N.G. Chernyshev State University, has greatly contributed to the oil shale science by investigating Volga-basin oil shales and developing theoretical basis for their effective utilization.

Volga-basin oil shale deposits were established due to prospecting carried out periodically since 1910.

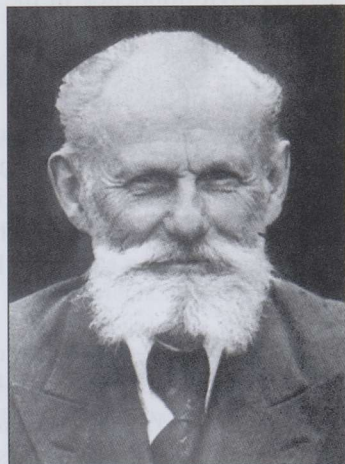
GOELRO plan passed in the Supreme Soviet of the USSR in 1920 dealt with the use of electric power in Russian industry and farming. According to this plan, erection of oil-shale-fired thermal power plants in the towns of Saratov and Samara was planned. Oil shale processing enterprises were constructed at the Kashpir, Savelyev and Ozinsk deposits. During geological exploration and mine construction, oil shale mined in these deposits was analysed and evaluated by chemists of the Saratov State University under the supervision of professors V.V. Chelintsev and Y.Y. Dodonov. They have established that Volga-basin oil shales essentially differ from the Baltic basin ones, especially by their high sulfur content.

A pilot-scale retorting unit constructed in 1920–1921 at the Saratov State University was exploited to produce oil and some preparations for veterinary practice.

Investigations made by Professor Dodonov and his co-workers have shown that sulfur compounds present in oil belong mainly to heterocyclics – thiophene and its derivatives [1]. Some pyridine bases have also been found in oil.

Further studies of Prof. Dodonov have shown that Volga-basin high-sulfur oil shales represent high-quality raw material for chemical industry of this region [2, 3].

Hypothesis about erection in Volga district of an energo-technological complex based on gasification of oil shales in the steam-and-oxygen flow published in 1940 is still a live issue. In this work Prof. Dodonov demonstrated the possibility of oil shale non-waste processing to gaseous power carrier, chemicals and building materials for the first time [3–6].



The possibility of using this technology in practice has been demonstrated in Germany where in one plant 1200 t of the Savelyev-deposit oil shale was processed in a gas-producer of the Lurgi Company [7].

Professor Dodonov and his co-workers have experimentally proved that the efficiency of gasification of Volga-basin shales may be essentially improved through adding shale oil into the gasification zone [8]. Pyrolysis of added oil enables not only the increase in the gas yield and improvement of gas composition but also a considerable increase in the content of thiophene and methylthiophenes in the gasification and pyrolysis product mixture obtained.

Research work made by Prof. Dodonov undoubtedly affected the modern conception of the foundation of oil shale industry in the Volga region.

The project of reconstruction of the Syzran oil shale processing plant foresees manufacturing of thiophene and methylthiophenes by their extraction from low-boiling fractions of oil obtained at retorting Volga-basin shales [9]. The presence of these compounds in oil from Volga high-sulfur oil shales was first stated by Professor Ya.Ya. Dodonov.

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All references are in Russian.