The Western Siberian Plain is a region with the process of swamping paludification occurring on a uniquely large scale. The still poor understanding of the genesis of swamp systems in the Holocene and links between biotic and abiotic processes, on the one hand, and the environment, on the other, call for detailed studying the peat-forming process in various zones [1].

To characterize the environments in which peat is produced in the study area and the conditions under which the organic matter (OM) is further transformed, it is possible to utilize a diversity of parameters of such compounds as normal and isoprenoid alkanes and polycyclic aromatic hydrocarbons. Hydrocarbons in modern sediments are the most stable and geochemically informative fraction. They may be employed as indicators of the fossilization conditions and the original OM type or be utilized to evaluate the degree of the transformations. Lipids in higher plants contain \( n \)-alkanes of the homologue series from \( C_{10} \) to \( C_{40} \), with the significant predominance of odd hydrocarbons. The distribution of \( n \)-alkanes in sediments is largely controlled by the contribution of the original bioproducers and is represented by compounds from \( C_{13} \) to \( C_{39} \) with a decrease in the oddity factor and changes in the proportions of certain hydrocarbon groups [2, 3].

Modern sediments contain no low-molecular aromatic hydrocarbons but were determined to contain a number of polycyclic aromatic (PCA) ones, mostly such holonuclear structures as pyrene, coronene, fluoranthene, perylene, and chrysenes. Perylenes and chrysenes are the most widely spread hydrocarbons in humic organic matter [4–9]. The mechanisms producing them in organic matter is still poorly understood. The genesis of aromatic hydrocarbons is reportedly related to a number of producing factors: the aromatization of steroids and hopanoids in early-diagenetic sediments, anthropogenic contamination, and the reduction of polyaromatic pigments. They can also be generated in the process of biosynthesis and bioassimilation by microorganisms. The main precursors of aromatic structures in the organic matter of modern sediments are thought to be the lignin of peat-forming plants and photosynthesizing organisms [10–13].

In light of the above facts and considerations, it is interesting to analyze information on the transformations of the composition of hydrocarbons in bioproducers and peats and to estimate them during the biogeochemical transformations of the original OM with regard for the zoning of peat accumulation.

We examined the distributions of \( n \)-alkanes in the PCA hydrocarbons contained in the OM of peat bioproducers. Much attention was paid to large ridge–pool bogs with pine–bush–sphagnum groups of formations (riams), which are widespread in this zone: the Bokcharskoe and Iksinskoe swamps [14]. The Bokcharskoe swamp in the interfluve area between the Bokchar and Iksa rivers occupies the eastern margin of the Vasyuganskoe Plateau (Fig. 1). Our research was conducted in a landscape profile (catena) with the main types of marsh plant communities (phytocenoses): high riam, low riam, and sedge–sphagnum bog. The thickness of the peat deposits in the sedge–sphagnum bog reaches 2.5 m, and those in the low and high riams are 3 and 0.9 m, respectively. The Iksinskoe swamp in the northeast flank of the Great Vasyuganskoe swamp contains an oligotrophic–eutrophic ridge–lake complex (Shegarskii district, Tomsk oblast). The depth of the peat layer is 3.3 m, and that beneath the lake is 2.5 m.

We examined peat samples from the Chistoe, Karbyshevskoe, Tagan, Temnoe, and Klyukvennoe deposits. The Chistoe deposit 50 km northwest of the town of Tomsk is a complex bog system in an ancient runoff course in the watershed between the Bol’shaya Yuksa and Ob rivers. The peat–bog province was distinguished within the zone of flat eutrophic sedge–hypnum moss bogs. The Karnyshevskoe deposit 17 km...
northwest of Tomsk occupies the flood plain of the Poros River. The deposit consists of eutrophic (lowland) peats, whose average degree of decomposition equals 30%. The Tagan peat deposit 13 km southwest of Tomsk belongs to the eutrophic type, with an average degree of decomposition equal to 30%. The Temnoe deposit of the oligotrophic (upland) type and the Klyukvennoe deposit of the eutrophic type compose a single massif in the second and third flood plain terraces of the Tom River.

The peat-forming plants were sampled at the Bakcharskoe swamp, whose flora is typical of the southern taiga subzone in Western Siberia and includes *Eryophorum vaginatum* L., *Sphagnum fuscum*, *Sphagnum megallanicum*, and *Carex limosa* L.

Table 1 summarizes the principal characteristics of the peats. They belong to the oligotrophic, transitional, and eutrophic types of moss, grass–moss, grass, and woody groups. The degree of decomposition is controlled by the species composition of the bog flora, which determines its botanical composition, and ranges from 5 to 55%. In the peats with narrow ranges of botanical compositions, particularly those of the moss group, the degree of decomposition is low and varies from 5 to 10%. The peat type predetermines both the rate and the degree of OM decomposition. The woody peat groups are characterized by high degrees of decomposition (55%), and the ash contents in the oligotrophic sphagnum low-decomposed peats are low (2.1–5.2%). The transitional and eutrophic peats have normal ash contents, up to 10.9%, and their mineralization drastically increases only in the underlying deposits. The oligotrophic peats of low degree of decomposition show a narrow range of pH values: from 2.6 to 4.2, and the pH of the transitional and eutrophic peats does not exceed 7.

Our peat samples were used to determine their general technical characteristics (ash contents, degrees of decomposition, and botanical composition) and the element and group compositions. Lipids were triply extracted from samples of bioproducers and peats by chloroform in the proportion 1:1, at stirring for 1 h. The solvent was removed on a rotary evaporator at a temperature of 30°C and residual pressure of 0.5 Pa. Saturated and aromatic hydrocarbons were extracted from lipids by the method of thin-layer chromatography (TLC) on Silufol platelets in the system hexane–benzol in the proportion 9:1 [15]. The individual composition of paraffin hydrocarbons of normal and isoprenoid structure was analyzed by gas–liquid chromatography under the following conditions: 24-m capillary column, SE-54 as the static phase, and linear temperature programming with 100°C at 3°C/min [16]. Based on the data of chromatographic mass spectrom-