



SCIENTIFIC RESEARCH OF THE SCO COUNTRIES: SYNERGY AND INTEGRATION

上合组织国家的科学研究：协同和一体化

Materials of the
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**“Scientific research of the SCO countries: synergy
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这些会议文结合了会议的材料 – 研究论文和科学工作者的论文报告。它考察了职业化人格的技术和社会学问题。一些文章涉及人格职业化研究问题的理论和方法论方法和原则。

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Foreword

We thank all participants of our conference "Scientific research of the SCO countries: synergy and integration" for the interest shown, for your speeches and reports. Such a wide range of participants, representing all the countries that are members of the Shanghai Cooperation Organization, speaks about the necessity and importance of this event. The reports of the participants cover a wide range of topical scientific problems and our joint interaction will contribute to the further development of both theoretical and applied modern scientific research by scientists from different countries. The result of the conference was the participation of 56 authors from 7 countries (China, Russia, Uzbekistan, Kazakhstan, Azerbaijan, Tajikistan, Kyrgyzstan).

This conference was a result of the serious interest of the world academic community, the state authorities of China and the Chinese Communist Party to preserve and strengthen international cooperation in the field of science. We also thank our Russian partner Infinity Publishing House for assistance in organizing the conference, preparing and publishing the conference proceedings in Chinese Part and English Part.

I hope that the collection of this conference will be useful to a wide range of readers. It will help to consider issues, that would interest the public, under a new point of view. It will also allow to find contacts among scientists of common interests.

Fan Fukuan,

Chairman of the organizing committee of the conference

"Scientific research of the SCO countries: synergy and integration"

*Full Professor, Doctor of Economic Sciences,
member of the Chinese Academy of Sciences*

前言

我们感谢所有参加本次会议的“上海合作组织国家的科学研究：协同作用和整合”，感谢您的演讲和报告。代表所有上海合作组织成员国的广泛参与者都谈到此次活动的必要性和重要性。参与者的报告涵盖了广泛的主题性科学问题，我们的联合互动将有助于不同国家的科学家进一步发展理论和应用的现代科学研究。会议结果是来自7个国家（中国，俄罗斯，乌兹别克斯坦，哈萨克斯坦，阿塞拜疆，塔吉克斯坦，吉尔吉斯斯坦）的83位作者的参与。

这次会议的召开，是学术界，中国国家权力机关和中国共产党对维护和加强科学领域国际合作的高度重视的结果。我们还要感谢我们的俄罗斯合作伙伴无限出版社协助组织会议，准备和发布中英文会议文集。

我希望会议的收集对广大读者有用，将有助于在新的观点下为读者提供有趣的问题，并且还将允许在共同利益的科学家中寻找联系。

范福宽，
教授，经济科学博士，中国科学院院士，会议组委会主席“上合组织国家科学研究：协同与融合”

EAEU的地缘金融风险
GEO-FINANCIAL RISKS OF THE EAEU

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注解。 该报告讲述了地缘金融风险及其导致的因素。 它还显示了俄罗斯经济和金融风险的金融部门分析结果。 它显示了对EAEU内部进一步整合潜力的评估。 报告中发现了影响EAEU成员国的地缘金融风险, 并提供了风险管理的一般要素。

关键词: 地缘金融风险, EAEU, 全球化, 主权化。

Annotation. *The report tells about geo-finance risks and factors that cause them. It also shows the results of analysis of financial sector of Russian economy and geo-finance risks. It shows the assessment of the potential for further integration within the EAEU. Geo-finance risks which influence countries-members of EAEU were detected in the report and the general elements of risk managing were offered.*

Keyword: *geo-finance risks, EAEU, globalization, sovereignty.*

Economic and financial losses of national economies due to the recent crises became new and more destructive menaces which can be called geo-finance risks. Geo-finance risks - are the probability of menaces to the world finance system, to economy of countries, regions and unions. They can be caused by *two types of factors* - geopolitical events such as change of power centers on the planet as well as the geographical, territorial, nature and economic peculiarities of these objects.

The factors of the first group of geopolitical risks are connected to the number of political events of the recent years which has determined the tension of political climate in the world such as opposition of mighty super-powers, fight for leadership and influence. The change of administrations in the USA, Great Britain, the decision of Great Britain to about the secession from the European Union, armed conflicts in Syria, Irani and North Korean problems, independent political posi-

tion and the influence of China as a comparatively new super-power, widespread terroristic attacks, mass destruction weapon, mass migration and other modern phenomena are considered by World Economic Forum in the annual analysis as the key global risk. The global risk prognosis for 2018 emphasizes the geopolitical unstable condition which is stimulated by growing economic confrontation and discords between the most powerful countries [10]. Superpowers oppose each other to obtain world leadership by means of economic methods and create geo-finance risks.

The factors of the second group are connected to the growing tendency of countries to become more sovereign and to unite in region blocks, first of all, according to the fact of territorial close location to defend their economic and politic interests. The intentions of the countries situated in the same world region to create free market zones, integrate financial markets and investment flows are quite clear. The processes of financial regionalization started long time ago but they had never had such kind of tension as they have today. And today there are attempts to rebuild and reconstruct the unions which exist for a long period of time. The most vivid examples are - the secession of Great Britain from the European Union, the secession of the USA from Iran nuclear deal, from the UNESCO - United Nations Educational, Scientific and Cultural Organization, from Paris climate agreement [3]. The events mentioned before and many other ones make the geo-economical situation more and more aggressive and apply pressure on the small countries, financial markets and business.

Russia has joined the community of financial systems due to its high geo-political status which became more solid in the recent years in the international arena. Our country actively participated global processes and procedures of post-crisis reformation of the regulation and supervision systems of the subjects of financial market. It represents itself in the international financial organizations and, first of all, in national institutions created after the global crisis to form innovative methodological management basis for system finance risks and search for the appropriate decisions. Russia is actively involved in the new programs of financial stability assessment what has helped its image of having global finance economy. Nevertheless, there are system risks growing inside the Russian economy which, oddly enough, suffered the most from the global crisis. It happens because of the limited national financial market with its high volatility and dependence on the external conjuncture.

Nevertheless, there are system risks growing inside the Russian economy which, oddly enough, suffered the most from the global crisis. They appear due to limitation of national financial market and its volatility and dependence on the external conjuncture. The inner financial market is actively "cleaning" unprofitable, financially unstable players in bad faith. Between 2001 and 2017, the number of

banks has decreased by 57.2 % or 750 banks. In 2014, licenses were revoked from 89 banks, in 2015 – from 101 banks, in 2016 - from 110 banks, in 2017 – from 62 banks. The number of insurance companies in 2017 decreased by 12% compared to the previous year — from 256 to 226. The regulator explained the reduction of insurers by the fact that 30 companies had their licenses revoked in 2017 after checking the reality of assets [5]. The measures taken by the regulator to improve the financial market were assessed differently by experts and researchers. Monopolization, weakening of region credit and insurance markets caused by mass bankrupts of small and medium companies which had not endured the regulative pressing and contest make worry. Probably, at such a high level, there are no simple solutions. The mega-regulator operates in extremely complex geopolitical and geo-finance conditions, trying to protect the domestic financial market and maintain its stability.

The report of the Eurasian Economic Commission in the EAEU for 2017 shows that the domestic trade increased by 25%, Foreign trade increased by 26.7%, in may 2017 the EAEU launched a united pharmaceutical market [7]. The Customs Union came into force on 1 January 2018.

The Treaty about EAEU posted on the site of Ministry of Economic Development of Russia shows that the countries are going to have coordinated macro economical policy to integrate more. This policy will have three directions: the budget deficit of the public administration sector in the EAEU countries should not exceed 3% of GDP, the national debt - not more than 50% of GDP, the inflation rate of not more than 5% may exceed the inflation rate in the member state, in which this indicator is the least important.

The calculations based on the "gravitational" model of international trade show that introduction of united currency in EAEU can lead to increase of commodity circulation among the members of the union from 7 to 57%. Thus, the growth of trade between Russia and Belarus will be more than 50%, between Russia and Kazakhstan – about 37% [9].

On the current stage on integration there are no serious political and economic reasons to introduce the united currency. There is a need to increase mutual trade, expand usage of national currency between the member-countries, to form effective ways to cooperate. With the right approach, the integration of financial markets in the EAEU should ultimately provide a great integration effect.

There are geo-finance risks affecting activities of countries-members of EAEU nowadays such as:

1. International sanctions.
2. Trade and economic wars.
3. Devaluation of the national currencies of the countries of the EAEU.
4. Recession of the demand/prices on the main production of the counties of the EAEU (oil, gas, metals.)

5. Recession of inflows/outflows of investments.

The countries of the EAEU should work together on these issues which are challenge other countries outside their national borders. The countries should cooperate to preserve and expand benefits of trade integration, to further reduce expenses and overcome discords without increasing the barriers which distort. Collaborated actions are also needed to accelerate the reforms of general finance system regulation, to stable taxes inside the Eurasian Union, to increase cyber safety, to recess import dependency, to fight corruption and soften the consequences after international sanctions and protection policy.

General elements of geo-finance risk management of EAEU are presented in the slide. There are:

1. Creation of the common financial market of the EAEU.
2. The calculations made in national currencies of countries-full members.
3. Production and sales market development in the countries-full members.
4. Increase of public investment in countries-full members.
5. The reduction of cost of domestic loans for investing projects and tax burden.
6. Investment in human capital.

The formation of a common financial market will minimize these risks and create conditions for the free movement of financial services and capital within the EAEU, provide effective protection for investors and consumers of financial services, expand the range of these services and their availability to the public. The reduction of the administrative barriers, establishing information exchange, expanding the customer base for financial market participants and increasing the profitability of the investment business will increase the profitability of financial market. As a result, the countries of EAEU will become more likely to be invested, the income of business will increase and the contributions to the budgets will increase too. But the functioning of common finance market will require closer cooperation between the regulators to have mutual access to supervisory information. It is necessary to elaborate mechanisms which would help to stabilize macro economic and coordinate monetary policy. When creating a common financial market, the EAEU should remember the experience of integration of other associations in order to minimize risks: the creation of additional opportunities for the countries-full members of the Union should not be accompanied by the accumulation of risks and their implementation.

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«绿色»经济是确保全球经济安全的因素之一
«GREEN» ECONOMY AS ONE OF THE FACTORS FOR ENSURING
GLOBAL ECONOMIC SECURITY

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注解。 本文探讨了“绿色”经济范畴的本质，考察了世界经济发展的环境因素对各国经济合作的影响，确保了全球经济安全的质量新水平。

关键词：“绿色”经济，可持续发展，全球经济安全，全球经济。

Annotation. *This article examines the essence of the category of "green" economy, examines the impact of the environmental component of world economic development on economic cooperation between countries and ensuring global economic security of a qualitatively new level.*

Keywords: *«green» economy, sustainable development, global economic security, global economy.*

Still overcoming the effects of the financial crisis of 2008–2009 the world economy is in a state of uncertainty about the vector of its further development. Ensuring sustainable economic security of the global economy complicates a whole range of problems, synergistically reinforcing each other, problems affecting all areas of the global natural-socio-economic system, the components of which, even under conditions of risk and uncertainty, evolve. Under these conditions, it is obvious that the global economy needs such a development concept, which will allow

solving social, financial, resource, information [1, p. 355] and other problems in a comprehensive manner, and achieve not only quantitative growth, but also significant qualitative improvements.

Threats and problems in each of the components of global economic security are reflected in its entire structure. Therefore, in the process of taking any measures to minimize destructive processes, it is necessary to take into account not only local issues (investment, socio-economic, environmental components, etc.), but also the subsequent reflection of these measures on the whole system [2, p. 1498].

It should also be taken into account that, on the one hand, economic security at the global level determines the level of security of individual countries, regions and industries, on the other hand, the level of economic security of individual subjects directly affects the state of the entire global world economic system, the speed and direction of its development. Those achieving sustainable global economic security is impossible without an effective mechanism to ensure all its components (energy, economic [3, p. 958], investment [2, p. 1498], social, informational [4, p.68], food [5, p. 226] and other security) and at all levels.

When designing a new concept for the development of the world economy, scientists drew attention to the need to change the principles of economic management and environmental restrictions. In place of the traditional production criteria, which ensured the greatest production volumes or its maximum efficiency, social and environmental criteria were adopted that guarantee reliable protection of the natural environment and a healthy ecologically friendly surroundings for the population. The development and expansion of production in the future remains the leading direction in solving the numerous socio-economic problems of modern society, but the priority now is the problem of ensuring the unconditional environmental safety of mankind. Fundamental research of scientists supported at the end of the 20th century - the beginning of the 21st century and authoritative international organizations that announced initiatives to enhance national and regional measures to increase the efficiency and sustainability of resource use and production processes - Janeiro, 1992; Millennium Declaration, 2000; Plan "20-20-20", EU, 2008; Declaration on environmentally-oriented growth, OECD, 2009, etc.).

According to progressive economists (H. Henderson, L. Brown, R. Murray, K. Gallacher, R. Rast, E. Mouhlegger, L. Margulis, D. Korten, B. Faller, H. Delhi, P. Houken et al.), to act as one of the factors of stability for economic systems, to balance the interests of man and nature, to ensure economic security at the level of subjects of world economic relations, a "green" economy is capable.

There is no exact official definition of the term "green" economy. There is a fairly large number of, sometimes very contradictory, definitions. For example, in UNEP documents, "green economy" refers to a system of economic activities associated with the production, distribution and consumption of goods and services

that lead to an increase in human well-being in the long run, while not exposing future generations to significant environmental risks or ecological deficiency [6]. Important features of such an economy are the efficient use of natural resources, the preservation and increase of natural capital, the reduction of pollution, low carbon emissions, the prevention of loss of ecosystem services and biodiversity, the growth of income and occupancy. Bautin V.M. Under the "green" economy offers to understand the economy, aimed at improving the welfare of people and ensuring social justice [7]. In his opinion, the "green" economy contributes to the eradication of poverty. We agree with the opinion of Prof. B.N. [8], who argues that the basis of a "green" economy is modernization and the transition of the world economy to a new technological order, which, in turn, implies improving socio-economic indicators and achieving a certain level of economic security, but not by itself, but just as a result of the modernization of economic activity and increase of production efficiency.

At the ESCAP initiative in 2005, the green growth / green economy strategy was adopted, which initially included four priority directions: rational consumption and production patterns; "Greening" of enterprises and markets; sustainable infrastructure and a green tax and budget reform. Subsequently, two more directions were added - investment in natural capital and indicators of environmental efficiency.

For the transition to a "green" economy, experts currently offer a wide range of tools [9]:

1) Corresponding to the principles of sustainable development pricing, including a refusal from ineffective subsidies, an assessment of natural resources in monetary terms and the introduction of taxes on things that harm the environment; 2) *a policy of public procurement* that encourages the production of environmentally friendly products and the use of sustainable production methods that are consistent with the principles of sustainable development; 3) reforming the system of "environmental" taxation, which presupposes a shift in the accent from the tax on the working force to the pollution tax; 4) the growth of state investments in the sustainable infrastructure development principles (including public transport, renewable energy, construction of energy-efficient buildings) and natural capital for restoring, maintaining and, where possible, increasing the volume of natural capital; 5) targeted *state support for research and development* related to the creation of environmentally friendly technologies; 6) *social strategies* designed to ensure agreement between social goals and existing or proposed economic strategies.

With all the obvious need for a transition to an economic model that will improve the well-being of people, while preserving the resources of the planets and not exposing future generations to significant environmental risks, the transition to a "green" economy is associated with numerous problems.

Concerns about the transition to a "green" economy actively express the developing countries. They fear that this concept can be used to create new trade barriers and reduce the competitiveness of their products, which in turn will impede the achievement of development goals. According to developing countries, the theme of a "green" economy should be considered only in the context of sustainable development and poverty alleviation.

In addition, numerous measures for the transition to a "green economy" can disguise trade, not comply with WTO rules and cause controversy not only between economically developed and developing, but also between self-developed countries.

Conclusion.

Despite the existing problems, the prospects for the transition to a "green" economy are very vigorous and objectively necessary, since this is in line with the national interests of any state, including Russia. Recent international discussions have shown that a clear-cut study of the concept of a "green" economy is needed, an in-depth analysis of measures for its realization in terms of the interests of all countries. A "green" economy is an economy of tomorrow, a factor in ensuring global economic security, and it should be the driving force of the economic development of the world economy for the future.

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俄罗斯当前经济形势下的物流问题
**PROBLEMS OF LOGISTICS IN THE CURRENT ECONOMIC
CONDITIONS OF RUSSIA**

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注解。 本文讨论了公司在运输货物时面临的后勤问题。 提供有关运输运输活动的运行信息。 分析了俄罗斯物流发展不足的原因及未来发展的可能性。

关键词: 物流, 公司, 运输, 交易网络, 仓库, 配送中心, 基础设施, 业务, 自动化。

Annotation. *This paper discusses the logistical problems that companies face when transporting goods. Operational information on the transportation activities of transport is given. The reasons for the insufficient development of logistics in Russia and the possibilities for its development in the future are analyzed.*

Key words: *logistics, company, transport, trading network, warehouse, distribution center, infrastructure, business, automation.*

At present, the consumer goods and services market is showing strong growth in Russia. The key element of this sector is trade; it realizes the economic and social tasks of the economy, the volume of trade increases annually. In this sector, in parallel, there is an increase in customer requirements for various criteria: assortment, quality of service, additional services, and much more. Therefore, the role and practical importance of optimizing the system of managing trade enterprises, which are complex systems with many internal and external connections, is constantly increasing. In order to maintain the competitiveness of the enterprise, it is necessary to manage the flow of goods, to ensure their safety on the way to the final consumer, to find new ways to improve business activities. Logistics is one of these areas and covers a wide range of problems. They are associated with the flow of goods and the formation of effective logistics systems for retailers.

In accordance with the definition given in the terminological dictionary, “Logistics (logistics) is the science of planning, controlling and managing transportation, warehousing, and other tangible and intangible operations performed in the process of bringing raw materials and materials to a manufacturing enterprise, internal refining of raw materials, materials and semi-finished products, bringing finished products to the consumer in accordance with the interests and requirements of the latter, as well as the transfer, storage and processing of relevant information”[1].

The object of logistics can be viewed from different points of view: from the position of a marketer, a financier, a production planning and production manager, a scientist, which explains the diversity of definitions of the concept of logistics. Reducing logistics costs can reduce the cost of production and thereby increase the economic efficiency of economic activity [2]. According to research, the logistics costs associated with transportation, storage, loading and unloading, packaging products and other logistics operations can reach 70% of the cost. At the same time, in industrialized countries, logistics costs on the scale of GDP reach 20%, in Russia - 25%. According to expert estimates, the introduction of a logistic approach at enterprises makes it possible to achieve an integrated effect by reducing inventory levels by 30-50%, on the one hand, and reducing product promotion time by 25-45% [3], on the other. At the same time, the reduction in the unit costs of logistics operations by 1% gives a potential opportunity to get an effect equal to an increase in the volume of production and sales of products by 10%.

The cost of transport logistics in developed countries reaches 5% of GDP. In Russia, this figure is higher due to the large territorial extent of our country. At the microeconomic level, the cost of transport logistics can reach up to 50% of the logistical costs that determine the cost of the products created.

Consider the freight turnover of transport for 2016-2018, which characterizes the volume of cargo transportation (in ton-kilometers), the information is presented in Figure 1 [4].



Fig.1 Operational information of the transportation activities of transport in Russia

Annually the volume of cargo turnover in Russia increases. So, in 2017, as compared with 2016, freight turnover increased by 284,420 million ton-kilometers, and in 2018, as compared with 2017, by 138,072 million ton-kilometers. The number of shipments is growing every year and its further increase is predicted.

Most of the logistics services are concentrated at federal retailers. Trading networks become drivers of regional growth; they develop their warehouse and transport systems. In 2017, Russian retail began to gradually emerge from the crisis. According to the National Research University Higher School of Economics, the index of real retail turnover in Russia (at the 1994 level of 100) reached its highest peak in 2014 (294) and further fell (in 2015 - 264.6, 2016 - 252.4). Last year there was a rise - up to 255.5 [5]. It was assumed that in 2018 it will also grow, but this is a “compensatory” growth. The development of logistics for federal retail chains will be one of the main guarantees of such growth and will largely determine the future of the commodity market.

The crisis of 2015-2016 has put a number of challenges for the Russian retail. Retailers had to conduct business under the influence of several negative factors at once: the fall in real incomes of the population, the growth rate of world currencies against the ruble, restrictions on the import of a number of goods. The Russian retail chains faced a difficult task: how to effectively tie the supply chains of Russian suppliers and their customers in the vast country, to preserve the assortment, quality, delivery time. Logistics is a long-standing “headache” of

Russian retail, and not only food. According to various estimates available in open analytics, if the total share of transport and logistics costs in the price of goods on the shelf at leading western retailers reaches 7%, in Russia it is 30%, depending on the product category and region. The so-called “high mark-up of trade networks” largely depends on logistic costs. Given that the average profit of networks from the sale of goods is only 2-3%, the high cost of logistics is a serious problem for regional sales.

The main reasons for unprofitable logistics are the following:

- Geography of deliveries. Because of the large territories in Russia, there are regions in which deliveries go up to several weeks.
- Insufficient development of air traffic and transport. In most cases with air traffic, a significant part of operational decisions, one way or another, involves transportation through the Moscow aviation hub, which affects delivery times and prices [6].
- Insufficiently developed road network and the prevailing role of rail transport, poor infrastructure development in the regions.

The negative development of the logistics infrastructure has a large negative impact. There is a shortage of storage space required by the class, owners of high-quality rolling stock; there is a shortage of transport during peak demand seasons. Large network players are forced to invest in their own infrastructure, building distribution centers and retail space, as well as acquire transport. This hinders the expansion due to huge investments in fixed assets and often shifts the focus from sales and marketing to logistics and freight handling. Particular attention should be paid to the introduction of innovative technologies in logistics. Not all companies have modern IT solutions for automatic accounting and order processing, so some of them are processed manually, which reduces the speed of delivery of goods to the consumer.

All this led to a significant lag of Russia from developed (primarily European) countries in terms of optimizing the share of logistical costs in the final price of products on the shelves. However, positive trends have emerged in the development of the Russian logistics system. The mechanism of logistics management of business processes in the company is being improved, which gives a synergistic effect in conjunction with automation. Companies that use such management become leaders in their work and increase their competitiveness. An example is the "Magnet", which created its system based on the "logic of common sense." It differs from the logistics of Western companies, which adheres to the "X5 Retail Group", and uses its software, its new modern fleet, as well as new modern distribution centers. However, the company's potential has not yet been fully utilized, many logistic management tools have not yet been mastered, and the proportion of administrative management remains high.

National logistics companies pay special attention to the creation of an integrated logistics supply chain according to the principle “trading network and supplier -“ a single organism ”. Such a system would help reduce logistics costs in the overall supply chain to retail outlets and improve the quality and speed of customer service. This process involves complete automation in integrated software. It is necessary to carry out technical re-equipment of warehouses and distribution centers, the introduction of warehouse robotization. This will reduce the time of delivery of goods to customers. The warehouse and the car can be connected into a single independently functioning system, which the operator will control in real time. This solution will allow you to optimally load both transport and docks, not allowing queues to form in warehouses, ensuring the shortest possible delivery times, as well as reducing the likelihood of errors. Currently, work has begun on the transition of enterprises to a new technological base. Tests have begun on the use of unmanned vehicles in the future and combining it with the classical system of cargo transportation

By creating more flexible and efficient logistics, companies will be able to gain significant competitive advantages in the coming years. Development of software for the logistics of the future can be based on existing solutions for the automation of logistics systems. Fundamentally new approaches have emerged and some of them already meet international requirements. In the future, the level of competition and market activity will increase, and customer demands will become higher. Enterprises will have to look for new ways to reduce costs, including by improving the logistic mechanisms for managing the flow of goods. Using modern technology to create forecasts, the stages of implementation of various federal programs are created. All this testifies to the good prospects for the development of logistics in Russia, taking into account international experience and adaptation to modern requirements to solve specific problems, problems and processes.

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专业法律意识的特殊性

PARTICULARITY OF PROFESSIONAL LEGAL CONSCIOUSNESS

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注解。 本文着重论述了专业法律意识的特殊性,它是反映客体 - 法律现实及其主体 - 专业律师的阶层。 本文分析了专业与一般法律意识的差异。 作者检测了专业法律意识内容的定性特征以及可能导致专业法律意识变形的因素。

关键词: 法律意识, 职业法律意识, 一般法律意识, 职业法律意识内容, 职业法律意识变形。

Annotation. *The article focuses on the peculiarities of professional legal consciousness which are the reflecting object - legal reality and its subjects - stratum of professional lawyers. The article analyses the differences between professional and general legal consciousness. Author detects the qualitative features of professional legal consciousness content and the factors which may cause the deformation of professional legal consciousness.*

Keywords: *legal consciousness, professional legal consciousness, general legal consciousness, the content of professional legal consciousness, deformation of professional legal consciousness.*

General legal consciousness and its structure - professional legal consciousness forms throughout historic development of society legal system, its material and spiritual components, with the process of creating and functioning of Juridical science and juridical education [1, p.215-221]. Professional legal consciousness

plays a special role in whole system of legal consciousness because its condition influences the effectiveness of law-creating, taking laws into force and enforcement. The level of professional legal consciousness influences the level of law culture in the country and its legal system in general.

This contains the theoretical and practical relevancies of the researches of professional legal consciousness, its peculiarities, forming conditions, rules of development and functioning, influence on other elements of the legal system. Understanding of the nature of professional legal consciousness allows to influence it deliberately and minimize abnormalities of professional legal consciousness and its system improvement.

There is a number of researches in the Russian legal theory which analyses separate problems of professional legal consciousness; there are also researches which try to learn this component of legal social system in a full scale [2 - 6]. However, today it is hardly possible to say that there already have been a theory of professional legal consciousness which has been well-established. The notion is not considered as an independent notion in many systematic researches about law theory. Those researches which do, it is hard to find the definition of the content of the notion of professional legal consciousness, the explanation of its occurrence and its place among the other law notions [7, p. 413 - 418].

It proves that there are a lot of issues in professional legal consciousness theory which are not studied enough. This article focuses on one of these problematic issue about professional legal consciousness peculiarities. The aim is to understand what are the main factors which distinguish professional legal consciousness in general legal consciousness and what are formal and content peculiarities of professional legal consciousness. Is it possible, for example, to consider that the legal consciousness of an athlete or artist, who, fortunately, obtained a certificate of a member of Parliament and who is included in the legislative activity, is a professional legal consciousness?

The model of legal consciousness which can be divided into two types was prevailing in the Russian juridical literature for a long time. legal ideology and legal psychology [8, p. 149 – 158]. Legal ideology - is more or less systematized at the rational level of thinking a set of knowledge and ideas about the existing legal norms, legislation and other phenomena of legal reality. Legal psychology is not a systematic perception of legal reality in the form of feelings, emotions and experiences peculiar for an individual, a particular social group or for a whole society [9, p.460]. It was believed that professional legal consciousness is the embodiment of legal ideology, while the rest of the legal consciousness of society in the form of mass or popular legal consciousness is mainly based on legal psychology.

We do not think that this position is correct for today. The general type of thinking for a modern man is rational type which includes profound knowledge

from school, professional, higher education or self-education including juridical field. We consider that this type of thinking is dominative in all forms and types of legal consciousness. But the same feelings, emotions are the element of any human way of thinking; it is hard to find out who has more of them: a judge who makes a decision how to divide the property of spouses or a citizen who concludes the contract to buy a flat. The division of legal consciousness to legal ideology and legal psychology makes it hard to define different types of legal consciousness and to detect the peculiarities of professional legal consciousness. We think that to come closer to the aim we should find other starting points and methodological principles.

It is necessary to note that the number of aspects which are not clear about notion's content and hence about professional legal consciousness are caused by the way to define them - by simple deduction from philosophical categories of consciousness and social consciousness. While legal consciousness does not appear as a product of the development of social consciousness itself, but as a necessary and natural continuation of legal reality – purposeful practical activities to streamline social relations, in the process of which legal norms are created, implemented and provided.

Genetically, legal consciousness is a special kind of thinking produced by legal reality to resolve the contradictions occur throughout the implementation of legal practical thinking. Legal consciousness overlays on legal reality and practical juridical way of thinking as its integral component to understand the nature, content and forms of legal reality and to use this knowledge for it to function and develop effectively. Therefore, speaking about kinds of legal consciousness and their peculiarities definition, their origin should be sought in special aspects of legal reality.

These special aspects directly depend on the aims to legal reality stated by the subjects of social life. It is possible to define a group of people who state objective juridical aims and do juridical professional work to create juridical norms, systematize them, use law, state offences, to hold law-breakers juridically liable etc. In contrast to this group of people, other subjects of social life, entering into legal nature of public relations, do not distinguish themselves as such special legal purposes.

Let us illustrate this difference with the following example. When a citizen leaves his property under his last will, he, participating its creation, performs legally significant actions. However they are not the aim itself, his aim is to distribute his property according to his will. Another thing is a notary who makes a will. For him it is not the distribution what is the aim, it is right and legal execution of the juridically significant document - last will - that is the aim. The social connection is the same but the aims of the subjects are different.

We believe that the difference which specifies the activity is the main reason

to divide legal consciousness into types. The occupation of some subjects (let us call them stratum of lawyers) to do professional juridical job which aims to create, rebuild, activate or cease concrete juridical phenomenon and processes makes them need to have special type of legal consciousness. This is the type of legal consciousness, the content and forms of which depend on the kind of professional juridical activities, should be named professional legal consciousness or professional juridical consciousness.

In contrast, the legal consciousness of other subjects of social life is not connected with the implementation of their specialized legal activities. Their need to produce legal consciousness arises as a consequence of the General desire to regulate the necessary social relations through the formation and functioning of legal reality. This type of legal consciousness by the nature of its relationship with the legal reality can be designated as a General legal consciousness. We consider it incorrect to apply to this type of legal consciousness the frequently used terms "mass " or" ordinary", at least due to the fact that professional lawyers also form a certain mass, and legally significant actions are made not only in legal circles, but also at the level of everyday life.

The first feature of professional legal consciousness is that it appears as a direct continuation of professional legal activity. But it is necessary to remember that it is not obligatory that a subject doing professional juridical job has professional legal consciousness. At the beginning of the article, an example of legislative activity was already given; it is not difficult to give relevant examples from the field of law enforcement, when a person with an engineering education prepares protocols and brings to administrative responsibility the subjects who committed offenses in the field of fire safety. We can continue this series with examples from other professional legal activities.

The fact is that any professional activity, as well as social activity in General is carried out on the basis of practical thinking, in this case, practical legal thinking. It helps to recognize legal needs, to form practical tasks, it as a will of a subject embodies in its concrete juridical actions: creation of a normative act, execution of a protocol, making a juridically significant decision etc.

However, practical legal thinking and legal consciousness are not the same form of thinking. In contrast to practical legal thinking – an element of legal reality, legal consciousness is outside of practical activity, reflecting it as an object of knowledge and forming a system of knowledge about legal reality. The task of legal consciousness is not to **make** legal reality - it is the task of practical legal thinking - but to **understand** the way it functions, acts, develops, what rules are at the basis of legal reality and at the basis of its individual elements.

Partly this way to understand it comes from the professional juridical activities as a base of personal empirical experience of a person and his/her colleagues.

But it is not full and complete because it is connected to achievement of concrete juridical aims and it is taken, as a rule, by the cut and try method and in fact can be characterized only as a base of legal consciousness as it is not able to solve the problems connected to legal consciousness exist as a special form of thinking. These aims are solved basically on the juridical science level which transformation through the system of juridical education on the level of professional juridical activities, makes the layer of professional legal consciousness at the same stage with practical juridical thinking.

All what was said before helps to conclude that another component which forms the quality of professional legal consciousness is that the subject of professional juridical activities should have professional juridical education. It can be got at the level of higher juridical education or at the level of medium professional juridical education at the appropriate accredited educational institutes and it should be confirmed by approved documents. It is possible to get professional juridical education by self-education but it is likely an exclusion from the rules.

We should emphasize that professional legal consciousness does not form as a result of that the subject is involved in professional juridical activities and not it does not come together with officially confirmed document of professional juridical education. It appears as a symbiosis of professional juridical activities and professional juridical knowledge of the subject taken throughout education. Professional juridical activities gives the possibility to state that a subject has a special form of legal thinking - professional legal consciousness only together with professional juridical education.

Let us pay attention to one more feature of professional legal consciousness. The purpose of professional legal consciousness is not just the to present but to give practical juridical thinking the ability to understand the content, forms and ruled of legal reality, to present the right strategy of professional activities and solve its discords effectively. The professional juridical knowledge of the subject of professional juridical activities becomes the professional legal consciousness only when it operates, influence practical juridical thinking and through it lead, correct and change professional juridical activities.

Another feature of professional legal consciousness is wish and motivation of the subjects of professional juridical activities to use their professional juridical knowledge on practice. On the one hand professional legal consciousness acts like an intellectual source which motivates juridical practical thinking to develop and with its help motivates practical juridical activities and the whole legal reality. On the other hand, legal consciousness is a necessary medium to make scientific legal ideas come true on practice and to comprehend true nature, content and forms of legal reality.

When the achievements of legal science through legal education are introduced

into the thinking of practically acting subjects and coincide with their desire to improve the legal system, the process of the impact of professional consciousness on legal reality is started. Practical activities of professional juridical workers such as judges, prosecutors, notaries, lawyers and workers of other juridical institutions contain the elements corresponded to the content, forms and rules of the law, forming the tendency of progressive modifying of legal reality.

It is necessary to note the number of contradictive to this tendency factors. The legal reality does not live and modify based only on the inner rules but also it is influenced by vast economical, political, ideological processes, classes dominating in the society, social groups, strata and even separate persons. They all act together according to their rules which rare are similar to the law needs. The vector of legal science and legal education in the system of influences on the development of legal reality does not seem to be decisive and in the absence of a purposeful will of the legal strata can only have a spontaneous and indirect impact on its state.

Together with these processes is deformation of professional legal consciousness. Professional legal consciousness in contrast to the General legal consciousness is characterized by the fact that it in the implementation of practical activities requires a national interest in the creation of legal norms; coordination and systematic understanding of the regulatory framework of law; implementation and application of law in accordance with the meaning of legal norms and the General interests of social life; the need to identify offenses and establish adequate legal liability; maintain the stability of law and order.

Accordingly, deviations from these requirements characterize the deformation of professional legal consciousness. They can be expressed in the substitution of national interest the interests of individual social groups; the distortion of natural relations between the legal norms; the formalism in the implementation and application of the law; the adoption of rules for norm of professional activity and etc. The external factors mentioned before as well as deformations of professional legal consciousness lead to faults in functioning of legal reality. And if they accumulate without any obstacle they may come to degradation of the legal system of the country.

To sum up we should note that professional legal consciousness is a type of legal consciousness which is an attribute of subjects of professional juridical activities as they obtain professional juridical knowledge and professional legal consciousness aims to make these activities in accordance to correctly understood content, forms and rules of legal reality. The effectiveness of the influence of professional legal consciousness on professional practical legal activity is assessed by the development of all underlying factors, including education and motivation, as well as the purposefulness of the policy to prevent and eliminate deformations of professional legal consciousness.

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保护上海合作组织各州的相关权利：共同和不同
**PROTECTION OF RELATED RIGHTS IN THE STATES
OF THE SHANGHAI COOPERATION ORGANIZATION:
COMMON AND DIFFERENT**

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注解。 保护与版权有关的权利可以促进社会的经济，社会和文化发展。 本文重点关注上海合作组织国家相关权利保护的主要陈述。 所有这些国家都支持表演者权利，嘴唇同步制造者的权利，广播组织的权利。 俄罗斯联邦，中国和巴基斯坦也支持其他经济上或理论上被视为相关权利的权利。 哈萨克斯坦建立了上海合作组织国家相关权利的最大保护条款。 乌兹别克斯坦是唯一一个不参与相关权保护领域全球协议的上合组织国家。 但是，这里的立法保护与参加这种国际协定的塔吉克斯坦和吉尔吉斯斯坦处于同一水平。

关键词：相关权，版权，表演者权利，口语同步权，广播组织权利。

***Annotation.** The protection of the rights related to copyright stimulates economical, social and cultural development of the society. This article focuses on the main statements about related rights protection in the SCO countries. All of these countries support performer rights, rights of lip-syncing makers, rights of broadcasting organizations. The Russian Federation, China and Pakistan also support other rights which officially or doctrinally considered as related rights. The greatest terms of protection of related rights among the SCO States are established in Kazakhstan. Uzbekistan is the only SCO state that does not participate in any of the global agreements in the field of protection of related rights. However, the legislative protection here is at the same level as in Tajikistan and Kyrgyzstan which participate this kind of international agreements.*

***Keywords:** related rights, copyright, rights of performers, rights of lip-syncing, rights of broadcasting organizations.*

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The main goals and tasks of SCO including those of 6 June 2002 are: promotion of effective regional cooperation in the cultural, scientific, technical, educational fields; promotion of comprehensive and balanced economic growth, social and cultural development in the region through joint action on the basis of equal partnership for the continuous improvement of the level and living conditions of the peoples of the member States; coordination of approaches for integration into the world economy. One of the factors to achieve the stated goals is the effective protection of intellectual property.

Nowadays the institute of rights related to copyrights develops the most dynamically in the field of intellectual rights. The norms of this institute protect rights of artists-performers, lip-syncing makers, television and radio broadcasting organizations. There are a lot of other rights considered as related rights in many countries. There are connected to science field, literature, art, entertainment and sport. The protection of related rights stimulates economical, social and cultural development of the society as it stimulates investments to recording industry, television and radio broadcasting, distribution of literature and art workpieces in the society. Regarding this, it is interesting to find out the level and equality of related rights protection in the SCO member-countries. The latter include: India, Kazakhstan, China, Kyrgyzstan, Pakistan, the Russian Federation, Tajikistan, Uzbekistan.

Intellectual property protection is now global. P. Drahos notes that this stage of intellectual rights development started with establishment of World Trade Organization and adoption the TRIPS Agreement of April 15, 1994. [1] That is why international agreements about related rights today are very important in establishing national protection of these rights. These agreements include: International Convention for the protection of performers, producers of phonograms and broadcasting organizations of 26 October 1961 (Rome Convention), the Convention for the protection of producers of phonograms against unauthorized duplication of their phonograms of 29 October 1971 (Geneva Convention), the TRIPS Agreement, the WIPO Treaty on performances and phonograms Treaty of 20 December 1996. It is interesting that these agreements are not participated by all members of the SCO. China, Pakistan and Uzbekistan do not participate the Rome Convention. Pakistan and Uzbekistan did not join the Geneva Convention and the WIPO Treaty. In addition, Uzbekistan is not a WTO member. It should also be noted that Russia, Kazakhstan and Kyrgyzstan are members of Eurasian Union and therefore their legal systems are also influenced by the Treaty of Eurasian economic Union of 29 May, 2014. But the statements of the Treaty about the protection of related rights do not interfere international standards, stated in multilateral agreements. Russia, Kazakhstan, Kyrgyzstan, Tajikistan and Uzbekistan are also members of the agreement of 24 September 1993. "About cooperation in the field of protection of copyright and rights related to it". Article 4 of the Agreement states that the

countries participating the agreement will take the necessary measures to develop and adopt draft laws to protect copyright and related rights at the level of the requirements of the Berne Convention about the protection of literary and artistic works, the Geneva Convention for the protection of producers of phonograms from unauthorized reproduction of their phonograms, the Rome Convention for the protection of performers, producers of phonograms, broadcasting organizations.

Precisely, the author of this article revealed four main national approaches for related rights protection. [2] The first group which has very small amount of members is composed by those countries where rights of performers, phonogram-makers and broadcasting organizations are not protected at all. The second group is characterised by the fact that the related rights are not considered as rights and the interests of beneficiaries are protected by copyright and different exterior legal institutions. This approach is presented in the law of the United States. The third group of legal systems includes mainly the countries of Anglo-American law, where some objects, as in the United States, are protected by copyright and other objects - by those rights which are considered as laws about copyright. These rights are separated from copyright but as a rule they are not considered as related. The fourth group is composed by the countries which have continental type of law and the majority of countries with mixed legal system. In this group all so-called classical related rights are separated institutionally from the copyright.

All the SCO members legally recognize classical executive related rights. rights of performers, producers of phonograms and broadcasting organizations. Kazakhstan, China, Kyrgyzstan, Russia, Tajikistan, Uzbekistan use the continental approach to protect related rights. India and Pakistan chose the British approach and do not name considering rights as related ones. Moreover, in India phonograms are regarded as objects of copyright (article 13 of the copyright Act of 4 June 1957).

In addition to the classical triad of related rights in the Russian Federation following rights are included: 1) the right to a non-creative database (§ 5 of Chapter 71 of the Civil code); 2) the right of the publisher who first published or organized the publication of a work of science, literature and art that has passed into the public domain (6 chapters 71 of the civil code). In China, together with the right for phonograms authorship, the right for video recordings is recognized (article 40 of the copyright Act of 7 September 1990). This right was first identified as a related right in EU Directive 92/100 of 19 November 1992. Regardless of copyrights, Chinese law recognizes the right of a publisher for typograph arrangement (article 35). The term of this right is 10 years. Pakistani law also protects the right for typograph arrangement but its term is 25 years here (article 28 of the Directive on copyright of June 2, 1962). By its very nature, this right should be considered

as related rights and not copyright, because it appears regardless of whether the printing of publications is original.

The most important parameter of the exclusive related rights is the duration of their validity. In all the countries under consideration, the time frame is almost the same: 50 years since the year of publication of performance, phonogram or television and radio programs. The minimum international standard for the rights of performers and producers of phonograms is 50 years, and for the rights of broadcasting organizations – 20 years. Such a term is established in Pakistan (article 24). In India, broadcasters' rights are valid for 25 years (article 37), rights in phonograms – 60 years from the year of issue of the phonogram. The maximum period of validity of related rights is 70 years in Kazakhstan (article 42 Of the law on copyright and related rights of June 10, 1996). There is an unusual model of the terms of rights is stated in the Civil code of RF. Here, the exclusive right for performance is valid for the entire life of the performer, but not less than 50 years from the year of release of the performance.

Thus, we conclude that the legislative protection of related rights in the countries-members of the SCO is on a high level. The institute of related rights was implemented to all of the considered legal systems under the influence of international law. Only Uzbekistan which does not participate the Rome and Geneva conventions, did not sign WIPO Treaty about performances and phonograms, TRIPS agreement has stated in its law about copyrights and related rights the level which is factually equal to the level of these right protection in Tajikistan and Kyrgyzstan. The specific features of the protection of related rights in Russia, expressed in the recognition of rights for non-creative databases and the rights of the publisher can be explained by the impact on Russian intellectual property law of the European Union.

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教育环境资源形成大学生批判性思维
**RESOURCES OF THE EDUCATIONAL ENVIRONMENT
IN THE DEVELOPMENT OF CRITICAL THINKING
OF COLLEGE STUDENTS**

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注解。 本文讨论了辩论技术在个人批判性思维发展中的优势。 作者认识到对环境教育能力动态的预测, 使用可以使环境适应个人发展的策略, 作为学生批判性思维发展的重要条件。 一个重要的领域是使用能够促进批判性思维发展的教育资源。

关键词: 批判性思维, 人格, 教育环境, 技术, 辩论, 自我实现。

Annotation. *The article discusses the advantages of the debate technology in the development of the critical thinking of the individual. The authors recognize the prediction of the dynamics of the pedagogical capabilities of the environment, the use of strategies that can make the environment comfortable for personal development, as important conditions for the development of critical thinking of students. An important area is the use of educational resources capable of enhancing the development of critical thinking.*

Keywords: *critical thinking, personality, educational environment, technology, debate, self-realization.*

The changes taking place in the life of modern Russian society could not help but touch upon the issues of transforming the consciousness of the people of their thinking and world outlook. The Concept of the long-term socio-economic development of the Russian Federation for the period up to 2020 focuses on preparing educated, moral, go-getters who are able to make responsible decisions in a choice situation, be responsible for their actions, predict their possible consequences, and defend their position.

It is not by chance that a modern specialist requires such personal qualities as high competence, mobility, the ability to determine the essence of the problem, find alternative ways to solve it, see the differences between fact and personal opinion, critically evaluate established judgments, etc.

All these requirements, to a large extent, are associated with the development of such a personality as critical thinking. According to N.F. Plotnikova it is an integral part of the professional competence of a specialist [5]. A highly developed critical thinking is the main condition for the discovery of real prospects for further professional activity, for turning a graduate into an independent, able to think creatively specialist who can find a non-standard approach to solving various types of problems.

Adolescence is very favorable for mastering and developing thinking, since it is at this age that the intellect acquires a certain integrity. Therefore, the existing education system should prepare students for the dynamics of changes in thinking and be restructured from reproductive to productive and proactive training of future specialists. For this, it is important to work on the development of a student's critical thinking, to direct it towards mastering non-standard ways of solving emerging life and professional problems, and self-development.

In their works, V.P. Zinchenko, Z.I. Kalmykova, A.V. Korzhuev, N.A. Menchinskaya, S.L. Rubinstein, B.M. Teplov, A.A. Tyukov, V. Roznin and others showed that the development of full-fledged knowledge is possible only under the condition of developing critical thinking. Unfortunately, real practice shows that most young people, starting a professional activity, cannot realize these qualities and do not have experience in implementing the necessary competencies even in training activities. Sometimes professional schools themselves do not always pay enough attention to the development of students' critical thinking during the educational process. This suggests the need to find new technologies for the targeted and systematic formation of critical thinking at the stage of professional training.

Critical thinking in its most general form is understood as a cognitive strategy, which involves continuous examination and testing of possible solutions on how to perform a certain task. The process of mastering professional knowledge and skills largely depends on the level of its development, especially when it comes to legal knowledge. In the case when a student can conduct a dialogue with a teacher and classmates, can see the essence of the problem, offers various options for solving it, he will be more independent in his educational and professional activities. Critical thinking can be viewed in the educational process not only as a condition of everyday effectiveness and well-being, but also as a resource for the effectiveness and well-being of future adulthood.

I.A. Morochenkova considers critical thinking as the ability to assess the degree of validity (rationality, sanity) of judgments, statements and actions. The phrase "think critical" means the ability to interpret and explain, draw conclusions. [4, p.22].

In their studies Z.I. Kalmykova, I.A. Morochenkova showed that schoolchildren and students with high learning skills are distinguished by the desire to look for new ways to solve problems, avoid patterns, change the way of action, that is, everything that characterizes critical thinking. On the contrary, students with low learning skills are characterized with passivity, inertness and weak awareness of their own thinking process. [3, 4].

M.I. Enikeev, describing the basic properties of thinking, identifies among them “criticality” and believes that it manifests itself in the ability to strictly evaluate the results of mental activity, subject them to a critical assessment, reject the wrong decision, refuse to start actions if they contradict the requirements of the task [2].

D. Halpern, in his book “The Psychology of Critical Thinking”, characterizes it as mental capacity, aimed at finding the best way to solve problems. It is an evaluation based on criteria. And this assessment can be directed both to the outside world, and to other people's thoughts and to oneself [6]. Assessment, as an integral part of critical thinking, can be seen in the work of psychologist M. Wexler. From his point of view, critical thinking is a process of solving a problem, which includes a discussion of the process and the results of work and their evaluation. The assessment is expressed in three aspects: the detection of an error, the establishment of positive aspects of the phenomenon under study and the establishment of the truth of the phenomenon under discussion [3].

G.D. Dmitriev identifies several skills that characterize critical thinking: the ability to identify false stereotypes that lead to incorrect conclusions; the ability to identify prejudiced judgments, opinions and attitudes; the ability to distinguish an objective fact, circumstance from personal opinion; the ability to question the logical inconsistency of speech; the ability to see the essence of the problem and alternative ways to solve it; the ability to avoid categorical judgments, etc. [1].

I.A. Morochenkova proposes to consider critical thinking as “an integrative quality of a person, developing according to motivational-value, cognitive and activity criteria, and opening the subject to the possibility of going beyond the limits of specified relationships and formed connections. The integrative core of personal quality is the subject position of the student, which determines the knowledge and ability to think logically, to doubt, to reflect, to compare judgments, to arrive at the most objectified conclusion; reflecting the measure of his freedom, responsibility, humanity, life-creating” [4, p. 28].

With regard to indicators of the degree of formation of critical thinking of students, the author identifies three main components:

- motivational, which is manifested in the presence of cognitive motives of learning, a detailed attitude to critical thinking.
- cognitive, which implies knowledge of basic psychological and pedagogical categories, methods of cognition, research activities.

- active, when a student is able to question the degree of validity of judgments, understand the main idea of the author, formulate and test a hypothesis, the ability to concentrate information in a thesis, quotation, wording, message; arguments to prove and refute; reflex their activities; to maintain a dialogue, to enter into a discussion, to recognize the value of the statements of another [4, p. 33].

It should be noted that in our work we proceeded from the approach of I.A. Morochenkova to assess the critical thinking of students.

From our point of view, one of the effective technologies for the formation of critical thinking of students is the debate, because they represent the experience of meaningful activity, where you need to approach the issue from different points of view, set goals, determine results, solve problems. In addition, debates are an important mechanism for involving into the social life of a society and an instrument for the development of students' decision making. Debates are taught to quickly navigate, evaluate information and make decisions in unusual situations, form the ability to defend their position, to conduct a tolerant dialogue.

At the same time, it should be noted that students are not always ready to listen to the opinions of others and tactfully defend their own, to hear another person and correctly understand and accept his arguments, to object on the merits. At the same time, these are the qualities that are necessary for a person in his professional life. Various approaches to the definition of the essence of the debate considered M.V. Clarin, M.V. Korotkova, O.L. Petrenko, T.V. Svetenko, A.M.M. Bakhtin, B.C. Bibler et al. In particular, the debates on the development of educational technology were considered by L.A. Turik; the use of debate techniques in the study of law is analyzed in the work of O.K. Hodaev; the use of "Debate" technology in law lessons is described by O.L. Petrenko.

The aim of our work was to identify and test the organizational and pedagogical conditions for the use of "Debate" technology in teaching legal disciplines that would contribute to the development of critical thinking of college students.

Our study was conducted on the basis of the Shadrinsk Financial and Economic College-branch of the Federal State Educational Budgetary Institution of Higher Education "Financial University under the Government of the Russian Federation. The total sample size was 26 individuals.

To study critical thinking, we used an expert assessment of teachers and a survey of students and teachers, where the evaluation criteria are divided into three groups: assessment of learning motivation and orientation to educational and research activities; assessment of knowledge of basic legal categories, methods of cognitive activities and assessment of skills to use this knowledge in educational and professional activities in the analysis of various branches of law, sections and topics.

Summarizing the data obtained in the research process we revealed that in the majority of students (57.14%) the level of critical thinking development was not

high. 19.04% had a low level. This means that students have a weak expression of educational and cognitive motives, they are at the bottom of the hierarchy, and the first places are taken by communicative motives, motives of avoidance, prestige; knowledge of legal disciplines is fragmentary and unsystematic, they do not own many critical thinking operations. In 38.1% of cases, cognitive motives are situational and depend on various external factors, as well as attitudes toward research and critical thinking itself; student knowledge on the subject of superficial, not systematized and poorly aware of. In addition, there is a lack of awareness of the actions performed, the paucity of their application and poor diversity.

In subjects with an average level of cognitive interest (28.58%), educational, cognitive and professional motives occupy middle positions in the general hierarchy; concentration, intellectual activity is manifested only in the study of individual, most interesting topics; distractibility is observed in work; readiness for independent work is manifested situationally, there are shortcomings in the self-organization of activities, there are no separate components of it; decisions are made after advice and consultation with others.

The group with a low level (14.28%) is characterized by weak expressiveness of educational and cognitive motives, they are at the lower levels of the hierarchy, and the first places are taken by communicative motives, motives of avoidance, prestige; knowledge of legal disciplines is fragmentary and haphazard, students do not own many critical thinking operations. The data obtained served as the basis for carrying out work on the development of a critical law when studying with the help of the technology “Debate”.

We have developed a program which goal was to form and develop the critical thinking of college students in the process of studying legal disciplines.

All the work was based on five main blocks:

- the first block is preparatory. This block of work was directed, firstly, to assess the skills of students to lead a discussion; secondly, to develop skills to ask problematic questions, to reflect on their activities.

- the second block - the theoretical, was aimed at immersing students in the theory of discussion, explaining its specifics and specifics of conducting, familiarity with the criteria for evaluating speeches;

- the third block assumed practicing the skills of working with text, highlighting its main idea, key theses, finding the advantages and disadvantages of the topic being studied, etc.

- the fourth block - direct debates, when the participants exchange views on the issue under discussion. Their main goal is to convince the audience that the chosen position is correct;

- the fifth block - discussion of the results of the debates, analysis of the success of the work performed by all participants.

For topics of the debates we chose “The death penalty: “for” and “against”; “Corruption leads to stability”, “Citizens of Russia should participate in the adjustment of laws”, “Legal knowledge for everyone”.

To complete the work, we chose the topic of the debate “Student Rights in Modern Russia”.

Repeated study of critical thinking indicators allowed us to evaluate the effectiveness of the work done.

Summarizing the results obtained at the control experiment stage, we came to the following results: a low level of critical thinking was detected in 4.76% of students. This means that students with a weak expression of educational and cognitive motives; fragmentary and unsystematic knowledge of legal disciplines that do not own many critical thinking operations has become significantly less. Only in 23.8% of the cognitive motives are situational and depend on various external factors, as well as attitudes towards research activities and the most critical thinking.

The subjects with an average level of cognitive interest (46.16%) can be characterized as follows: educational, cognitive and professional motives occupy middle positions in the general hierarchy; concentration is manifested only in the study of individual, most interesting topics, distractibility in work; intellectual activity is also observed in the study of those that are most interesting to the student; readiness for independent work is manifested situationally, there are shortcomings in the self-organization of activities, there are no separate components of it; decisions are made after advice and consultation with others.

The group with a low level (4.76%) has a very weak expression of educational and cognitive motives, they are at the lower levels of the hierarchy, and the first places are taken by communicative motives, motives of avoidance, prestige; knowledge of legal disciplines is fragmentary and unsystematic; they do not own many critical thinking operations.

The findings suggest that the pedagogical conditions developed by us for implementing the debate technology for the development of critical thinking of college students in the process of studying legal disciplines proved to be effective.

The analysis of the work done on the formation of critical thinking of students in the process of studying law with the use of the "Debates" technology showed that the key pedagogical conditions for the implementation of this technology are: the inclusion of the debate technology in the course of law as a mandatory form of education; sequential mastering of technology by students under the guidance of a teacher; the creation of such an atmosphere in a group in which the student would not hesitate to express his opinion; adherence to the basic principles of the debate; thorough preparation for their conduct from the teacher's side.

Thus, the critical thinking of students is an integrative quality of a person, developing according to motivational-value, cognitive and activity criteria and

opening the subject to the possibility of going beyond the limits of specified relationships and formed connections. Debates are a means adequate to the competence-based approach in education. They not only allow to develop critical thinking, but also teach to quickly navigate, evaluate information and make decisions in non-standard situations, form the ability to defend an individual position, to conduct a tolerant dialogue.

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划船和划独木舟训练过程的个性化

INDIVIDUALIZATION OF THE TRAINING PROCESS IN ROWING AND CANOEING

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注解。文章重点介绍了白俄罗斯赛艇运动员在高质量皮划艇和独木舟上的个人训练过程中存在的问题。它讲述了在不同时期的运动员训练中应该考虑制定计划的主要陈述。皮划艇和独木舟划船者训练的个性化是由每个运动员的形态,功能,心理和许多其他特点引起的。个人训练方法包括方式,时间和强度,可以为运动员提供实现计划目标的方法。

关键词: 运动员, 皮划艇和皮划艇, 训练设施, 强度, 训练过程的个性化。

Annotation. *The article focuses on the problems of individual training process of Belarusian rowers on kayaks and canoes of high qualification. It tells about the main statements which should be considered making plan in different periods of sportsman training. Individualization of training of kayak and canoe rowers is caused by morphological, functional, psychological and many other peculiarities of each individual sportsman. The individual method of training including ways, time and intensity, can provide a sportsman with achieving planned aim.*

Keywords: *athletes, kayaking and Canoeing, training facilities, intensity, individualization of the training process.*

Problem statement. Management of training kayak and canoe rowers with high qualification has a relevant issue - to form adequate content of training and its structure organization during a year-period. Sports science has not yet revealed a clear relationship between the amount of the made training and the degree of adaptation of the athlete's body [1].

Individualization of sports training is caused by morphofunctional, psychological and many other features of the athlete. And only individual method of training including ways, time and intensity, can provide a sportsman with achieving planned aim. Nowadays the tendency to to make training individual is connected to the elaboration of year-models and longterm-models [3]. The creation of models involves the integration of experience of technique elaboration, the amount of facilities and the intensity of training and contests during the year cycle for the athletes of different qualifications. [2]

The aim. To define individual approach to chose facilities, methods, amount and intensity of training for kayak and canoe rowers.

Results and discussion. The analysis of scientific and methodical literature and the conducted researches allowed to define the directions of individualization of training of qualified rowers on kayaks.

The main provisions were identified:

1. The main tasks of the a year-training cycle are to train of speed, special endurance and strength of an athletes as well as to improve technical skills in rowing and canoeing. However, the specifics of rowing (short, medium and long competitive distances) make certain differences, both in the amount of training orientation as well as in the choice of facilities for each type of training.

2. The structure of training of rowers of high qualification, both men and women has no valuable differences (except for total amount of training for separate facilities.) But the organization of training for sportswomen should consider specific biological peculiarities of a female body.

For this purpose an algorithm to make decisions about trainings of rowers of high qualification was made. It was a system of logical actions of the real training process of a concrete athlete. On the basis of the mentioned before statements and made decisions during the individualization of training, the models were elaborated and during pedagogical experiment they were tested at qualified athletes. When the models were elaborating the fact that every rower should be trained according to his/her individual plan considering their individual peculiarities was taken into consideration. The creation of models was based on the General principles defining the most rational forms of training construction.

The effectiveness of these models was assessed according to improvement of sports skills, health and psychological stability of athletes. For these purposes, each pedagogical experiment in which qualified rowers who specialize in different competitive distances participated, was conducted in two stages. On the first stage, the connection between the amount of training and functional condition of an athlete has been being assessed by means of this method during a year (from September to August). Training and its individual influence on athlete's body were recorded in accordance to the groups of facilities used in a particular type of rowing. The tests were made twice and at the particular stages three times a month.

Studies have shown that the form of the relationship between the condition of the individual rower and the training is ambiguous and extremely complex. Meanwhile, the decisions to choose the optimal variant of training to achieve the aimed level of special performance of an individual rower requires knowledge of the dynamics of its his morphological and functional condition. This is the central notion reflecting the content of the concept of individual training. Also it is the main factor which in directly connected to the content, amount and division of trainings in structural stages of a year-preiod. It is a key to scientific solvation of the individual training problem as well as it it a key to manage it.

At the end of the first stage of the experiment, together with the coach of a particular rower, the results were analyzed, and on their basis, as well as on the basis of the calendar of competitions and training tasks for the next year, an individual model of the dynamics of the athlete and the system of training effects for its implementation were elaborated. At the same time, the training was planned considering the specific orientation in the individual dynamics of the level of special training of an athlete and it was organized in such a way as to achieve the desired level of relevant indicators by the time of the most important competitions in the upcoming season.

The purpose of the second stage of the pedagogical experiment was to increase the strength of the athlete's body in a specialized motor mode. It provided the improvement of the results at different competitive distances. Thus the strategic line of training provided priority increase of motor potential of athletes and improvement of ability to use it effectively on competitive distances of 200m, 500m and 1000m. The main methodological orientation of the individualization of rower training at the second stage of the pedagogical experiment was to organize the work mainly to increase the specific power of rowing. As the main time forms of organization of the training process were identified: the year-cycle, a separate cycle phases mesocycles. The dynamics of training facilities and methods of these structural units of a year-cycle is caused by the aim of training process.

The aims of the stages included changing of rower's condition as it was necessary. The number of changes was reached by means of training program, main effective criteria of which were: amount, intensity, content and organization of the training process. Considering individual peculiarities of athlete's organism, his physical level and knowing the amount of training which had been taken before it was possible to calculate required amount of training for mesocycle and the way of its division in microcycles. Then the task to calculate the amount of training at the stage was easier as there had been the experience of realisation of condition dynamic of the athlete in the previous year.

Regarding what was mentioned above, it is advised to organise training microcycles in such a way that would combine This required a strict individualization of training process

of each athlete hence it changed the requirements to the way of microcycle organization which have function of correction to make order that part of training which is required. In addition the specific aims of each stage of a year-cycle of training, state of training and the individual ability of a sportsman to recover influence the structure of microcycles.

During the first microcycle the training was planned to be given in little or middle portions according to their amount and intensity. They were approximately 8-9% of total month training. It is advised to take the same portions of training using game approach and increasing the rest intervals. It is acceptable to give local exercises to improve muscle strength of upper limbs. General training session was led without competitive atmosphere and additional training was meant to activate recovery processes. During the second microcycle, qualified athletes had to do lots of training with high intensity. It was supposed to improve their speed-strength abilities and special endurance. During the third microcycle the amount of training was not so big but it was approached to maintain speed.

The fourth microcycle included the largest amount of training with the highest intensity for the athletes (40-42% of the total month amount). The fifth microcycle was supposed to reduce the amount of exercises with the highest intensity to a minimum as a result of exhaustion.

This construction of the training process taking into account the biological characteristics of the rowers, allowed to provide a higher total capacity. This created the prerequisites for achieving the necessary level of their special training. At the same time, monitoring of individual dynamics of functional indicators of athletes in different phases of the biological cycle and the orientation of the training process, taking into account the biorhythms of the body, largely optimize strategic approaches in preparation for the main competitions of the season.

This model of training for rowers cause that rhythmic changes of functional organism state of each athlete which seem like waves are same with the dynamic of training. The specified structure of training was mainly used in mesocycles of General preparatory and special-preparatory stages. As for the competition period, the content and amount of training for athletes was changed in accordance with the timing of the most important competitions. In accordance with this concept, a training program taking into account modern ideas about the rational dynamics was developed.

The effectiveness of the program was provided by the feedback system which meant to control and check the current condition of an athlete regularly (2-3 times a month). Also the results should be compared to the real model characteristics. If necessary, the correction of the training program was carried out. It was also considered that during the training at a stage it was necessary to be oriented on elimination or maximal reduction of negative relations between different training effects. It is possible to save training effect by means of the system of introduction

of more effective facilities into training program. At the same time, the facilities consistently introduced into training are constantly replaced, "displacing" each other.

The main amount of training was performed at optimum capacity. Special facilities of strength training were used: exercises with weights, various kinds of training devices that set the dosed resistance in order to develop both muscle strength and various forms of its manifestation, in a particular mode of operation. And in the first and second preparatory periods the sequence of use of special training facilities was various.

The aim of the special preparatory period was to learn how to use growing motor potential effectively in conditions of gradually rising capacity of competitive exercise fulfilment. For this purpose the training was led in the zone of submaximum power (considering individual trained condition without too much tension for organism functions and breaks of its motor structure.

The aim of the general period was to learn how to use motor potential with maximum effect. And it was acceptable to work out the organism to its maximum capacity in specific motor mode by the moment of main competitions. For this purpose training process included competitive conditions (for example, the rest intervals between exercises, their amount, different tactic variants etc.)

Thus individualization of training program included realisation of the main methodological concept considering individual peculiarities of rowers.

Conclusion

1. Practical realisation of the individualization training model during the pedagogic experiment allowed to reduce total annual amount of different training.
2. The elaborated content and distribution of trainings allowed to organize and make the current and stage control easier. The current control lets to find and then correct (if necessary) the characteristics showing the reaction on the dominating at the moment training.
3. Phased testing of athletes more organically fits into the completion of a particular stage of training, on the basis of which it is possible to judge the permanent state in which a particular rower.

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俄罗斯外国学生培训的流动口音
**MOBILE ACCENT IN TRAINING OF FOREIGN STUDENTS
IN RUSSIAN**

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注解。 本文介绍了教授外国学生俄语单词口音和最困难的部分 – 移动口音的方法。 在俄语中, 重音可以从基础移动到结尾, 反之亦然。 本文分析了在名词, 形容词和动词中正确放置重音的训练练习。

关键词: 外国留学生; 俄罗斯手机口音; 教学方法

Annotation. *The article presents the methodology of teaching foreign students the Russian word-accent and its most difficult section - mobile accent. In the Russian language the accent can move from the base to the ending and vice versa. The training exercises to place accents correctly in nouns, adjectives and verbs are analyzed in the article.*

Keywords: *foreign students; Russian mobile accent; teaching methods*

The accent as the aspect which organizes rhythmically and provides effectiveness of communication is very significant. To teach students to use mobile accent is rather hard, it takes much insistence from both the teacher and the student because the knowledge about the native language is very stable. According to communicative methodology it is necessary to use accent not only as an element of theoretical knowledge but also as a tool of real communication. G.M. Bogomazov says that it is necessary to show to the students that "the accent is an attribute of the whole class of words, that means that they are suggested getting acquainted with the accent by means of learning the sets of general rhythmic models".¹

There are five rhythmic models important for the initial stage of training: there are two two-syllable and three three-syllable models. To understand the rhythmic structure of a Russian word it is necessary to pronounce rhythmic models of different sound content many times.² A student learns "rhythmic impulse" of a word model. The words with immobile accent are easier to learn. They should be taught on the initial level of work of understanding the accentual rules. Students should be taught how to come from the initial form to other word-forms, saving the accent

immobile (there are 96% of words with immobile accent in the Russian language).³ However, the remaining 4% of words with mobile accent contain the vocabulary which is most frequently used. That is why it is necessary to start teaching basic accent schemes of mobile accent far at the A1 language level.

The aim of the study the mobile accent, in our opinion, is to overcome the deviations occurring when a student does not distinguish grammatical forms (*Окна - окна*), brakes the norms of Russian literature pronunciation (*областЕй, а не Областей*). Special attention should be paid to overcoming differentially significant deviations (*дорога - дороГа, вЫходитъ - выходиТЬ, etc.*).

Y. G. Lebedeva says that it is necessary to teach this morphological aspect "systemizing the material according to the general grammatical word-classes." Y.G. Lebedeva says: "For students not to learn each separate word it is better to work out the most productive forms of word-building and word-changing. And the maximum unification is required when distinguishing the main and secondary, typical and atypical, theoretical and practical, visual and speculative."⁴

According to communicative methodology during the first stage of teaching access it is necessary to emphasize phonetic motivation detecting the access place in a word, during the next stage - to emphasize the morphological principle of the motivation after its main role is detected. Phonetic aspect makes it possible to understand the similarities in the functioning of the accent in the native language of students compared to Russian. Morphological principle allows us to better understand the functional differences of accents in Russian and native language of students.

We believe that the training material on accentuation should be classified as follows: a) fixed accent (on the flexion, on the suffix, on the root); b) shifts of accent (from the base to the flexion and, conversely, from the flexion to the base).⁵ We think just like P.S. Vovk that it is methodologically useful to consider accent as immobile only in such cases when it has the same position on the same syllable of the same morpheme in all word-forms: *брат, брата, брату, братья, братьям etc.* The words should be considered as words with mobile accent even if the accent moves on one syllable: *стол, стола, столы, столы.*⁶

The students are supposed to make the following exercises to train the use of mobile accent in nouns:

A). Shift the accent from the base to the ending.

1. Make the form of the genitive case from the following masculine nouns, answer the questions:

У тебя есть? (отец, носок, кусок; словарь, моряк, москвич, карандаш).

У меня нет...

2. Put the following nouns in the plural form: *дом, паспорт, город, поезд; море, поле, место, дело; время, имя, племя.*

3. Make the form of the ablative case of the plural: *вещь, повесть, речь, роль*.

4. Answer the question, make the form of the prepositional case of the singular, use the prepositions В, НА:

Где? (мост, шкаф, лес, нос, ряд, угол).

В). Shift the accent from the base to the ending.

2. Put the following nouns in the plural form: *вода, душа, зима, рука, сестра, страна; окно, письмо, лицо, число, яйцо*.

2. Make the appropriate form, put the accent in the nouns and read the word-sets:

Дай (рука) - мой (рука) – вот моя (рука), позови (сестра) - приехали (сестра) - это моя (сестра), вытри (доска) – привезли (доска)- чистая (доска), из какой (страна) – разные (страна)- моя (страна).

3. Make the form of the accusative case of the plural: *вода, доска, голова, стена, щека*.

Our manual for ways of teaching foreign students the Russian accent more fully presents the exercises training mobile accent not only in nouns but also in adjectives and verb forms.⁷ The manual for ways of teaching Russian accent is based on psychological theory of step-by-step formatting of mental actions and notions elaborated by P.Y. Galperin. The theory involves training on the basis of a complete and generalized system of guidelines for the organization of phased assimilation according to a strictly fixed plan of action, which ensures that students do not make mistakes.⁸ The model or the way to present educational material should be rationally constructed with educational activities. Every educational process is the formation of new actions and corresponding them sensory images and concepts. The course of this formation can be represented as a process consisting of two stages: the stages of preliminary understanding and the stages of comprehending the system of references and actions based on them. The reference system includes: 1) model of the object and 2) the activity model (algorithm). The ready-made model is not medium of analysis. The model functions like a medium forming knowledge only when it is being built, during the revealing the rules (explaining function). The construction of the model by students leads to the fixation of theoretical rules, which allows students to use them to analyse words. But that thing which a student bases on when making the action, is the oriented basis of the action (OBA). Oriented basis of the action is the system of conditions, prescriptions and guidelines which are necessary to make an action. As a student studies OBA step-by-step, it becomes a psychological basis of the action of a subject, becomes oriented basis of his action.⁹ Full and generalized OBA can be presented as a study map which would fix the plan of actions.

It is necessary to elaborate OBA scheme together with the students. The way studies, education, elaboration of the OBA scheme go influence the learning of an

action, that is learning the communicative activities. The OBA scheme should not be learnt by heart as its function is to be a theoretical tool of an action fulfilment. With its help, students begin to work individually. Throughout the work the OBA scheme is assimilated involuntarily. It becomes an oriented part of communicative activities of a student. Gradually students stop to look at the studying map, firstly, pronounce aloud, then to themselves what are they doing, that is that OBA scheme transfers to a student's head, it interiorities it.

Thus, the assimilation of the new action with the educational material goes through all the stages (1) creation of the motivate basis for an action; 2) elaboration of the scheme of oriented basis of an action; 3) material stage; 4) speaking-aloud stage; 5) external speech "to yourself" stage; 6) hidden speech stage, becomes realized mental action. As a result we have generalized, fully folded and comprehended action which is automated as the exercises are fulfilled and the skill is formed.¹⁰

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在能力方法的基础上, 在额外的职业教育体系中组织教学过程
**ORGANIZATION OF PEDAGOGICAL PROCESS IN THE SYSTEM
OF ADDITIONAL PROFESSIONAL EDUCATION ON THE BASIS
OF COMPETENCE APPROACH**

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注解。 本文将职业教育问题作为社会教育过程, 在此过程中, 学生在基于能力的方法的基础上掌握心理学, 教育学和专业文化价值体系。 这一过程的结果是规范性地设定了专业和教学能力水平。

关键词: 专业和教育活动, 基于能力的方法, 额外的专业教育

Annotation. *The article deals with the issues of vocational education as a socio-pedagogical process, during which students master the system of psychological, pedagogical, and professional-cultural values on the basis of the competence-based approach. The result of this process is a normatively set level of professional and pedagogical competence.*

Keywords: *professional and pedagogical activity, competence-based approach, additional professional education*

The relevance of the study is due, above all, to the tasks of humanizing vocational education, its orientation towards the creation of conditions for the maximum disclosure of the abilities of each person. Today, the system of additional professional education should provide high-quality training for specialists with the necessary level of professional competence, developed professional self-awareness, high spiritual and creative potential, and a focus on continuous self-improvement and creative self-actualization.

Vocational training is considered by us as a socio-pedagogical process, during which specialists translate and assimilate the system of psychological, pedagogical and professional cultural values, experience, and the result is a standardized level of professional pedagogical competence.

Analysis of scientific literature [1; 2; 3] shows that the process of training a person as an individual is very complex and multidimensional. It is accompanied by the influence of numerous and multidirectional factors, the combination of which makes up the dominant approaches to the problem of becoming a person as a professional. At the same time, the person acts as the goal and result of the integration processes of socialization and individualization, the result of the interaction of the conflicting sides of these processes. The value of the individual is in its unique individuality, which combines a qualitative set of various characteristics. Thus, as A.M. Kuzmin, the human personality is a manifestation of a set of social, spiritual, national, historical, cultural qualities and individual properties [5, p. 69-78].

The process of vocational training is determined, among other things, by the development of the above two processes - socialization and individualization. In professional education, a third process is added here - the professionalization of the individual. In this case, the person acts as a subject of relations, individuality - as a subject of life activity. The unity of the social and the individual in man is ensured by the motivational “core” —the orientation of the personality. Thus, the subject of transformation in professional education is the professional orientation of the individual.

Following the logic of A.Ya. Nain, who studied the psychological and pedagogical mechanisms for the individualization of vocational training of students in the system of additional education, the main psychological mechanism that ensures this process is the development of the socio-professional identity of the individual as a representative of a certain social and professional community, the restructuring of the hierarchy of values from the student’s position to the specialist-teacher position, included in the system of professional relations [6, p. 106-114].

For the future specialist, the result of his development as the subject of professional activity is individuality as a complex of professional abilities, first of all creative, due to the specificity of pedagogical activity. The result of the training process is the system of professional and pedagogical values that determine the system of professional relations of the subject of pedagogical work.

Based on the above, we consider professional training in a broad sense as the management of the process of the formation of a socially significant system of professional relations, value-oriented and adapted to the goals of the future professional life.

The very formulation of the problem of professional training of a future specialist in the system of additional professional education is debatable. This is due

to the fact that we are talking about the training (retraining) of adults, albeit young people, who mostly have the leading personal characteristics. Traditionally, in Soviet pedagogy, professional training was understood as a process of purposeful influence on a person (often with the use of moral violence) in order to form any qualities necessary for a specialist or a society. In today's socio-cultural situation, this approach seems to be illegal. In the new understanding, professional training should be considered, first of all, as the creation of conditions for personal self-expression and self-development, as the construction of relations between the subjects of the educational process on the basis of the competence approach [7, p. 532-535].

Such an approach fully corresponds to the main provisions of the concept of person-centered vocational training, which we regard as the main value foundation of our research. Personally oriented vocational education is education, in the process of which the organization of interaction between subjects of education is focused to the maximum extent on the professional development of a person and the specifics of future professional activity.

Guided by these provisions, it is legitimate to assume that the task of the vocational training system is not so much the translation of knowledge and experience, as in the development and reproduction of a particular cultural layer, the key figure of which is the future professional specialist. The leading characteristics of professional readiness for professional activity are not only a set of knowledge and skills, but also their own worldview, attitudes and individual values, features of professional behavior, etc. Hence, the main task of an educational institution is to introduce a professional education specialist to general cultural and professional values, which involves building a specific system of relationships between them based on the principles of trust, cooperation, mutual respect, involving joint development and co-creation [6, p. 105-108].

The primary task of vocational training is the creation of conditions for the independent selection of values by the listener, since by the end of the courses the set of value orientations must have a complete form and be organized into an ordered theoretical and methodological system. This raises the question of the legality and feasibility of influencing the system of values by teachers, as well as the boundaries of such an impact. In our opinion, the boundaries of such an impact exist.

First of all, these are inter-social (universal) values, which are an indicator of the social maturity of the individual, the core of its humanistic orientation.

Secondly, it is a system of professional and pedagogical values, the choice of which is carried out within the framework of a particular profession, contributing to the clear formation of the position "I am the future professional".

Thirdly, it is the system of values of professional culture, when the listener is self-determined within a specific specialty. The main task of the teacher at

the same time - the inclusion of students in the situation of independent personal choice, deliberately created in the process of training.

The pedagogical aspect of the problem under study involves identifying ways to effectively organize the pedagogical process based on determining its purpose, content, forms and methods, building a conceptual model of professional training of a specialist based on the competence approach. At the same time, the whole system of pedagogical conditions in the educational process should be aimed at ensuring the procedural aspect of vocational training, coordination of objective and subjective goals, objective conditions and individual characteristics of the subject. The process of developing and creating pedagogical conditions in the holistic process of training specialists for additional professional education requires the design of appropriate pedagogical technologies [4, p. 10-18].

The main value basis of our concept is the paradigm of person-centered vocational training, which is understood as a special type of education based on the organization of interaction between students and teachers, which created optimal conditions for the development of the ability of the subjects of the pedagogical process to self-education, self-determination, independence and professional self-realization. The center of gravity of this educational system proclaims the professional development of a specialist's personality [1, p. 52-56].

The pedagogical model of vocational training offered by us has the main purpose of mastering the future specialist of professional-pedagogical culture, which is realized in the individual-creative activity. In the model, we distinguish three blocks:

a) an invariant block, with the goal of shaping the student's common culture, understanding the essence of a person, the meaning of life, determining a person's place in real life conditions, the ability to make vital choices within professional values;

b) a block of creative teacher training, the purpose of which is to create conditions for the self-development and self-realization of the student as a professional who is able to make an independent choice within the framework of general professional values;

c) a block of special training implies the ability to make choices within the framework of the values of professional culture, knowledge of the methods of teaching special disciplines, and creating on this basis conditions for the development of the learner's individuality.

We believe that the process of vocational training consists of a set of pedagogical tasks, the solution of which provides an effective impact on the system of values, the motivational and need sphere of the student's personality. The main subject of influence in vocational training is the orientation of the individual. Other

mental properties and qualities of the personality develop directly in professional activity in the presence of the main thing - professional orientation.

Professional orientation is the core of the personality of the specialist, which expresses the motivational value attitude to professional reality and activities. As applied to our problem, professional and pedagogical orientation determines the attitude to the profession of a teacher of the system of additional professional education, interest in it as a social phenomenon, as well as subjects of pedagogical interaction, a conscious attitude to cooperate with them, to their own self-development, professional self-actualization, the need for deep understanding of these processes and the ability to manage them.

The key means of the personality-oriented vocational training technology, as noted by E.F. Zeer, is a pedagogical communication, organized in the form of a dialogue between the teacher and the student, as the interaction of equal subjects of the pedagogical process [2, p. 110].

The basis of technology interaction between the teacher and students is the teacher's readiness to create a personality-oriented situation in the educational process, when the listener exercises the opportunity to choose, make decisions, purposefully gains experience, evaluates, carries out a vision of himself in a new capacity - a professional education specialist.

Pedagogical influence presupposes the learner's orientation towards a definite attitude towards social and professional values, enabling their emotional experience, stimulating inner spiritual work, and pedagogical support at the time of making a choice. In the process of transmitting social and professional cultural values, the teacher expresses his own attitude towards them, which has an indirect effect on the formation of their value position. Technologically, the task of the teacher of the system of additional education is to choose a method of pedagogical influence that ensures a comfortable state of the learner and maximally contributes to the disclosure of his individuality. Thus, the technology of interaction of the teacher with the listener should be built as an assistance to the formation of the latter's subjectivity, which makes him capable of developing his own professional position, implementing an individual project of life and professional self-development.

The course instructor managing the training process must make a choice within his own methodological position, i.e. selection of basic concepts and value orientations. To date, the priority is the competency model and personality-oriented position in the educational process instead of the subject-oriented one. Such a position, according to A.M. Kuzmin, involves the activation of the teacher's reflexive processes, the formation of his ability to empathy, mastering the values of humanistic pedagogy. The activity of a teacher in the process of vocational training is conceived as a form of his personal self-expression, which implies a pronounced author's position. The pedagogical support of the act of self-realization requires

the teacher to work in the subject-subject interaction paradigm, i.e. translates pedagogical interaction from the functional sphere (interaction of activities) into the personal sphere (interaction of personalities), an indispensable condition of which is own self-realization [5, p. 69-78].

Each stage of vocational training corresponds to well-defined components: objectives, means, conditions, forms, methods, resources and results. In the course of their shift, the forms of interaction between the teacher and the students in the logic of restructuring the levels of self-regulation from the maximum help of the teacher in the implementation of professional tasks to the gradual increase in students' own activity, up to full self-regulation of subject and educational actions and manifestation of their own professional and pedagogical position unfold. Thus, the process of vocational training is replaced by the process of self-education, and the process of development - by self-development. The tasks of each of the stages are due to the need to resolve specific contradictions.

The main objective of the first stage is the formation of a socially defined level of professional orientation of a teacher of vocational education. The value orientations that have emerged at this stage, professional convictions and ideals, and social attitudes are internal motivators that induce the future specialist to work on themselves, to continuous professional self-improvement.

The task of the second stage is to master the technical and technological components of pedagogical activity, allowing future specialists to successfully solve professional problems. It is about the structure of pedagogical abilities as a set of personal qualities of a future specialist: pedagogical observation, psychological stability, professional ethics, ability to instill, creative penetration into the inner world of colleagues, empathy, artistry, culture of speech and communication, etc.

At the third stage, the leading task is the dynamics of the general and professional development of the future specialist, which is expressed in individual creative self-realization, development of professional consciousness and self-awareness as the basis of professional pedagogical activity. At the same time, professional-pedagogical culture is considered as an integrative characteristic of the quality of vocational training, as a measure and method of creative self-realization of a person in various types of professional activity and communication aimed at mastering and creating pedagogical values, technologies and abilities of an individual.

Thus, professional training of future specialists of the system of additional professional education can be subjected to structuring and program-targeted development not only as an imperative of an integrated system of professional education, but also technologized at the level of the objectives, content, methods, forms of organization of activities and predicted results of professional activity.

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随着生命进化的变化，生物圈的全球退化
**GLOBAL DEGRADATION OF THE BIOSPHERE
WITH THE CHANGE OF LIFE EVOLUTION**

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注解。文章分析了地球在整个发展史上的一种新现象，这种现象是从人类聚集时代向生产经济社会的形成过渡，即新石器时代农业的形成及其进一步转变为工业阶段，同时也是人为进步。作者使用他们开发的社会自然和多学科方法。

来自不同科学的统计和社会学材料分析了全球社会和社会自然发展的大趋势，这些发展开辟了通往地球未来的途径。解决联合国会议提出的环境问题不会导致预期的结果，因为人类会破坏生物圈，决定地球上生命的演变。最后，作者关注的是建立一个以联合国为基础的世界政府的必要性，并将参与制定旨在保护生物圈和限制过度有害的技术圈发展的基本命题。

关键词：生物圈，生物圈生命，大趋势，方法论，生命变化演变，人类社会，技术主义，技术圈。

***Annotation.** The article analyzes a new phenomenon on Earth in the entire history of its development, caused by the transition from the era of gathering humanity to the formation of a society with a productive economy namely the formation of agriculture in the Neolithic era and its further transformation into a stage of industrial and at the same time anthropogenic progress. The authors use their developed socio-natural and multidisciplinary approaches.*

The statistical and sociological material from various sciences analyzes the megatrends of global social and socio-natural development, which open up the ways leading to the future of the Earth. Solving the environmental problems posed by the UN conferences does not lead to the intended result, as humankind destroys

the biosphere, determining the evolution of life on Earth. In conclusion, the authors focus on the need to form a world government based on the UN. , and will be engaged in the development of fundamental propositions aimed at preserving the biosphere and limiting excessive and harmful technospheric development.

Keywords: *biosphere, biosphere life, megatrends, methodology, change of life evolution, anthropogenic society, technocratism, technosphere.*

Introduction

The article poses the task of choosing *the basic methodology of research* in the development of the biosphere, which includes humanity as a single stream of Life. With the advent of man, the *anthropogenic era of the development of the biosphere* emerges. This topic was revealed in writings of academicians A.P. Pavlov and V.I. Vernadsky in the 20s of XX century. As Vernadsky emphasized, Pavlov correctly noted: “a man ... becomes a powerful growing geological force” supporting his conclusions [1, p. 173]. It can be seen of following facts: if, back in 1800, there were agricultural productive forces on Earth that combined physical strength of man (30%) and animals (68%) with a small role of technical energy (2%) in the amount of world labor, now, just two centuries later, new scientific and machine productive forces already give mankind about 98% of world energy [2, pp. 29-31]. The authors, on the basis of the chosen methodology, set the task of conducting a scientific analysis regarding the vector of the development of the earthly world based on the research carried out by various sciences for a very long time. This analysis was carried out by the authors over two decades and logically summarized in an article on the degradation of the biosphere and the change in the evolution of Life on Earth. It was about the insufficient measures that are being taken by mankind without taking into account global environmental issues and those essential researches that appeared in different scientific disciplines and were not brought together as a result of not only the fragmentation of science, but also the existing competition of states.

Choice of methodology of the auctorial scientific analysis

One of the serious drawbacks of researching the sustainability of the development of society and the biosphere is the lack of a choice of an appropriate research methodology, which was not raised at the UN conferences on ecology, but was taken as the original global environmental situation in the interactions “humanity - the environment.” They did not forget about the biosphere and it was present in the medium under discussion. The results of COSR-92 (UN Conference on Environment and Development) in Moscow at the meeting (attended by E.S. Demidenko) drew attention to the fact that the proposals coming from the USSR for discussion omitted the most important two topics: soil cover issues and the role of man in environmental issues.

This undifferentiated environment, by which the natural environment was understood, is destroyed by the development of mankind. At the same time, the theory of

a sufficiently substantiated *global environmental problem was not considered. The question of studying two interacting systems — the biosphere and humanity, which is from its inception the social subsystem of the biosphere along with such recognized as plants, animals and microorganisms, forming with humanity a living matter, i.e. biota. Humanity in a producing economy that originated in agriculture 10–12 thousand years ago is a special component system of a higher level of organization, the social organism. It includes not only the biological component, biological organic relations, but also social relations and the artificial world of life and labor created by man.*

Working on the problems of the biosphere, V.I. Vernadsky drew attention to the fact that *the biota* for the entire period of the historical development of life was developed by the transformation of the planet itself, without disturbing its naturalness. Now, humanity is even more transforming (i.e., cultivating, socializing) the biosphere, relying on science as a collective mind, receiving powerful productive forces comparable to geological ones [1, p. 175-177].

Nowadays, the issue of the discovery of a great scientist, ***which forces us to look at the modern world and its prospects***, is being discussed a little. First of all, scientists *should take into account its very powerful methodological approach to the study of the process of changing the world and life*, which in the publications of the early Twenty first century is called “***system socio-natural approach***”. The developing society is influencing the biosphere nature now with the help of the scientific and technical productive forces, not so much changing it positively, as transforming it negatively.

Another methodological approach adopted by the Bryansk Scientific and Philosophical School is called ***multidisciplinary approach***, *that is, interdisciplinary, the central discipline of which is philosophy*. Without this, we will not be able to understand the essence of the tomorrow’s world and evaluate our decisions correctly.

Problems of the biosphere and biospheric life

One of the central problems is the problem of the biosphere and biospheric life on Earth. As is known, the concept of the biosphere was introduced by the Austrian geologist E. Suess (1875), who considered the biosphere as a habitat of living organisms on the planet. But the holistic theory of the biosphere was created by V.I. Vernadsky (1926) the Russian encyclopedist V.I., who substantiated the geological transformative role of living organisms (of a living substance). They also formed deposits of limestone, deposits of coal and oil, accumulated free oxygen in the atmosphere, etc. However, the Biosphere is treated with coverage and part of non-biospheric nature. It, they say, includes the lower part of the atmosphere (troposphere), the entire hydrosphere (fresh and marine waters) and the upper part of the Earth’s lithosphere. Its upper limit is located at an altitude of 6 km above sea level; the lower one is at a depth of 15 km deep in the earth’s crust and 11 km in the ocean.

The biosphere is a self-regulating ecosystem in which ecological equilibrium is maintained due to the flow of solar energy and the cycles of chemical elements-nutrients. The authors have a different point of view on the biosphere, which differs from such grandiose ideas about the biosphere. **The biosphere is the core of life, the layer of life, the biostrome**, which not only has been degraded for thousands of years, but is also crumbling. On land, more than half of the soils are groundless, essentially lifeless, and anthropogenic, *in which there is no layer of life*. The mass of living matter is concentrated on land. Moreover, 79% of animal species out of the total number of objects of living nature account for only 1% of the entire biomass of the Earth [3, p.402]. *Indeed, with the current scale of destruction of soil cover on Earth, it may remain by the end of the twenty first century about 20% of the land cover of the land, covering only 6% of the total surface of the Earth.*

What kind of biosphere life can we talk about? If only over the last 40 years (1970-2010) bioresources have declined by about a third by weight [4]. At such rates in 80 years (40x2), they could run out by the end of the twenty first century. **Biostrome, i.e. real bio-sphere**, *develops in the natural environment and stretches its "hands" and other organs in an environmentally friendly non-living environment, constantly changing. We are in our ideas about the "huge biosphere" we dig our graves.*

In the structure of the biosphere, we distinguish its main subsystems: 1) living matter: microorganisms, plants, animals, and humanity; 2) soil cover (bio-substance), which accumulated on the land of the planet for 0.5 billion years and was kept by a turfy layer with plant roots reaching up to 2-3 meters deep into the lithosphere; 3) oceanic, marine, lake and river sediments with a concentration of living organisms per hundred or two meters in the depths of the water; 4) biospheric (biotic, biogenic) circulation of substances-nutrients that form life; 5) the lower part of the atmosphere, or the troposphere; 6) the increasing electromagnetic radiation in living matter, especially higher animals, leading to human consciousness and the spiritual life of mankind.

V. I. Vernadsky, whose teacher was also soil scientist V.V. Dokuchaev, singled out *a nonliving material* in the environment - soils that play a crucial role in *the reproduction of life on land and even in the hydrosphere (precipitation)*. A complicated preparation for the reproduction of life processes takes place in the *soil house*, due to which 92% of the species of living organisms on the planet are fed [5, p.9].

Global megatrend of degradation of the biosphere

A significant *megatrend* is the destruction of the biosphere. During the period of gathering in the evolution of the biosphere began the emergence of the elements of the *post-biospheric evolution of Life - while the socio-biosphere elements*. The following changes in the biosphere become very noticeable when the first *producing economy* replaces the *collective economy* — *agriculture* based on using soils to meet the significant nutritional needs of the global population and its needs.

For 10 thousand years, mankind has been *creating agricultural productive forces with social energy - muscular-biological energy*. During this period, there is an incomparably faster growth of social progress compared with gathering due to the use of animals in the agricultural economy [2, p.29.]. The use of animal and craft energy has opened up new opportunities for active scientific and technological transformations both in public life and in reducing the biosphere's living space, especially on land - soil cover. During the period from the Neolithic period to 1700, people completely used about 1.3 billion hectares of fertile land [6]. At the same time, farmers *used technical equipment*, albeit elementary. Such losses make it possible for the authors to state that in the *agrarian period further changes in the evolution of Life began to take shape on the planet — the socio - technological and biospheric period*, since human labor was increasing the use of technology for plowing and cultivating land with the destruction of soil. This undermined the biosphere, but *did not stop its self-development*.

Mass destruction of the biosphere begins with a period of pre-industrial, and then industrial development, when a machine with its unlimited possibilities to meet the needs of humanity at the expense of natural resources enters the arena of production activity. This affected not only the resources which are neutral for the biosphere, but also the *active life-processes* of the biosphere. We are talking about soil cover, in the depths of which biogenic biologic matter and living organisms accumulate. Over the past three centuries (1700–2000), another 0.7 billion hectares of fertile land were used and destroyed, that is, their annual reduction increased in the twentieth century in 30 times compared with the pre-industrial period [6]. According to forecasts, within 200 years the land of the planet will remain without biospheric land with soil-less soils, since already on the planet's land more than half of anthropogenic soils concentrated in the urban environment [7; 8, p. 43-44].

But we are not talking about *the disappearance of human life in general*, if humanity takes up the preservation of the biosphere with the restoration of a significant part of the soil cover at a new scientific and political level. It means *the termination of life of the biosphere biota and the biospheric person*, i.e. cultivated by the biosphere and educated by society.

It should be noted that, along the soil cover, the living biospheric biological substance began to shrink dramatically on the planet, especially at the expense of forests, grass cover, and extinction of many populations of biospheric organisms, especially in industrialized countries. Over the past 10 thousand years, 2/3 of all biosphere forests have been destroyed on Earth [9, P. 509]. Thus, in just four decades (1970–2010), the “alive planet” index decreased by 52% [4]. Since these and similar processes occur in highly industrial and technologically developed countries, they show the direction in which the earthly world is developing. The socio-technogenic transformation of the biosphere world is a phenomenon determined

by the one-sided and unreasoned development of the urban and other forms of the technosphere. This leads to major negative transformations of the natural world in the space of action of the technosphere, starting with environmental pollution and ending with the death of the biospheric nature and increasing diseases of the population [10, C.11]; [11].

We are destroying the layer of life, creating, by reducing the age-old biotic circulation of substances, their social circulation, N. N. Moiseyev wrote [12, pp. 133-134.]. The authors of the article call this cycle anthropo-technogenic or social-technogenic, because without machine technology it is difficult for people to create it in such a volume. If you look at the biowaste discharged annually after being consumed by man, food makes up about 5% of the world's organic waste, or 1.5 billion tons [5, p. 10].

Technosperical megatrend of changing evolution of Life on Earth

Along with the megatrend of the degradation of the biosphere, *the second most important megatrend is the development, moreover, a very rapid, global technosphere*, mostly urban one. The technical sphere in its most general form represents the natural resources transformed by man into construction, technical and anthropogenic objects. Professor N. V. Popkova refers its beginning to the Neolithic revolution [13, p.104-105], which ended the "era of human animal life" and allowed him "... to qualitatively restructure the very nature of nature" [14, p.85]. With the advent of man on Earth, he generates an artificial world, starting with tools, dwellings and clothing. The formation of cities 7–8 thousand years ago, the development of crafts in them meant *the sustainable formation of the technosphere on Earth*, although the cities grew extremely slowly. As early as 1800, there were 45 million people out of 910 million earthlings in cities, or 5.1%. Now the world has formed *such a volume and mass of the technosphere, which has become comparable with the remnants of biospheric living matter* by these indicators. Over 10 thousand years of its formation, from the Neolithic era, technospheric objects captured 4–5% of the land and, according to specialists' forecasts, with the current social and technogenic vector of the evolution of terrestrial life by the end of the XXI century. Already one fifth of the viable land will be covered by technospheric objects. Facts speak about it. If in 1860 about 5% of animals, including humans, were in the technosphere, then in 1940 it was 10%, in 1980 it was 20%, now it is about 40%. [15, p. 253] It is not difficult to calculate how many "inhabitants of the technosphere" may be by the end of the century, if the elite of the world does not think again and does not take care of the living biosphere substance of the planet, the biospheric life processes on Earth, passing the "point of no return" [16].

Conclusion. The search for the preservation of biospheric life

Scientists and thinkers raise the question of the elimination of the capitalist economy, which dominates the world and creates a deadly problem. Capitalists

show that capitalism has outlived its usefulness. At the opening of the World Economic Forum in Switzerland (January 2012), Klaus Schwab noted: "Solving problems based on outdated and collapsed models will only bury us deeper into failure ... Capitalism in its current form has no place in the world around us" [17, C.245].

Studies of the problems of social and technological development of the world and life should be attributed to the Rome Club in the late 60s of the twentieth century, whose participants, along with global research on the use of natural resources and pollution, gave appropriate recommendations for the conservation of the biosphere. This was followed by the United Nations Conference on Environment and Development, which was limited only to environmental issues and then not fully. Basic research on the social and technological development of the world and solving the problems of preserving the biosphere began in the scientific and philosophical school of social and technological development and social development. Bryansk State Technical University, whose leaders are the authors of the article. The authors propose a promising scenario of avoiding a mortal danger to humans and the biosphere, and this danger comes from the spontaneously chosen social and technological development of the world by mankind. Research of this school is supported by the International Academy of Informatization and the Russian Academy of Sciences [18], [19], and other scientific communities. Among the most important tasks, the authors see the need to hold an international congress of state and public figures with leading scientists of the world with the involvement of the UN and the Security Council to discuss the current situation and intensify research in this direction [20], [21], [22].

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文学文本的普遍性和独特性（对诗歌普遍性的问题）
**UNIVERSALITY AND UNIQUENESS OF THE LITERARY TEXT
(TO THE PROBLEM OF POETIC UNIVERSALITY)**

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The problem of universals takes not only philosophers, especially logicians, but also linguists, as well as mathematicians. In the last decades of the 20th century, the concept of universals in culture began to develop [Oizerman. 1989. p. 51]. These developments of modern scholars of various directions speak of a nontrivial approach to the traditional problem. T. I. Oizerman, notes that such an approach cannot be implemented by extrapolating the concept of universals to cultural phenomena.

The new approach requires some revision of the epistemological formulation of the problem of universals. Here we are faced with the reverse side of the problem of universals - uniqueness. The *relative* does not exclude the existence of the *absolute* and vice versa. This applies equally to knowledge and to a reality that is independent of them [Malinowski 1944].

Some realities that at first glance seem very strange, in essence, are related to universal and fundamental cultural elements. From this point of view, the specification of the epistemological concept of universals is absolutely necessary. After all, if our knowledge, the validity of which, with some exceptions, is subject to proof, is only approximately true, approximately universal, then this also applies to universals, since they are not empty logical forms, but also knowledge [Malinowski 1944].

This conclusion can, of course, be interpreted as a rejection of the universal. However, such a specification of the concept of universals has nothing to do with nominalism and is fully consistent with the modern methodological imperatives of science.

The concept of a poetic universal is just beginning to enter the circle of literary problems, as can be learned from upcoming material on the Internet «Samovitoe slovo» [<http://www.ipmce.su/~>].

Probably the main one when preparing Dictionary articles for a variety of express-lemmas like some “poetic universals”, i.e. significant words, with rather

high frequency found in the works of each of our ten poets (and, apparently, in general any "normal" Poet), it turns out the problem of selection and selection of necessary and sufficient contexts, based on the approximate class and volume of the Dictionary ("Poetic Ozhegov" or "Poetic Dahl" [<http://www.ipmce.su/~>]). General concepts are obtained by diverting similar traits from many objects.

Being of common concepts, those have a different character than being of signs; the latter really exist, really, while the general concepts exist only as a distraction, in the human mind; they exist only ideally, and the qualities of objects really exist [A. Smirnov. 2000].

The principle of unity of the general, the particular and the individual is of the utmost importance for the understanding of human existence, each person is an **individual**, something **special**, indivisible and in this quality he is significantly different from any other person. The difference between a person and a person should be included in his differentia specifica. but is not the common characteristic of all human individuals the same specific characteristic of man?

Arguing about the individual as an element of living matter, Academician Vernadsky noted its indivisibility and heterogeneity, noting that it is precisely this "compilation of closely related and not caused by external causes, functions and represents the individual as an organism" [Vernadsky 1978].

From linguistic analysis alone (uni (lat.) - one + versio (late lat.) - modification, rotation = universalis - common, universal; uni + cum (lat.) - from = unicum - unique, exceptional) the problem range of two opposites presents itself. Universals call general concepts, categories first of all, as well as forms of universality, since they are recognized as inherent not only in thinking, but also reality independent of it. A universal is the inclusion of a set in unity, and uniqueness is an exception from the general. We are talking about one categorical apparatus, and multidirectionality creates the illusion of contrast.

The problem arises in the field of interaction between the universal and the unique. Conventionally, this can be represented in the form of a certain fabric (in this context, poetic, A. Kushner calls it still a poetic fabric [A. Kushner, 1980. P. 205]), the thread of which is nothing but universals, general unshakable concepts and the only ones are the weft thread, held by the tool in the hand of the creator. The strength and quality of the weave depends on the Path. There are several ways of movement, all of them are studied, as well as the categories of interweaving, where there can be from one to several bases (we are talking about plan forms). The points of intersection are tropic (in poetry), details (in prose). The order of interweaving creates a text drawing. In poetry, outwardly, it looks like a musical theme: alliteration, sound writing. In prose - this is the plot. The arrangement of the picture is a compositional aspect. The more talented the author, the clearer the picture, the more voluminous its form, hence the many interpretations of the text in hermeneutical terms.

Examination of the extrapolarity of the “universal-unique” is unusual in that any term, on the one hand, is unique, because the need to introduce it is due to a lack of focus on this concept of terms that already exist; on the other hand, any term is universal, because it is a designation of a concept, which, in turn, is a category that unites many similar realities

When any courageous act bordering on genius is not only accomplished, but also realized, analyzed and fixed in the text, this individual, discrete knowledge becomes public property. Therefore, it is necessary to consider the influence of the stream of consciousness on a unit of the human individual.

In literary studies, it is noted that “within the avatars of the chain of transformations, sometimes a single passive literary type is captured, and within the nominal organic world it sometimes gives rise to a passive image that haunts the writer *throughout* his creative life. This through-image in some cases is split (Onegin - Lensky, Pechorin - Grushnitsky...), which indicates the author’s new, critical attitude to him and, therefore, the living mobility of artistic thought” [S.T. Wyman 1981]. The stadial consistency of the creative process is indicated by the presence of universals, which are unique building blocks in the building of the universe, whose walls are interpreted by humanity as a single space. And only a few distinguish divine laying, discovering theories, describing schemes, systems that permeate all human life.

The scope of the poetic language is the field of poetic universal. Having resorted to our own linguistic competence, we can notice that a kind of reference literary quotation in the understanding of a native speaker is a fragment of a single, unique text [Kuzmina, 1997]. Its author may be indefinite or unknown to the reader, but he is certainly individualized. In contrast to the quotation, the poetic formula is not connected with any specific text, it is perceived as a sign used in various texts, and the list of formulas is an open set. Actually, the “author” of a poetic formula can only be thought of as a collective subject — “a collection of speakers of a given language” [Schwarzkopf, 1970].

The category “form-content” is one of the literary universals. Take, for example, the universal “time-space”, which, being philosophical, acquires the notion of literary when it comes to the chronotope of the text. The literary universal of “time-space” is characterized by a chronological framework, when they cover a particular historical field (depending on the storyline). That is, we are talking about the historical process, where the individual is important as part of the universal (as far as it fits or falls out of the traditional path of evolution), hence the concept of the literary type (= society), the poetic universal of “time-space”, on the contrary, considers it is an individual that is unique and operates with the concept of a lyrical hero (= personality).

So we come to the interconnectedness of poetic language and poetic universal, which are in the same relationship as form and content, but at a different level of abstraction, since it is extrapolarity “poetic language - poetic universal” gives life to the philosophical concept of “form- content. In cases where the form does not correspond to the content, we are talking about the poetic language that exists in the field of everyday consciousness, and vice versa: the communicative language used in the field of poetic or mythological universality.

The discrepancy between form and content indicates a horizontal connection between the language and the field of study. Whereas “form-content” is always a vertical, inter-level connection.

This problem is rooted in the language field. The generally accepted perception of the poetic language can lead to a superficial idea of the system “poetic language — poetic universal”: both are supposedly related to the field of poetry and the connection should be horizontal. But poetic language consists of concrete and abstract concepts. The first are belonging to the communicative sphere of the language, the second to the philosophical universal. It is at this stage “abstraction-universal” that the vertical of relations between the poetic language and the poetic universal is given, since the area of the poetic universal, its coordinates is one of the important questions of poetics. And the poetic universal itself is both the level and the content of the aesthetically necessary for the existence of man as a being unique and inimitable.

The ability to simultaneously be on two levels (actually being on one plus the memory of another) is akin to the skill of combining not only speculative concepts, but also temporal spatial points (a kind of “time machine” model). The feeling of simultaneity of the three levels [Paul Ricoeur. 1995] (and there are only three of them in the human body: sensible, hearty and sexy) gives knowledge about the fourth, the divine level, which is outside of man, and which appears only with the awareness of the three previous ones. Such knowledge leads through the extrapolarity of “poetic language — poetic universal” to the categorical relationship “personality — catholicity.”

The development of vertical links is most important in the concept of the creative process. In the late 60s of XX century between Gadamer and Jürgen Habermas [Hermeneutik und Ideologiekritik, P. 73.] a controversy broke out that had an extremely wide resonance. The subject of this dispute is the place of tradition, authority and “prejudice” in knowledge. According to Gadamer, our understanding of the world and ourselves has been preceded by a certain “pre-understanding”, rooted in the language tradition in which we are. Unconscious assumptions (prejudices) are not eliminated¹ in principle from consciousness. If you use the hermeneutic method of reading the text, it is a kind of indication of the impossibility of destroying the threshold as a whole, but also this does not deny the possibility of transferring this threshold.

¹Limen (lat.) - threshold.

Thus, we come to the existence of the concept of a certain threshold. Overcoming it can be done in two ways. One of them: autism, the second - reflection. Autism is a method of alleged destruction of the threshold, in fact there is a breakdown of consciousness without subsequent recovery. And the reflection is able to transfer, shift the threshold, which leads to a change in consciousness, the introduction of new components of the process of cognition and the reduction of this process to universality.

To talk about what is the essence of our life and the meaning of our existence is possible only in the language of periphrasis. The famous wording is well known, according to which "the ontic character peculiar to *here-being* depends on what *being-is* ontological" [Heidegger. 1997. p. 98.]; to speak less mysteriously, this means: "the understanding of being is itself crucial for being here." Thus, we come to a kind of circular relationship. It is here that the subject is born: the question of the meaning of being simultaneously leads back and forth in relation to questioning as a method of possible eqo, and semantic connections that are known in advance are manifested. A certain symbol arises, the meaning of which assumes that the singular, particular appears as a fragment of being, able to connect with the fragment corresponding to it somewhere and sometime into a harmonious whole, provided that the expected particle complements to the whole our fragment of life.

Generally, the primary, artistic stimulus of a work appears instantly, - the whole work, as if an echo of the future - the work on the eve of the text. "Our soul," noted Wundt, "hurls ready fruits at us" [Wundt V. 1920. p. 318].

This artistic "suddenly" is nothing but the moment of the intuitive seizing, the discretion of the "whole before the parts." When the Egyptian sages happened to judge an unexplored subject, they did it not through words, not rationally, but with the support of "(unconscious) instinct," we would say - intuitively. According to Plotinus, "the artist is a person specially prepared by nature for the perception and creative reconstruction of the whole before the parts" [Plotinus, 1962. P. 228] (later this concept was taken up by Kant, Schelling, Goethe). The artist thinks whole and moves from the whole (on the eve of the parts) to the whole (the result of the addition of the parts).

According to Rimsky-Korsakov, the creative process "goes in reverse order": from the "whole theme" to the overall composition and originality of the details. [Lapshin, 1922. p. 134.] The "living spirit" before the "formula" is such, if you rely on Dostoevsky's famous maxim, the indivisible essence of this paradoxical situation.

The "outstripping" participation of the whole in the creative process is the psychological ground on which the illusion of the "out-of-finding" of the creative process itself grows, that which is pushed back into the mind, seems to be something completely outward, outgoing from outside. And in fact, this is the case, for all these sensations come with a stream of consciousness from the unconscious.

(Here we are talking about the poetic universal, as opposed to the upward flow of consciousness from the subconscious - the area of the mythological universal.)

Speaking of the poetic universal, we are dealing with a common concept for poetry.

What is the main difference between poetry and prose? - Rhyme? Rhythm? But there are poems in prose. Elusive inner meaning? But elusiveness is not an object of scientific research. - This is a special breathing organization. The ability of the writer to self-sacrifice, renunciation allows him to turn his individual into a workshop, a forge for reforging personal into common. The uniqueness of the work (product) depends on the height of asceticism. This sets the tone: the dissolution of the individual in the universal, and, as a result of this process, the receiving of the text.

A set of poetic text is specified and limited to a verbal form, the specific manifestations of which are interconnected in a hierarchical semantic relationship. The hierarchy of the sign is such that the lexical characteristic of one word form comes out of another, and so on. Here there is a sequence, a chain linkage of the topic-theme.

But the closeness of the poetic text also reveals the pattern of reminiscence, the return moment (in case of repetition of the detail, which is the key). This is not an image yet, but one can speak about the universe of an all-encompassing semantic field and the uniqueness of the specific (dominant in this text) meaning of the verse. And this is the uniqueness and universality of the poetic fabric, which has a peculiar form in each specific text.

Details, fastening the text, create a picture, which in turn serves as the basis for the image, ultimately creating at the same time both the ease of perception and the bulk of the text.

Recipient (reader), recreating, reviving the text in his mind, brings his element of the universe, based on the existence of a person of his inner world, his hierarchy of the image, which makes the psyche of the individual unique and inimitable.

Entry into the text is akin to the initiation procedure. Each time, depending on the state of mind, the recipient plunges into the text, pushing the semantic framework, animating the word, whose universe manifests itself through a sequence of unique perceptions with simultaneous (parallel) linkage with the semantic characteristic of the previous entry.

Thus, an objective, universal point of view on the text is created through a series of associations of the perception of the same, but in different ways.

Knowing the text by heart allows you to instantly associative parallel. Ugliness is formed in the worldview system. The image is the vertex element of the poetic text and is the subject of literary criticism. Above image is a universum to which a number of similar images of one and various authors go back.

Thus, the multi-level universality of the poetic text is revealed, each time fixed in detail and figuratively, which in turn constitutes its uniqueness.

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亲子关系及其对儿童焦虑形成的影响
**PARENT-CHILD RELATIONSHIPS AND THEIR INFLUENCE
ON THE FORMATION OF ANXIETY IN A CHILD**

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注解。 本文讨论了对孩子情绪领域形成有很大影响的亲子关系。 在与父母和不同类型家庭的孩子一起工作时, 对这一主题的研究不仅具有理论价值, 而且具有实用价值, 并且可以对家庭教育问题采取不同的方法。 一个正常运作的家庭是形成儿童繁荣情绪领域的一个因素。

关键词: 家庭, 情绪领域, 亲子关系, 焦虑, 焦虑儿童。

Annotation. *The article discusses child-parent relationships that have a strong influence on the formation of the emotional sphere of the child. Studies on this topic have not only theoretical, but also practical value when working with parents and children from families of different types, and also allow a differentiated approach to the problem of family education. A normally functioning family is a factor in the formation of a prosperous emotional sphere of the child.*

Keywords: *family, emotional sphere, parent-child relationships, anxiety, anxious children.*

The study of the nature and specifics of the emotional sphere of the child in families is an extremely important issue as revealing factors, the development of the child's personality, and for organizing the psychological and educational practice of psychocorrective activities of child-parent relationships. The relevance of this topic is due to the social circumstances of the existence of modern families. The type of behavior of parents affects not only the formation of the emotional sphere of the child, but also the formation of his personality. The influence of the relationship between mother and father has a strong effect on the formation of anxiety (in particular) in a child; sometimes this influence is stronger than all other educational influences. It is a full-fledged family and its quality that in a certain way influences the process and the result of the formation of the child's personality. Only in a family such qualities of a personality are developed which cannot be brought up anywhere except for the parental home. Moreover, in the development

of certain qualities both parents matter, since many forms of behavior are characteristic of both men and women and are mastered only with the active participation of both parents in the educational process.

The study of parent-child relationships and the emotional sphere of the child in the family is a new, high-potential and promising area for the study of the family. These studies have not only theoretical, but also practical value when working with parents and children from families of different types, and also allow a differentiated approach to the problem of family education. The problem of the quality of the family in raising a child will always remain relevant to society as long as the social institution of the family exists.

The influence of parent-child relationships on the formation of the child's emotional sphere in foreign psychology is traditionally considered within the framework of psychoanalytic (Z. Freud, E. Erickson, E. Fromm, D. Winnicot, E. Bern, etc.), behaviorist (J. Watson, B. Skinner, R. Sears, A. Bandura, and others) and humanistic (T. Gordon, C. Rogers, J. Bayard, V. Satir, etc.) approaches [2].

Among the various social factors influencing the formation of the personality, one of the most important is the family. Traditionally, the family - the main institution of education. What a person acquires in the family, he retains throughout his later life. The importance of a family is due to the fact that a person is in it for a significant part of his life. The family lays the foundations of the individual. Thus, children who are deprived of the opportunity to directly and constantly participate in the life of a small group consisting of relatives and people close to them lose a lot. This is especially noticeable in young children living outside the family - in orphanages and other institutions of this type. The development of the personality of these children often proceeds in a different way than that of children brought up in a family. The mental and social development of these children is sometimes delayed, and the emotional one is slowed down. The same thing can happen with an adult, because the lack of constant personal contacts is the essence of loneliness, anxiety and becomes the source of many negative phenomena and causes serious personality disorders.

From a very young age, the correct process of child development is carried out primarily due to the care of the parents. A small child learns from his parents to think, speak, understand and control his reactions. Thanks to the personal patterns that his parents are for, he learns how to treat other family members, relatives, acquaintances: who to love, who to avoid, who more or less reckon with, who to express his sympathy or antipathy, when to restrain his reactions. The family prepares the child for the future independent life in society, transmits to him spiritual values, moral norms, patterns of behavior, traditions, culture of their society. Guiding, coordinated educational methods of parents teach the child relaxedness, at the same time he learns to manage his actions and behavior according to moral norms [1].

Dependence on the micro-environment, underdevelopment or the complete absence of legal consciousness and the lack of clarity in social dispositions are a normal manifestation of the age psychology of minors. Therefore, in the group of social factors influencing the child's formation of aggression, fears, anxiety and other leading roles, many scientists (A.G. Asmolov, B.N. Almazov, Yu. Z. Gilbukh, K. Leonhard, I. Kon and others) are unanimously assigned to the family and informal peer group, as well as to the teaching staff of the educational institution [4].

The concept of "family neglect" implies at least two things: unfavorable family relations and the wrong approach to raising children. The first moment, according to B.N. Almazov, has to learn unwanted skills, the second has a motivating force to the emergence of problems of environmental adaptation and compensatory ways of responding. Many domestic and foreign psychologists have turned to the problems of unsuccessful upbringing in families, which have created several typologies of dysfunctional families, where children often have anxiety, fear, etc. [1].

Typology by G.P. Bochkareva compiled on the basis of the content of the experience of the child. To the first type, the author classifies families with an unfavorable emotional atmosphere, in which indifferent relations between children and parents have developed, or the child experiences rudeness and disrespect from adults, his will is suppressed and, as a consequence, anxiety is formed. The second type includes families in which there is no emotional contact between parents and children while maintaining the external pattern of moral relations, where the indifference of adults forces the child to seek emotional contacts outside the family. The third is a type of family with an unhealthy moral atmosphere, where the child is forced to participate in an immoral lifestyle [4]. L.S. Alekseeva divides dysfunctional families into: conflict, moral, pedagogically incompetent, asocial.

Thus, the family is a factor in the formation of a prosperous emotional sphere of the child, as well as a carrier of certain moral forms.

Anxiety is a common psychological phenomenon of our time. It is a frequent symptom of neurosis and functional psychosis, and also enters into the syndromology of other diseases or is the trigger mechanism of the personality disorder of the emotional sphere. Like any complex psychological education, anxiety is characterized by a complex structure, including cognitive, emotional and operational aspects, with the dominance of the emotional. In general, anxiety is a subjective manifestation of the individual's distress, his disadaptation. Anxiety is seen as an experience of emotional discomfort, a presentiment of impending danger. The main causes of anxiety in children: the conflict between the needs of the child; conflicting demands from parents, children and society; inadequate requirements that do not meet the psycho-physiological development of the child; conflict educational system of the school; modified attitude of society. Causes of anxiety at the

social level - a violation of communication. At the psychological level, inadequate perception by the subject of himself, on the psycho-physiological causes of anxiety are associated with the peculiarities of the structure and functioning of the central nervous system. Personal anxiety does not necessarily manifest itself directly in behavior, it has an expression of the subjective unhappiness of the individual, creating a specific background of his life activity, depressing the psyche [4]. The identified main negative aspects of a high level of personal anxiety are as follows:

1. A person with a high level of anxiety tends to perceive the world around him as containing a threat and danger to a much greater degree than a person with a low level of anxiety.
2. A high level of anxiety creates a threat to the mental health of the individual, contributes to the development of pre-neurotic conditions.
3. A high level of anxiety negatively affects the results of activity, there is a correlation of anxiety with personality traits on which learning performance depends.
4. Anxiety affects professional orientation.

In addition to the negative impact on health, behavior and productivity of activities, a high level of anxiety adversely affects the quality of the social functioning of the individual. Anxiety leads to a person's lack of confidence in his or her ability to communicate, is associated with negative social status, and forms conflict relations. The level of anxiety at the moment is defined as reactive anxiety as a state, and the level of personal anxiety is defined as a stable characteristic of a person. Personal anxiety characterizes a steady tendency to perceive a large range of situations as threatening. Reactive anxiety is characterized by tension, anxiety, nervousness. Very high reactive anxiety causes impaired attention, sometimes a violation of fine coordination. Very high personal anxiety is directly correlated with the presence of neurotic conflict, with emotional and neurotic breakdowns and with psychosomatic diseases. But anxiety is not initially a negative trait. A certain level of anxiety is a natural and indispensable component of a healthy, active personality. At the same time, there is an optimal individual level of "useful alarm". Anxiety is a personality trait, reflecting a decrease in the threshold of sensitivity to various stressors. Anxiety is expressed in the constant sense of threat to one's own "I" in all situations; anxiety is the tendency of an individual to experience anxiety, characterized by a low threshold for the emergence of anxiety reaction: one of the main parameters of individual differences. Personal anxiety is understood to be a steady individual characteristic, reflecting the subject's predisposition to anxiety and suggesting that he has a tendency to perceive a rather broad "fan" of situations as threatening, responding to each of them with a specific reaction. As a predisposition, personal anxiety is activated by the perception of certain stimuli, regarded by a person as dangerous for self-esteem, self-respect.

Situational or reactive anxiety as a state is characterized by subjectively experienced emotions: tension, anxiety, concerns, nervousness. This condition arises as an emotional reaction to a stressful situation and may be different in intensity and dynamism over time. Increased anxiety caused by the fear of possible failure is an adaptive mechanism that increases the responsibility of an individual in the face of social demands and attitudes. This once again emphasizes the social nature of the phenomenon of "anxiety". At the same time, negative emotions accompanying anxiety are the "price" that a person has to pay for an increased ability to respond responsively and, ultimately, better adapts to social requirements and norms [3].

Anxious children constantly experience some kind of fear, anxiety and apprehension. This prevents them from contacting and communicating with people normally. These children often, when performing any activity, expect and be afraid of a negative assessment or aggressive reaction, as they have a relatively stable tendency to perceive the threat to their "I" in various situations. They are unsure of their actions, worried about the events or possible events that have subjective or social significance. Anxiety is inherent in all people, but in some people this property is poorly developed, while in others the opposite is strong. Various factors: the need to focus, fatigue, fear, resentment, cold, and much more, which is enough in school life - cause a complex reaction in the body that does not depend on what kind of stimulus acts on it at the moment - at the physiological level is carried out directly reaction mobilization for a specific scenario. When stress effects, certain hormones begin to be released into the blood, as a result of which the mode of operation of many organs and body systems changes (its protective properties change, the rhythm of heart contractions increases, blood clotting increases). The body tries to provide muscles with oxygen and nutrients in order to develop maximum muscular effort and fight back, hit or run harder. However, such a reaction is justified when it is adequate to external danger and does not last long. But to show physical aggression or to run away for a modern person in most cases means to come into conflict with the existing rules, moral norms. As a result, no action occurs, and the resulting tension and physiological changes — preparation for action that did not occur — remain unclaimed in the body. If a person is able to get rid of the negative effects of stress, then this phenomenon can have a positive meaning in the form of even negative experience acquired. But this often does not occur, and emotional stress accumulates in the muscles [5].

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在伊朗俄罗斯研究的起源 – N.V. Hanykov

AT THE ORIGIN OF RUSSIAN IRANIAN STUDIES - N.V. HANYKOV

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注解。这篇文章致力于Nikolai Vladimirovich Hanykov (1819–1878) – 一位天才和多才多艺的受过教育的科学家。Hanykov的科学遗产,包括其丰富的科学文章,在其多样性和广度上引人注目。他结合了敏锐的旅行者,地理学家和博学多才的探险家的特点。他的兴趣包括中亚,高加索,伊朗的自然地理学的各种问题,同时研究历史,民族志,考古学,人类学,语言学,宗教,金石学,钱币学。

关键词: 汉奇科夫, 东方主义, 东方研究, 波斯, 探险, 收藏, 亚洲人民。

Annotation. *The article is dedicated to Nikolai Vladimirovich Hanykov (1819-1878) - a gifted and versatile educated scientist. Hanykov's scientific heritage, including its rich scientific post, is striking in its diversity and breadth. He combined the features of an observant traveler, a geographer and an erudite, scrupulous explorer. His interests include various problems of the physical geography of Central Asia, the Caucasus, Iran, and at the same time the study of history, ethnography, archeology, anthropology, philology, religions, epigraphy, numismatics.*

Key words: *Hanykov, Orientalism, Oriental studies, Persia, expeditions, collections, Asian peoples.*

Oriental studies in our country have long been given great attention. Russia, spread out not only on the European, but also on the Asian continent, bordered then and borders now with many countries of the East, while maintaining active trade relations, developing political relations and carrying out a significant exchange of ambassadorial missions.

Such contacts with the eastern neighbors could be significant only if there were specially trained people who knew the customs and languages of the peoples of Asia well. Among the many outstanding Orientalists, it is difficult to find a person who would have done so much to study the East, this is Nikolai Vladimirovich Hanykov. The research of N.V. Hanykov was cited, his authority as a scientist

was recognized in a number of issues, and it is rather difficult to disprove his scientific heritage. The works of Hanykov are well known to the oriental studies of the whole world. Many studies of this scientist in Russia so far have not been translated into Russian, since most of the works were written in French. Only two have been translated into Russian: “Notes on the Ethnography of Persia” and “Expedition to Horsan” [1] Unfortunately, we do not have monographic works that would highlight the life and work of a scientist - bright and intense with hard work, traveling through uncharted regions of Asia, participating in diplomatic missions, collecting and studying Eastern manuscripts and inscriptions, contacts with cultural and social figures. .

With all the breadth of research, Hanykov is a stranger to dilettantism. His works are characterized by exceptional scientific conscientiousness, although the author “actually did not have a special Oriental education and did not belong to professional Orientalists ...” [2], being largely related to bureaucratic activities from which he could relatively free himself only in his declining years.

Nikolai Vladimirovich had a very important role for Russia during the Crimean War. Already at the beginning of December 1853, the Consul General in Persia, Hanykov, known for his education and excellent knowledge of the East, conducted an active correspondence with Prince Baratyansky and in his letters in detail reported on the state of affairs in Persia, on the mood in the government, on rumors and information received from Europe, as well as the movement of the Persian troops.

The Tabriz period, apparently, we cannot call very easy and calm in the life of N. V. Hanykov. And it cannot be called the most productive in scientific terms: the activity of an orientalist came up against significant difficulties. Of course, N.V. Hanykov continued to carefully study the surrounding reality, life and customs of the local population, was interested in manuscripts and other historical materials, accumulated all sorts of information to continue research, but there was not enough time for much. As a result of the circumstances, the diplomat seriously pressed the scientist for a long time, but if there was a minimal opportunity to do what he loved, Hanykov did not miss it.

And later, traveling through Persia in the exercise of consular duties, the Orientalist with particular diligence undertook the search for Oriental manuscripts, historical inscriptions and other materials that could expand the scientific understanding of the political, economic and spiritual development of Asian peoples. Nikolai Vladimirovich acquired manuscripts, replenishing his own library, which gradually gained a unique, even universal character.

It is difficult to assert anything definite about the attitude of a scholar to religion. We only note that in the building of the consulate general they opened a home church for the Christian population of Tabriz - this is material for thought.

In Tabriz itself, Hanykov showed himself as a talented diplomat, a wise and strong-willed politician who defended the interests of his country in very difficult conditions. During this period, scientific studies were in the background. On April 8, 1857, Hanykov left Tabriz, broke up with the bureaucratic position and left for his homeland, but he himself, not knowing, would soon return to this most interesting country, but already as a researcher.

September 23, 1857. The Council of the Geographical Society decided to create a scientific expedition to Persia, headed by Hanykov, for success in science and industry in Russia.

The Khorsan expedition was very interesting and significant for Oriental studies. "In its happy composition, scope and diversity of research and the abundance of collected scientific materials, it was one of the most successful and even brilliant enterprises of the Geographical Society." [3] Hanykov managed to inspect up to 25 monuments, to enrich himself with information about the dialects of the Persian language in cities and villages along the line, and also to study the peculiarities of the tribes living in the northern part of Khorsan. However, much more in terms of geography, ethnography and in the field of social organization of Persia was not known. "... We knew almost nothing about the nature of the terraces that form the basis of the mountain ranges; about the direction and structure of the mountain ranges of the country; about its hydrography; about the nature of flora and fauna; the laws of heat distribution and the phenomena of magnetism on this vast surface; we lacked information on ethnography - in a word, almost all the elements were missing, on the basis of which it would be possible to make a scientific description of the country, and the little that was at our disposal could not be a serious basis in this regard." [4, p.159] So Hanykov justified the expediency of sending a complex expedition to East Persia.

Then he talked about the organization and the general course of travel, cities and villages, through which the path of Russian scientists ran, dwelling in more or less detail on the way of life and customs of the population, interesting moments of their past and present, interesting buildings and structures, inscriptions on them and etc. The Orientalist treated with particular zeal and attention the historical and cultural monuments that he encountered on his way. He describes in comparative detail the manuscript richness of the library of the Imam Reza mosque in Mashhad. [5] A bright and easy style of presentation, emotional coloring gave the story of the trip of a scientific expedition the features of an exciting artistic work, which figuratively characterized the area and its inhabitants.

The results of the expedition were impressive. A route of over 6 thousand miles was mapped, and topographic surveys, including plans for cities and individual provinces, covered an area of 350 thousand square versts. According to Hanykov, "the Khorasan expedition first penetrated into these countries, so to speak, with

measure and weights in its hands, and the first could precisely map this cradle of Iranian nationality” [6, p.313].

For the first time, the territory of Iran was explored from the point of view of geological structure, climate, animal and plant world. A huge work was done by the researcher himself on the archaeological survey of ancient monuments, the definition of the ethnic composition of the population, the collection of manuscripts, numismatic and epigraphic collections.

The results of his mission N. V. Hanykov considered “renewing our relations with the Afghan owners, establishing friendly relations with the ruler of Herat, clarifying the question of Persia’s identity, and also collecting materials about the situation in Khorasan”. Such was the brief account of the Khorsan Expedition. It can be called “official” because in the future its leader showed great activity and perseverance in order to achieve wide recognition of merit - not his own, in this regard he was extremely delicate and restrained, but other members of the expedition. N. V. Hanykov was very prudent in his desire to apply for material support for his companions. So that they have the opportunity to bring the work done to its logical conclusion, and publish the collected materials in the press. After the return of all members of the expedition, the delivery of the collected collections to Tiflis and the submission to the Society’s Council of a “general review of the results achieved,” he writes, “I think that it would be highly desirable for science to have these results processed”. What prevents this? As it turns out, the financial situation of the specialists selected by our diplomat for participation in the trip is not very strong.

N. V. Hanykov, of course, understood that the Society itself did not have sufficient financial resources, and saw only one way out of this situation, it was to go abroad to process scientific material. Thus, one of the largest domestic Orientalists, a talented scientist and diplomat, State Councilor Nikolai Vladimirovich Hanykov, in March 1860, left his homeland and went abroad. He still remained in the position of Dragoman V class of the Asian Department and formally left for a while. But this time almost lasted over 18 years - until his death. In fact, he did not return to Russia, visiting it only occasionally and for very short periods.

Noting all the positive features of his activities and scientific works, we must still remember that he was the son of his time and his environment. Thus, the framework set by these circumstances, Nikolai Vladimirovich Hanykov, in fact, did not transgress. An inquisitive mind and skepticism about Russian reality determined his negative attitude to what is happening in his homeland, but he never publicly condemned the outrages that took place there, either during the period of serfdom or after its abolition, which was not fair to the main peasant mass of the country's population "reform." It should be noted that he did not stand in the position of his petrashevets-brother, a supporter of decisive action. Understand-

ing A.I. Herzen, he was not going to follow his example, thereby entering into open, unequal wrestling with the tsarist regime. N.V. Hanykov preferred peaceful coexistence for the sake of one thing - a guaranteed opportunity to work on the problems of Orientalism.

In general, his works reflected the advanced features of Russian oriental studies: a genuine interest in the past and present Asian peoples, in their culture, as well as in their efforts to approach the study of the essential problems of Orientalism.

Hanykov was one of the most remarkable Russian Orientalists, who, unfortunately, did not find a place in Russia corresponding to his abilities and vast erudition.

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奴隶制在十九世纪上半叶在美国的作用
**THE ROLE OF SLAVERY IN THE UNITED STATES
IN THE FIRST HALF OF THE XIX CENTURY**

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注解。 本文讨论了奴隶制对十九世纪上半叶美国经济和政策的影响。 文章试图表明，虽然奴隶制在美国国家形成中占有非常重要的地位，但南北对抗与1861 - 1865年内战对抗的主要原因是经济和政治。 奴隶制只是这两个部分的理论家的掩护，使用奴隶的经济利益使南方有机会为自己的利益奉行政策。 在文章的最后，得出的结论是，奴隶制不仅改变了南方，而且改变了北方的面貌，同时由于经济差异将它们彼此分开，最终导致内战。

关键词：十九世纪的历史，美国的历史，内战的起因，奴隶制，美国宪法。

Annotation. *This article discusses the impact of slavery on the economy and policy of the United States in the first half of the nineteenth century. The article attempts to show that, although slavery occupied a very important place in the formation of the American state, the main reasons for the confrontation between the South and the North and the Civil War of 1861-1865 were economic and political. Slavery was only a cover for the ideologues of the two sections, and the economic benefit from the use of slaves gave the South an opportunity to pursue a policy in their own interests. At the end of the article, conclusions were made that slavery changed the face of not only the South, but also the North, while separating them from each other due to economic differences, which eventually led to the Civil War.*

Keywords: *the history of the XIX century, the history of the United States, the causes of the Civil War, slavery, the US Constitution.*

The entire first half of the XIX century for the United States was marked by major changes - a new nation was formed, and the new state was strengthened. Several important processes took place at once: the industrial revolution, the advance to the West and the controversy over slavery. All this rested on the confron-

tation between the North and the South, which ultimately led to the Civil War, which to this day remains the bloodiest war for the United States.

Among the many causes of the Civil War, the question of slavery remains today as one of the most debatable. Slavery held a special place and directly influenced politics and the economy, but it cannot be argued that slavery itself was the cause of the war. Slavery is only a particular, a detail, albeit a very important one. The main reason for the contradiction is the economy, and the ideology of slavery or abolitionism was only covered by those who sought to seize land of the West.

The next problem is the opinion that it is the Southerners who are to blame for the outbreak of war. English historian Brendan Simms in his large-scale work "Europe - the struggle for domination", describing the United States in the period under review, justifies the actions of southerners by the necessity caused by the economic and political situation in the country. However, when the description reaches the beginning of the war, he completely shifts the blame to the southern states. In particular, he writes: "Having failed in trying to force Washington into expansionist politics on its own terms ..., the South decided to deliver a preemptive strike. «...Separated states created a confederation — not only to oppose the abolitionist North, but also to promote territorial expansion [1, p. 277-278]». Thus, he shifts the responsibility to the southern states. Although in the US there are points of view according to which the North is to blame for the outbreak of war just like the South. Bruce Catton in his book "Civil War", considering its reasons, writes that the Southerners rallied their ranks in the difficult economic situation and because of the pressure of the abolitionists of the North [2, p. 8].

Before considering the economic and political influence of slavery, it is necessary to pay attention to the legal aspect of slavery, since it was legalized by the constitution. Solving slavery, the Constitution contradicts the idea on which it is built. The "Declaration of Independence", written in 1776, began with the words: "All people are created equal, and they all have certain inalienable rights, including life, freedom and the pursuit of happiness" [3]. However, it seems that life, freedom and the pursuit of happiness of blacks were not taken into account. Legislation regarded slaves as property, not as people [4].

The Constitution itself begins with the words: "We, the people of the United States, with the goal of forming a more perfect Union, establish justice, guarantee inner peace, provide joint defense, promote universal prosperity and secure the benefits of freedom for us and our posterity to proclaim and States of America" [5, p. 29]. But the Negroes were not included in the concept of "we-people".

In the Constitution, several articles raise questions about slavery. In the first article, two sections at once concern slaves. In section 2, paragraph 3, we read: "Representative places and direct taxes are distributed between individual states that can be included in the present Union, according to their population, which is

determined by adding to the total number of free individuals - including this is the number of those who entered the service for a specific period, and excluding non-taxable Indians - three fifths of all other persons” [5, p. 29]. This article deals with the amount of taxes that states must pay. The tax depends on the population of the state plus $\frac{3}{5}$ of "other persons", where by "other persons" are meant black slaves.

Section 9 permits the importation of slaves: “The relocation or importation of those persons who any of the existing states consider possible to allow should not be prohibited by Congress until one thousand eight hundred and eight, but may be imposed on such importation a tax or duty not exceeding ten dollars for every face” [5, p. 34]. According to this article, the states themselves had to define their attitude towards slavery (the slaves here are referred as “those persons”). Imports should not be prohibited until 1808. Thus, the solution of this question was postponed for the next generations.

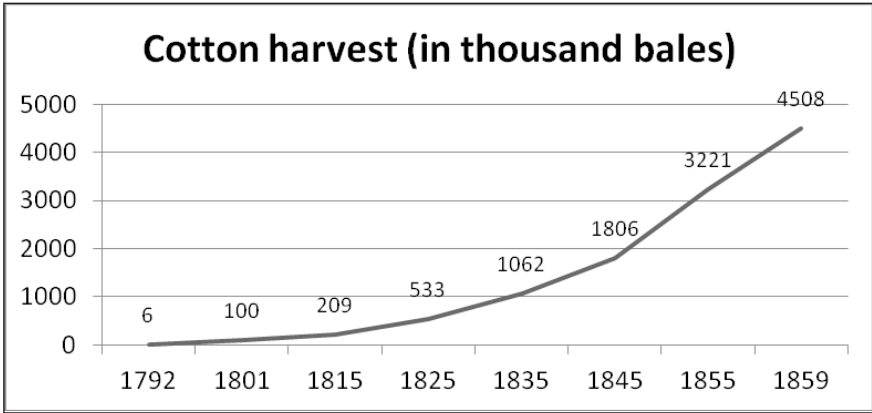
Article IV addresses the issue of escaped non-citizens: “No person who must be in service or work in one state according to his laws and who has fled to another state, by virtue of any law or state ordinance, shall not be exempted from service or work, but should be issued at the request of the party to which such service or work can be recognized as belonging to the right” [5, p. 39].

Article V prohibits raising the issue of slavery before 1808: “... not a single amendment that can be adopted up to one thousand eight hundred and eight, should not in any way affect paragraphs one and four of Section 9 of Article I ...” [5, p. 39].

Beginning in 1794, Congress forbade the export of slaves from the United States to all ships, and until 1808 the slave trade became more complicated by law. From 1 January 1808, it became illegal to “import or bring into the United States or into their territory from any foreign kingdom, place or state of any Negro, mulatto or colored person with the purpose of maintaining it, selling or considering <...> a slave or distributing it to the service or for work” [6]. For violation of the law, large fines were envisaged, however, the issue of the fate of illegally imported slaves was not resolved. Their fate could have been different: illegally imported slaves could become free; remain slaves; could be returned to their homeland. But President T. Jefferson was not determined to recognize slaves as people and was not going to spend money on their repatriation to Africa. Therefore, the situation of illegally imported slaves was deplorable - they fell under the jurisdiction of the state where they were brought [4].

From the beginning of the 19th century, slavery gradually began to play an increasing role in the economy of the South. Despite the prohibition of the importation of slaves, the black population is increasing. If in 1790 there were 757 363 people, of them 697 897 slaves [7, p. 600], then by 1860 there were 4,441,830 of them, of them 3,953,760 slaves [7, p. 597].

Initially, many believed that slavery would die of its own accord, but in 1793, Eli Whitney invented a cotton-cleaning machine that allowed the use of short-staple cotton in textile mills. This cotton could provide the South, and attitudes toward slavery changed. In the diagram presented, we can see an increase in cotton yield by a factor of 751 [8, p. 518].



The cotton monopoly of the slavery states was established simultaneously with the monopoly of the English cotton industry in the world market and the industrial revolution in the Northeast of the United States, and one of the reasons for the spread and strengthening of slavery was the gigantic demand for cotton by European countries, primarily Great Britain [9]. As Karl Marx emphasized, during this period, an “international division of labor is created that turns one part of the globe into a predominantly agricultural production area for another part of the globe as a predominantly industrial production area” [10, p. 462]. So, at this time, the United States is divided into the agrarian South and the industrial North.

The demand for cotton in the market gave rise to passion in the planters and forced them to exploit slaves even more. And this is not surprising, because slavery in the United States is not a separate economic model, but part of world capitalism. Therefore, the whole logic of the capitalists with the growth of demand is inherent in the slave owners. The desire for enrichment was also fueled by the fact that climatic conditions made it possible to grow cotton all year round, and the simplicity of cultivation did not require skilled workers. This was also the reason for the strengthening of slavery.

The demand for cotton and the presence of a huge fund of land contributed to the expansion of slavery to new territories. On this issue, a dispute broke out between the North and the South. The fact is that in order for southerners to have a political weight in Congress, an equal number of states (free and slave-owning) were necessary. The development of new territories immediately put this question at the forefront.

The reasons for the development of new lands were purely economic, but this issue was immediately intertwined with slavery.

The first dispute arose around the state of Missouri. In addition to purely economic reasons, political ones were dragged here. The fact is that the accession of Missouri as a free state upset the balance of power in Congress in favor of the North. The conflict was settled, and two states were accepted into the United States: Maine - free, Missouri - slave-owning.

The next dispute was caused by the Mexican War. To expand the plantation economy, new territories were required. The annexation of Texas leads to a new round of debate. Democrats supported this war, while the Whigs were against the annexation of Texas. The problem of slavery leads to a split in the US Democratic Party and a change in the political balance of power. There is a party of freesolers, which included the left wing of the Democrats, led by Martin Van Buren, the anti-slave owners of the Whigs and the abolitionists. The basis for their program was the "Wilmot condition" of 1846, which required the restriction of slavery and its non-proliferation [11, p. 140]. As a result of the war with Mexico, the United States was joined by vast territories that needed to be settled. Pennsylvania Congressman David Wilmot proposed a bill that prohibited slavery in the new lands. Wilmot's amendment was not adopted, but it sparked heated debate in Congress. In the end, Henry Clay developed a new compromise, according to which California was to become a free state; in the states of New Mexico and Utah, the Wilmot amendment did not work; in the District of Columbia the slave trade was banned; a tougher act was adopted to regulate the return of runaway slaves. This compromise did not satisfy either the North or the South, but both sections hoped that the issue of slavery was settled forever [2, p. eleven]. The next compromise was signed in 1854. This time the cause of the dispute was the issue of building a railway. In 1854, Illinois Senator Stephen A. Douglas presented the draft Kansas-Nebraska law. Douglas was a democrat, friendly to the South and hotly beloved there. He was little concerned about the issue of slavery: he just wanted the country to explore and develop new western lands between Missouri and California. In particular, Douglas dreamed of a transcontinental railroad, stretching from west to east to Chicago. The Kansas-Nebraska Act was due to this.

Construction of the road was to be carried out through public lands. If the railroad passes through the northern territories, the land west of Iowa and Missouri needed to be surveyed and settled. A suitable territorial organization was needed. But the southern states wanted the road through Texas and New Mexico. To get southerners' support for his plan, Douglas had to bribe them with something.

And he could do it. When he presented the bill for the creation of Kansas and Nebraska, it contained two special provisions. The first position embodied the idea of "national sovereignty" - people in the new states had to decide the slavery question themselves. The second clause abolished the Missouri compromise [2, p. 11-12].

All three compromises were beneficial to the South, but this situation could not be the guarantor of peace, and in 1861 a new crisis moment arrived, which could not be resolved by a compromise. The civil war broke out.

Thus, we see that slavery played a huge role in the life of the United States. Despite the fact that there was no slavery in the northern states, it was thanks to him that an industrial leap occurred here. Slavery permeated all aspects of American society: the economy, politics and social life. The huge role of slavery is expressed in the fact that it was they who were hiding behind politicians in the North and in the South. The issue of slavery stood together with economic issues, and for some time it was possible to solve them with the help of compromises. However, the difference between the South and the North was so great that their opposition eventually turned into the bloodiest war in US history.

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多元文化空间中的民族认同特征
FEATURES OF ETHNIC IDENTITY IN A MULTICULTURAL SPACE

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注解。 在现代世界中，社会群体的种族多样性正在增加，同时，代表种族多数和少数群体的文化群体的民族认同也在增加。 在全球社会文化转型的背景下，身份问题变得相关，取决于一个人理解，了解自己和找到自己在社会中的位置的愿望。 在这方面，在多文化环境中形成民族认同的问题特别重要。 根据一个人参与其民族文化，规范和价值观的程度，他的种族身份可能有不同的形式：从种族狂热主义，极端形式的侵略性到民族主义，这意味着否认种族，民族和文化价值观。

关键词：民族，环境，文化，宽容，民族认同，侨民，自我意识，社会化。

Annotation. In the modern world, the ethnic diversity of social groups is increasing, and at the same time there is an increase in the ethnic identity of cultural groups representing both an ethnic majority and a minority. In the context of global sociocultural transformations, identity problems become relevant, determined by a person's desire to understand, know himself and find his place in society. In this regard, the problems of the formation of ethnic identity in a multicultural environment are of particular relevance. Depending on how much a person is involved in his ethnic culture, norms and values, his ethnic identity may have different forms: from ethnic fanaticism, the extreme form of aggressiveness, to ethnonigilism, which means the denial of ethnicity, ethnic and cultural values.

Keywords: ethnos, environment, culture, tolerance, ethnic identity, diaspora, self-awareness, socialization.

Today, one of the main principles of the continued existence and development of a person in a multicultural environment is tolerance and recognition of cultural and ethnic diversity. Without an individual's awareness of their own cultural characteristics, it is impossible to respect the cultural characteristics of other people with respect. At best, there is a danger of ignoring, indifference, misunderstanding, alienation, at worst, irritation, the emergence of aggression regarding the manifestation of some aspects of the ethno-culture of another individual. The elimination of this problem is possible not through ethnic unification, but by searching for ways that contribute to the preservation and development of positive ethnic identity in the context of inter-ethnic interaction.

The term "ethnic identity" is determined as an interdisciplinary phenomenon by ethnologists, psychologists, sociologists, anthropologists, and philosophers. It's research requires the definition of closely related concepts of "ethnos" and "diaspora".

Analysis of the positions of some scientists (S.M. Shirokogorov, F. Barth, Yu.V. Bromley, S. A. Arutyunov, N.N. Cheboksary) led us to understand the ethnos as a historically established community, which is characterized by a common language and culture, features of life, traditions, as well as awareness of their unity and differences from other similar entities [10, 2, 1].

Works by M.A. Astvytsaturova, V. Dyatlova, Z.I. Levin, V. Popkova, V.A. Tishkova, J.T. Toshchenko, T. Chaptkyova, and M.V. Shnirelman helped to define the term diaspora as a significant part of an ethnic community outside its country of origin. Initially, diasporas arose as a result of forced evictions, the threat of genocide, the pressure of economic and political factors. In the future, many ethnic communities in a multicultural environment began to be called diasporas [8]. The diaspora, on the one hand, seeks to preserve the cultural characteristics of its ethnic group, on the other hand, is forced to adapt to the socio-cultural environment of residence.

In the general sense, the term "environment" is defined as a surrounding. The human environment includes a set of natural, cultural and social factors that can directly or indirectly affect the livelihoods of society [12]. The success of the personality development process is determined by the external conditions, the environment of life, in which it is located, the activity, the readiness of a person to become a person, to realize and express himself as a person in constantly changing conditions. A multi-ethnic, multicultural environment is extremely dynamic by definition. The interactions occurring in such an environment determine numerous qualitative transformations of needs, value orientations, states, feelings, traditions, habits and customs of members of various ethnic groups, which is due to the specific nature of the interaction [4].

The study of a number of approaches to the definition of ethnic identity made it possible to analyze it as a person's understanding of his belonging to a particular ethnic group, an individual's experience of his identity with one ethnic group, and differentiation from others. The structure of ethnic identity includes three components: cognitive (knowledge, ideas about the specifics of one's group and self-awareness as a member), affective (feeling one's identity with a group, assessing its qualities, attitude to belonging to it) and behavioral (manifesting oneself as a member of an ethnic group.) [3].

Ethnic identity develops simultaneously with the development of the identity of the individual, its socialization. In the process of socialization of the individual, factors of ethnic culture are actively involved, the carriers of which are the people around them. As a result of upbringing and education, people lay down in a child signs, traits, principles that meet the norms and requirements that are relevant within a given culture.

The main factors influencing the formation and development of ethnic identity are the native language, culture, traditions, customs, rites, and features of the ethnocultural contact environment. The formation of ethnic identity is an important condition for the well-being of a person, since this is the basis for the formation of an internal culture and value orientations. Ethnic identity as a process and structure is formed in the course of the development of human activities and communication. Awareness of the ethnocultural specificity of the group determines ethnic identity. Identification acts as a key process in the formation of ethnic identity. The basis of identification is considered to be knowledge and ideas, by means of which all forms of existence of an ethnos are mastered, a frame of reference is formed.

Ethnicity itself is characterized by a set of common properties among people and communities: knowledge of the language, highlighting it as a mother language; mastering the culture of the ethnos, the ability to apply it in everyday life; maintenance and adherence to the traditions, norms of behavior and lifestyle of the ethnic group; awareness of their identity with an ethnos that has a certain ethnonym. It is obvious that the main criterion for identifying oneself with a certain ethnos is communication.

N.N. Cheboksarov, considering the language, the territory, the totality of cultural features characteristic of certain ethnic groups, notes: “The interaction of these characteristics, their total influence on the formation and preservation of ethnic community are expressed as a secondary phenomenon - ethnic identity, which, it turns out to be decisive for determining the belonging of individuals or whole human groups to one or another ethnic community. Ethnic self-consciousness is a kind of resultant of the action of all the main factors that form the ethnic community” [9: 99].

Ethnic self-consciousness is a sense of belonging to one or another ethnos, which manifests itself in ethnic self-determination, that is, in an individual's attribution of himself to a given ethnic community. This is a reflection of the ethnos' consciousness in the individual consciousness of its representatives, expressing the result of the latest assimilation of ideas about the historical experience, position and development prospects of its people, its values and norms, as well as its place and role among other peoples and the interactions between them.

The situation of interethnic interaction provides an individual with more opportunities to gain knowledge about the peculiarities of his and other ethnic groups, leads to the development of interethnic understanding, tolerance and communication skills [5].

People who are in a mono-ethnic environment show less interest in their ethnicity and in gaining knowledge about the specifics of other ethnic groups. However, such conditions catalyze the process of formation in an individual of qualities that influence the determination of their belonging to a particular ethnic group.

The unity of culture, traditions, norms, ethno-linguistic environment provide identification of a person with a certain group at an earlier stage of its development, as imitation, as a rule, acts as a mechanism for the formation and formation of ethnic attitudes and stereotypes of behavior.

In a multi-ethnic environment, ethnic identity moves to one of the first plans in the structure of social identity. The difference between the cultural environment in which people live, from their own is directly proportional to the expression of their ethnic identity. Psychologists have established that if a child's socialization takes place in a wide poly-ethnic space, ethnic identity is more clearly understood, and the ideas about the differences between groups are assimilated earlier. But the time frame for the formation of ethnic identity and the accuracy of ideas about belonging to a particular ethnos is largely determined by the type of group of which the child is a member - a majority or minority group. For people belonging to an ethnic minority, ethnic identification is faster, and knowledge about the ethnic characteristics of one's own and the surrounding ethnic groups is more accurate. While the representatives of the ethnic majority may not even think about their ethnicity.

In mono-ethnic conditions, ethnicity is mainly defined as ascriptive quality. In other words, in the course of socialization and inculturation, socium "attributes" a child to a certain ethnic community. In a multi-ethnic environment, especially in the case of emigration or in inter-ethnic families, a person faces the need to choose. The process of ethnic identification in such a situation describes well the model of two dimensions of ethnic identity [13]. According to this provision, an individual with a different degree of intensity has the ability to identify himself with one, and simultaneously with two ethnic groups. Based on this, there are four main types of ethnic identity:

- monoethnic identity, which coincides with the official ethnicity (strong identification with its own ethnic group and weak with another, separation);
- mono-ethnic identity that does not coincide with the official ethnicity (strong identification with another's ethnicity and weak with its own, assimilation);
- biethnic identity (at the same time strong identification with both their own and foreign, biculturalism);
- marginal identity (equally weak identification with both their own and others, the lack of proper understanding of the norms and values of their own and other cultures).

Some researchers also establish the possibility of the existence of another type - a weak, clearly not expressed ethnic identity (or even its complete absence). As a strategy for maintaining personal well-being, it manifests itself in the denial of the importance of ethnic factor and ethnicity [11]. Such exclusion from the structure of social identity of one of its main components can disrupt the integrity of the image of the I and break the connection with any culture.

In a multi-ethnic environment, the biethnic identity is the most suitable for an individual, since it gives the opportunity to harmoniously combine different perspectives of world perception, to absorb the richness of a new culture without threatening the values of its culture. Bi-or multiculturalism has a beneficial effect on personal development. However, according to the results of empirical studies, the majority of people from inter-ethnic marriages have a marginal identity, in which an individual balances between two cultures and does not adequately assimilate the norms and values of any of them [3: 75-86]. Being confused in identities, they often experience intrapersonal conflicts, the signs of which are maladjustment, disorganization, alienation, anxiety, despair, meaninglessness of existence, aggressiveness [7].

Scientists studying the problem of ethnic identity as a system of knowledge about the typical features of their people highlight various manifestations of this phenomenon, in particular, L.M. Drobizheva, S.V. Ryzhov set the following:

1. Ethnonygilism - the failure of the ethnocultural values of their people, the experience of ethnic inferiority, limitations, shame for the representatives of their ethnic group, negativism towards them, the difficulty of communication with them.

2. Ethnic indifference - indifference to interethnic relations and ethnic issues.

3. Positive ethnic identity - a positive attitude not only to his ethnic group, but also to other peoples, tolerant attitude to incult values, readiness to have business relationships with people of any nationality.

4. Ethno-egoism - a sense of priority of his people over others, the expectation of trouble on the part of others, anxiety and irritation in communicating with representatives of other ethnic groups.

5. Isolationism (xenophobia) - confidence in the superiority of one's ethnos, striving for the "cleansing" of the national culture, recognition of its people's right to solve their problems at the expense of others.

6. National fanaticism - the conviction of the need for "ethnic cleansing", denial of the right to use resources, social privileges to other nations, recognition of the priority of the rights of a nation over human rights [6].

Thus, ethnic identity is an awareness, emotional evaluation, perception, experience of their belonging to an ethnic group. Its formation throughout life is considered a dynamic process. Ethnic identity is transformed under the influence of various socio-psychological factors. In a multicultural society, a positive ethnic identity, manifested in respect for the values of one's own and other ethnic groups, on the one hand, ensures the autonomy and stability of the development of the ethnic group itself, on the other hand, determines the conflict-free inter-ethnic interaction, forms a dialogical ethnic-cultural reality.

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纵隔淋巴结经气管支气管镜穿刺活检对疾病的验证, 表现为纵隔淋巴结肿大综合征

**PLACE TRANSTRACHEOBRONCHIAL NEEDLE-ASPIRATION
BIOPSY OF MEDIASTINAL LYMPH NODES
IN THE VERIFICATION OF DISEASE, MANIFESTED
BY MEDIASTINAL LYMPHADENOPATHY SYNDROME**

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注解。 一项前瞻性研究评估纵隔淋巴结 (TBNA) 经膀胱支气管细针穿刺活检的诊断效果, 包括在2018年MH KBR的SBHI "TB药房" 差异诊断部门检查的纵隔淋巴结病变患者37例病因不明。对于肿瘤病变, 该方法的敏感性和特异性为100.0%, 对于呼吸器官的结节病 - 分别为92.3%和100.0%。

关键词: 纵隔淋巴结肿大, TBNA。

Annotation. *A prospective study evaluating the diagnostic efficacy of trans-tracheobronchial fine-needle aspiration biopsy of the lymph nodes of the mediastinum (TBNA) included 37 patients examined in the differential-diagnostic department of the SBHI "TB Dispensary" of the MH KBR in 2018 for mediastinal lymphadenopathy of unknown etiology. For tumor lesions, the sensitivity and*

specificity of the method were 100.0%, for sarcoidosis of the respiratory organs - 92.3% and 100.0%, respectively.

Key words: *mediastinal lymphadenopathy, TBNA.*

Introduction. Mediastinal lymphadenopathy (ML) is an extensive group of diseases of a variety of etiologies, the diagnosis of which is a complex process, including clinical, radiological, laboratory and instrumental methods of investigation. Despite the fact that diagnostic technologies have been developing extremely dynamically in recent years, morphological and bacteriological studies of biopsy material are still the most important condition for verifying a diagnosis.

Not so long ago, such traumatic surgical approaches as sternotomy and thoracotomy, mediastinotomy and medistinoscopy were used to obtain diagnostic material from mediastinal lymph nodes [2, 9]. After introducing the endovideosurgical technique into practice, the video-assisted thoracoscopic biopsy became the method of choice [1, 3]. In recent years, many publications have appeared that emphasize the high informativeness of biopsies of mediastinal lymph nodes using less invasive transbronchial (TBNA, EBUS-TBNA) and transesophageal (EUS-FNA) accesses, which have shown their effectiveness in staging malignant lung neoplasms [6, 7, eleven]. The role of these methods in the differential diagnosis of ML caused by other diseases is currently being actively studied [4, 5, 8, 10].

In this article, we studied the effectiveness of using TBNA, planned on the basis of the results of virtual bronchoscopy, built on the technology of volumetric rendering of three-dimensional x-ray multispiral computed tomography data of a patient.

Objective. Analyze the results of using TBNA in the diagnosis of diseases manifesting mediastinal lymphadenopathy syndrome.

Materials and methods. From January 2018 to January 2019, a prospective study was conducted to assess the efficacy of TBNA in 37 patients with mediastinal lymphadenopathy on the basis of SBHI “TB Dispensary” of the Ministry of Health of the Kabardino-Balkarian Republic. All patients were hospitalized to verify the diagnosis.

Inclusion criteria: the age of patients older than 18 years, the presence of ML according to the data of multispiral computed tomography of the chest organs (MSCT CO), negative results of sputum and / or tracheobronchial tree washings on Mycobacterium tuberculosis (MBT) according to microscopy and molecular genetic (PCR) methods, informed written consent of the patient to conduct a biopsy.

Exclusion criteria: the presence of a previously verified pathology of the lung or cancer in the anamnesis.

When analyzing the MSCT CO, in 23 (62.2%) patients noted a combination of radiological syndromes: dissemination in the lungs and ML in 19 (51.4%) pa-

tients, in 4 (10.8%) - peripheral education in the lung and ML. Isolated mediastinal lymphadenopathy was detected in 14 patients (37.8%).

All patients with a disseminated process and formations in the lungs prior to TBNA underwent a transbronchial gable biopsy of the lung, which in all cases was non-informative, according to the results of bacteriological (PCR and microscopy, culture on non-specific flora and fungi) and histological studies of the biopsy material.

TBNA was performed under general anesthesia; a single-lumen endotracheal tube No. 8–9 or a laryngeal mask No. 5–6 were used to introduce a bronchoscope into the airways. The study was carried out with the help of a video or fiber bronchoscopy with a further fine-needle aspiration biopsy of the lymph nodes. Equipment: Evis Exera III video endoscopic system, BF 1T180 broncho video imaging system and BF 1T60 broncho fibroscope manufactured by Olympus (Japan). Tool: aspiration needles for TBNA 19G-21G, Olympus Medical System Corp. (Japan).

In all cases, a biopsy of 7 (bifurcation) and 4R (right lower paratracheal) groups of mediastinal lymph nodes was performed, in 14 patients (37.8% of cases) the biopsy was performed from lymph nodes 2R (right upper paratracheal) group, in 3 patients (8.1% cases) biopsy material obtained from lymph nodes 4L (left lower paratracheal) group.

Puncture of the 7th group was performed at standard points for biopsy of bifurcated lymph nodes, for biopsy of the other groups of mediastinal lymph nodes used pre-selected points, which were determined on the basis of MSCT CO and “virtual tracheobronchoscopy”. All patients underwent 1 to 3 punctures-aspirations into the lymph node group. The duration of the procedure varied from 10 to 35 minutes, on average - 17.7 ± 1.2 minutes.

In all cases, molecular genetic (PCR-GeneXpert), bacteriological (luminescent microscopy) and cytological examination of the aspirates was performed. For cytological examination, the technique of making smears and prints was used, in all cases 3 glasses were prepared. The research results were obtained on the day of or the next day after the execution of TBNA.

After the biopsy, all patients underwent a CO X-ray study in direct and lateral projection to exclude iatrogenic pneumothorax and hematoma of the mediastinum.

The final diagnostic points for establishing the diagnosis were: 1) the presence of signs of granulomatous inflammation without necrosis and granulomas of the sarcoid type (for sarcoidosis of the lymph nodes); 2) the presence of signs of granulomatous inflammation with areas of caseous necrosis during cytological examination and/or detection of the pathogen during bacteriological examination (for tuberculous lesions of the lymph nodes); 3) the presence of tumor cells (for tumor damage to the lymph nodes); 4) presence of signs of non-specific inflammation (for reactive lymphadenopathy).

In the absence of lymphoid tissue elements in the aspirate, the procedure was considered uninformative.

Results. Among the examined patients, female patients prevailed (15 males and 22 females), the age ranged from 18 to 67 years, averaging 45.5 ± 2.4 years. The distribution of patients by gender and age are presented in table 1.

Table 1
The distribution of patients by gender and age

Gender	Total	18-44 years	45-59 years	60-75 years
Male	15	11	2	2
Female	22	7	11	4
Total (ind.)	37	18	13	6

The overwhelming majority (83.8%) were patients of working age. In the middle and elderly age, females prevailed, and among young people, the gender ratio was reversed.

The overall informativeness of TBNA was equal to 94.6%, while the cytological verification of the diagnosis was obtained in 97.1% of cases, and bacteriological, only 2.9%. In 2 patients (5.4%), it was not possible to find cells of the lymph node in the biopsy material - they were diagnosed with sarcoidosis based on a histological examination of the surgical material obtained later with video thoracoscopy.

Table 2 presents the results of TBNA, as well as the final diagnoses with which the patients were discharged from the hospital.

Table 2
TBNA results, depending on the diagnosis verification method

Biopsy Result	Number of patients		Verification method	Diagnosis on discharge
	A6c.	%		
Sarciodosis	24	64,9	Cytological	Sarciodosis RO
Mts-affect	8	21,6	Cytological	Cancer
Reactive ML	2	5,4	Cytological	Pneumomia
Tuberculosis	1	2,7	PCR, microscopy	Tuberculosis ILN
No l/n tissue	2	5,4	-	Sarciodosis RO
Total	37	100	-	-

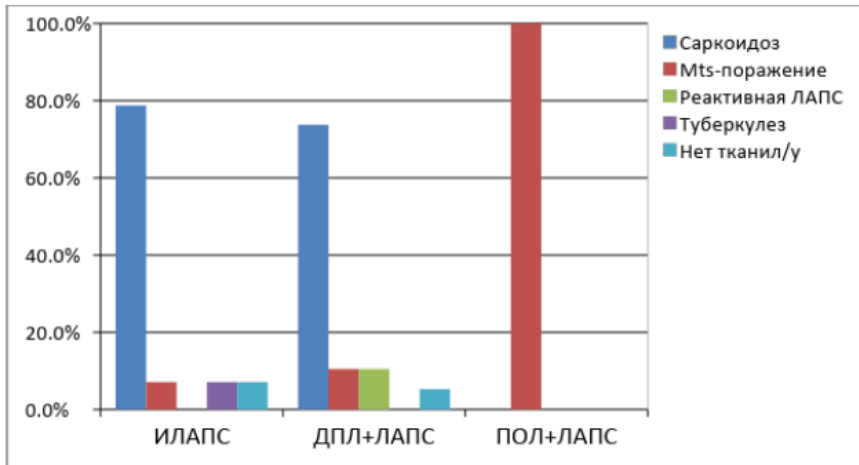
As can be seen from table 2, in the majority of patients (97.1%), the diagnosis was clarified on the basis of cytological examination of aspirate from lymph

nodes of the mediastinum. In the only case of bacteriological verification of the diagnosis, a 18-year-old patient was diagnosed with tuberculosis of the intrathoracic lymph nodes by microscopy and PCR. On the basis of PCR (GeneXpert) of the material obtained by TBNA, the “Rif-resistance” of MBT was determined, which is a criterion of the multi-drug resistance of MBT. The cytological picture of changes in the lymph nodes in this patient corresponded to granulomatous inflammation.

In 2 (5.4%) patients with disseminated process in the lungs and signs of reactive lymphadenopathy, according to a cytological study of an aspirate obtained by TBNA, after a course of anti-inflammatory and nonspecific antibiotic therapy, a repeated positive X-ray study showed marked positive changes in lymph node size and resorption focal infiltrative changes in the lungs. In these cases, pneumonia was diagnosed (Table 2).

Diagram 1 shows the distribution of patients depending on the diagnosis with which they were sent for examination and the results of a study of the biopsy material obtained with TBNA.

Diagram 1
The distribution of patients, depending on the diagnosis of the direction and the results of TBNA



Note: IML - isolated mediastinal lymphadenopathy; DLP is a disseminated lung process; PLF - peripheral lung formation

Thus, in all patients with peripheral lesion in the lung and ML, a metastatic lymph node involvement was diagnosed on the basis of a cytological examination of an aspirate obtained by TBNA. In the group of patients with a combination of a disseminated process in the lungs with ML and isolated ML, in most cases (73.7 and 78.7%, respectively) the diagnosis of sarcoidosis was established, lymph node metastatic lesion was found in 7.1% of cases in the group with isolated ML and in 10.5% of cases in the group of patients with a combination of DLP and ML. The procedure was declared uninformative in 5.3-7.1% of cases.

The diagnostic efficacy of TBNA varied depending on the etiology of ML. In sarcoidosis ($n = 26$), the sensitivity was 92.3%, the specificity was 100.0%; for the diagnosis of tumor lesions of intrathoracic lymph nodes ($n = 8$): sensitivity - 100%, specificity - 100%. A small number of patients (3 individuals) in our study with specific and reactive ML did not allow to draw correct conclusions about the effectiveness of the procedure and requires further research to clarify the diagnostic effectiveness of TBNA in this category of patients.

Complications and deaths during and after TBNA were not observed.

Conclusion. Analyzing the results of our study, it can be noted that TBNA is an informative, highly specific and quite sensitive method of verifying lymphadenopathies of the mediastinum, which allows for the diagnosis of the disease to be made in a short time and safely for the patient. TBNA allows you to specify the diagnosis in 97.1% and significantly expands the diagnostic capabilities of the clinic. When personnel acquire a particular skill, it becomes an effective and safe diagnostic method. Such a technique, in our opinion, can be recommended for use in all clinics with specialized hospitals.

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白色Tolstrobik (*Hypophthalmichthys molitrix* (val., 1844) 库班盆地的生物, 环境和形态特征

**BIOLOGICAL, ECOLOGICAL AND MORPHOLOGICAL
CHARACTERISTICS OF THE SILVER CARP
(HYPOPTHALMICHTHYS MOLITRIX (VAL., 1844) KUBAN BASIN**

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注解。首次详细介绍了库班盆地鲢鱼 (*Hypophthalmichthys molitrix*, Val., 1844) 的详细生物学, 生态学和形态学指标 (生长, 营养, 青春期, 繁殖力, 繁殖, meristic和塑料标志等)。

关键词: 库班盆地, 鲢鱼, 生物学, 生态学, 形态学

Annotation. *For the first time, detailed biological, ecological and morphological indicators of silver carp - Hypophthalmichthys molitrix (Val., 1844) of the Kuban basin are given (growth, nutrition, puberty, fecundity, reproduction, meristic and plastic signs, etc.).*

Key words: *Kuban basin, silver carp, biology, ecology, morphology*

Introduction

The homeland of the silver carp is the river basin of the Amur and South China (the Yangtze, Xi Jiang, and others). As an object of fish farming is widely settled in Asia and Europe. Since 1960 it lives in many reservoirs of Russia and the former USSR including in the waters of the Kuban basin.

The introduction of the silver carp into the waters of the Kuban basin proved to be very successful. Thus, in the spring of 1967, 446 thousand yearlings (572 specimens / ha) with an average weight of 36 g were released into the Shendzhy reservoir and as early as the third year after stocking the catch of herbivorous fish amounted to 149 - 998 kg / ha [1].

From 1975 to 1992, the reservoirs of the Kuban basin were intensively stocked with one's year brood, yearlings and two-year-old bigheads and silver carps. The annual catch (1979-1995) varied from 280 to 1,850 tons [9, 10]. In recent years (1996-2015), catches have drastically decreased and are only 3-5 tons. It is explained by the fact that the efficiency of natural spawning of silver carps in the rivers of the Kuban basin is zero, and stocking of reservoirs with young fish grown in pond farms is not carried out. to continue stocking up the reservoirs of the Kuban basin with young herbivorous fish, according to the developed guidelines [9,10], this will significantly increase the fish catch.

Silver carp as an object of pond pisciculture is studied quite well. The literature has significant publications on growing it in ponds together with carp and other fish, as well as on plant reproduction of it on fish farms in artificial conditions, at the same time there are few publications on its biology, ecology and morphology in natural water bodies and reservoirs.

In this regard, the goal was to give a complete biological, ecological and morphological characteristic of the silver carp of the Kuban basin.

Still there is no works on the biology, ecology and morphology of the silver carp of the Kuban basin waters; therefore, our studies are of undoubted scientific and practical interest.

Material and research methods

Ichthyological material on the main biological, ecological and morphological indicators (growth, nutrition, reproduction, fecundity, meristic and plastic signs, etc.) of the silver carp population of the Kuban basin were collected and processed according to generally accepted methods [11,12,15].

Morphometric measurements were carried out on fresh fish specimens according to 34 signs (9 meristic and 25 plastic). The body length was measured from the beginning of the snout to the end of the scale covering. The fish were weighted on technical scales with an accuracy of up to 1 g, and gonads - on pharmacy and torsion scales with an accuracy of 0.1 g.

Material for characterizing the age, size, weight and sex structure of fish populations was selected from control and commercial non-aqueous and net catches in different parts of water bodies. Age of fish was determined by scales. The growth rate was studied by direct measurements, as well as by relative length and mass increments. The spawning grounds and the breeding dates were established by the concentration of producers at the spawning sites, as well as by the presence of females with gonads of IV – V stages of maturity. During the spawning period in the spawning grounds, the temperature of the

water, the depth, the rate of flow of the water were measured and samples of phytoplankton and zooplankton were taken. Fertility samples were taken during the prespawning and spawning periods and absolute and relative fecundity were determined.

To determine the qualitative and quantitative composition of silver carp food, samples were taken from uneven-aged individuals from non-water catches during the entire feeding period of the fish. During processing, the taxonomic composition of the food objects of the first intestinal section of each individual was investigated. The contents were distributed to the mass of the whole food lump. The percentage content of mineral particles in the food lump was determined by the method of dry burning in a muffle furnace [8]. Indexes of Intestinal filling were calculated according to L.A. Zenkevich. [4]. Expeditionary trips to collect ichthyological material were carried out 3 times during the growing season (in spring during the spawning of fish, in summer in the period of feeding for fish, and in autumn in the period of concentration of fish in wintering pits).

Field work was carried out in conjunction with hydrobiological, hydrochemical and ichthyological studies conducted by the laboratory of the Krasnodar Research Institute of Fisheries.

1597 different-age specimens of silver carp from reservoirs of the Kuban basin, including: 70 samples for morphological analysis, 245 copies for fecundity, and 349 copies for nutrition were collected, processed and analyzed. The results of this article are based on works performed in 1976–2011.

Processing and analysis of primary material was carried out in the laboratory of the Krasnodar Scientific Research Institute of Fisheries (1976 - 2009) and at the Department of the Kuban State University (1998 - 2018). Digital processing of the obtained materials was carried out according to I. F. Lakin [5].

Analysis of the data

Silver carp (*Hypophthalmichthys molitrix* (Val., 1844)) refers to pelagic fish. Its body is compressed from the sides, on the abdomen, from the throat to the anus, there is a sharp keel. The scales are small, silvery. It has facing up oblique mouth, pharyngeal teeth single row, 4–4. Gill membranes are spliced and form a large fold across the interbranchial spacing to which they are not incremented. Numerous gill rakers, spliced together and form, as it was, a thick “sieve” that delays the smallest planktonic organisms. The gut is very long, more than 10 times the length of the body. Peritoneum is black.

There are In the dorsal fin, 2–3 (on average, 2.98 ± 0.025) hard rays and 6–9 (on average, 7.78 ± 0.074) soft (D II – III 6–9), in the anal - 2–3 (on average 2.97 ± 0.026) hard and 12–15 (on average, 13.79 ± 0.102) soft rays (AII – III 12–15). In the lateral line, 109–125 (on average, 122.87 ± 0.402) scales. The number of vertebrae is 37–39 (on average, 38.46 ± 0.012).

Indicators of plastic signs are presented in table 1.

Table 1. Morphological features of the silver carp of the Kuban basin (n = 70).

Signs	min	max	M ± m	S _x	Cv,%
Mass of fish, g	350,00	11400,00	5096 ± 5,144	43,04	0,845
Total length of fish (L), sm	30,80	107,00	75,89 ± 3,188	3,188	4,200
Length of body without C (l), sm	27,00	97,00	67,17 ± 0,369	3,087	4,595
<i>Meristic signs</i>					
Scales in the lateral line	109,00	125,00	122,87 ± 0,402	3,368	2,741
Scales above the lateral line	26,00	32,00	29,56 ± 0,215	1,263	4,273
Scales under the lateral line	16,00	21,00	19,74 ± 0,125	1,053	5,334
The number of non-ramulous rays in D	2,00	3,00	2,98 ± 0,025	0,211	7,081
The number of ramulous rays in D	6,00	9,00	7,78 ± 0,074	0,631	8,110
The number of non-ramulous rays in A	2,00	3,00	2,97 ± 0,026	0,210	7,065
The number of ramulous rays in A	12,00	15,00	13,79 ± 0,102	0,631	4,580
The number of vertebrae	37,00	39,00	38,46 ± 0,012	0,421	1,095
<i>Plastic signs of body length in %</i>					
Torso length	50,000	80,556	74,63 ± 0,768	6,433	8,619
Tail stem length	14,433	20,667	17,18 ± 0,157	1,312	7,637
Head length	20,966	29,885	24,12 ± 0,170	1,877	7,782
Snout length	8,039	12,885	10,47 ± 0,116	1,020	9,742
The ocular section of the head	12,028	17,647	14,64 ± 0,109	1,183	8,081
The horizontal diameter of the eye	1,842	3,144	2,72 ± 0,077	0,274	10,077
The height of the head at the occiput	17,500	23,967	19,89 ± 0,180	1,361	6,843
Forehead width	8,630	13,571	11,12 ± 0,103	1,040	9,354
The greatest body height	17,913	26,469	23,50 ± 0,201	1,801	7,664
The smallest body height	7,356	13,088	9,35 ± 0,108	1,207	12,909
Anterdorsal distance	33,947	52,632	47,92 ± 0,469	3,934	8,209
Post-dorsal distance	36,663	47,432	42,50 ± 0,205	2,267	5,334
P-V distance	12,959	21,444	19,09 ± 0,213	1,786	9,356
V-A distance	16,056	26,000	23,23 ± 0,163	2,093	9,012
Base D length	8,608	11,746	10,06 ± 0,090	0,754	7,495
The greatest D height	10,556	19,160	15,06 ± 0,135	1,130	7,501
Base A length	11,139	17,656	14,87 ± 0,123	1,029	6,920
The greatest A height	9,957	16,784	12,93 ± 0,297	1,437	11,114
P length	10,390	22,521	17,34 ± 0,305	2,554	14,729
V length	9,873	16,134	13,11 ± 0,112	1,124	8,574
<i>Plastic signs of head length in %</i>					
Snout length	20,482	34,429	30,99 ± 0,226	2,568	8,289
The postorbital region of the head	46,667	76,000	60,99 ± 0,247	2,063	3,383
The horizontal diameter of the eye	8,619	12,608	10,35 ± 0,162	0,839	8,114
The height of the head at the occiput	45,714	96,078	71,23 ± 0,376	3,149	4,422
Forehead width	34,054	60,500	46,35 ± 0,244	2,045	4,413

As can be seen from the data of table 1, the coefficient of variation of the meristic and plastic signs of the silver carp of the Kuban basin in most indicators does not exceed 10%. According to G. F. Lakin [5], 10% variation is considered weak. However, there are signs whose indicators exceed 10% variation. The highest degree of variation is characterized by indicators in% of body length - length P (Cv – 14.729%), smallest body height (Cv – 12.909%), maximum height A (Cv – 11.114%), horizontal eye diameter (Cv – 10.077%).

Analysis of the statistical processing of the meristic and plastic signs of the silver carp of the Kuban basin showed that they do not go beyond the limits of variations in the characteristics characteristic of the species (*Hypophthalmichthys molitrix* (Valenciennes, 1844)).

Silver carp in reservoirs of the Kuban basin reaches sexual maturity at 3-4 years of age, with a length of 38–47 cm and a mass of 3.5–5.6 kg. Males mature a year earlier than females. Mature males can be identified by the presence of horny denticles on the rays of the inner side of the pectoral fins.

In the prespawning period, there is only one generation of caviar in the gonads, the size of which ranges from 1.23 to 1.35 mm. The minimum gonad mass is observed in females of younger age groups (4+) - 621.4 g or 11.95% of body weight. With an increase in linear-weight indicators, the number of eggs produced increases also in females with a length of 81.2 cm and a mass of 14.8 kg (9+), reaching 2082.6 g or 14.07%. At the same time, the coefficient of gonad maturity does not increase with the growth of fish.

The individual absolute fecundity of the silver carp ranges from 481 to 1259 (on average, 1179.7 ± 6.23) thousand patches. The relative fecundity varies from 101.5 to 131.9 ikr / g, on average - 118.5 calf / g (Table 2).

Some researchers have noted a one-time spawning of the silver carp [14, 3, 4, 6], others [13,16] report batch spawning.

Table 2. Individual fertility of the white silver carp of the Kuban basin

Age	Length, cm	Mass, kg	Gonad mass, g	Fertility		MR	n
	M ± m	M ± m	M ± m	AF, thousand pc. M ± m	RF, Fish egg/g	gonad, %	
4+	50,4±0,23	5,2±0,02	621,4±7,53	527,6±2,74	101,5	11,9	45
5+	54,2±0,15	6,8±0,02	998,2±6,24	875,4±7,88	128,7	14,7	62
6+	62,5±0,17	8,8±0,03	1270,5±6,86	1021,2±6,07	116,1	14,4	65
7+	70,6±0,15	10,2±0,07	1670,4±10,78	1345,2±3,93	131,9	16,4	43
8+	75,4±0,27	13,6±0,07	1830,2±6,42	1532,4±9,48	112,7	13,4	22
9+	81,2±0,72	14,8±0,19	2082,6±22,68	1776,3±19,22	120,0	14,1	8
Average	65,7±0,20	9,9±0,05	1412,2±7,92	1179,7±6,23	118,5	14,2	Σ=245

Note: AF - absolute fecundity, PAI - absolute fecundity, RF- relative fecundity, MR - coefficient of gonad maturity

Studies conducted by us in 1976–2008 showed that the silver carp from the Krasnodar reservoir at a water temperature of 16–18 °C begins the migration path up the Kuban River. He climbed to the city of Armavir, making the way about 100 km. Spawning herd consists of individuals 3–9 years of age. Males are found in age from 3 to 7 years, females from 4 to 9 years. The bulk of the spawning population of carp is females and males aged 5–8 years.

Special studies conducted by us in 1981–1985, 1988, 1993 to collect caviar with caviar net with an inlet opening of 50 cm both in the reservoir bowl and in the Kuban River above the reservoir showed that during the entire study period no larvae were found herbivorous fish. Caviar met throughout the river Kuban from the city of Armavir to the confluence of the reservoir.

Studies have shown that for spawning, silver carp chooses parts of a river that have a turbulent flow on rifts above the city of Ust-Labinsk to the city of Armavir at a speed of water flow of 0.3–1.7 m / s. in the period of raising the level of water in May-June, at a water temperature of 19.8–22.5 °C.

The caviar, once lined up, fails to go through all the stages of development, rolls down into the reservoir, where the river current is practically absent, precipitates to the bottom and dies. Therefore, for all the years of research in the Kuban basin, we have not found the silver carp larvae. At the same time, Yu. M. Motenkov [7] notes that before the creation of the Krasnodar hydroelectric complex, the eggs managed to go through all the stages of development and the larvae were found both in the rice fields and in the lower reaches of the Kuban and Kuban estuaries.

Silver carp is a large fast-growing fish. White silver carp begins to realize its high genetic abilities from the third year of life. Thus, in the Krasnodar Reservoir,

three-year-old individuals reach a length of 33.5 cm and a mass of 1.12 kg, six-year-olds, respectively — 52.4 cm and 6.57 kg, at ten years old (9+) there are individuals with a length of 85 cm and a mass of 16.7 kg (on average - 80.7 cm and 14.55 kg) (Table 3).

The highest growth rates were observed in silver carps from the Krasnodar and Shendzhy reservoirs.

Table 3. Average long-term growth of white carp in various watersheds of the Kuban basin

Reservoir	1+	2+	3+	4+	5+	6+	7+	8+	9+	n
Krasnodar reservoir	<u>31,5</u> 0,45	<u>33,5</u> 1,12	<u>39,4</u> 2,74	<u>46,5</u> 4,85	<u>52,4</u> 6,57	<u>59,8</u> 8,53	<u>68,5</u> 9,96	<u>74,5</u> 11,85	<u>80,7</u> 14,55	648
Shendzhy reservoir	<u>32,5</u> 0,53	<u>37,8</u> 0,98	<u>45,2</u> 2,55	<u>49,8</u> 5,53	<u>54,4</u> 8,62	<u>61,5</u> 9,15	<u>63,3</u> 10,25	<u>69,5</u> 13,12		224
Krukovsk reservoir	<u>30,5</u> 0,46	<u>34,5</u> 0,88	<u>35,3</u> 1,16	<u>39,5</u> 2,85	<u>44,5</u> 5,26	<u>48,4</u> 7,30	<u>55,3</u> 8,86			284
The large reservoir	<u>25,0</u> 0,27	<u>32,0</u> 0,53	<u>34,0</u> 0,82	<u>36,0</u> 1,20	<u>38,0</u> 1,75	<u>40,0</u> 2,35	<u>43,0</u> 3,20			156
Kuban limans	<u>30,0</u> 0,43	<u>32,8</u> 0,53	<u>39,0</u> 1,25	<u>45,2</u> 3,79	<u>47,4</u> 5,98	<u>53,6</u> 7,65	<u>55,2</u> 8,12	<u>58,3</u> 9,89		285
Average	<u>29,9</u> 0,43	<u>34,1</u> 0,81	<u>38,6</u> 1,70	<u>43,4</u> 3,64	<u>47,3</u> 5,64	<u>52,6</u> 6,99	<u>57,1</u> 8,08	<u>67,4</u> 11,62	<u>80,7</u> 14,55	Σ=1597

Note: above the line - length, cm below the line - weight, kg

Silver carp is characterized by a low growth rate from the large reservoir, where the temperature of water in the summer months does not exceed 15–18 °C. In the remaining waters of the Kuban basin, the growth rate of the white carp is relatively high. This is facilitated by good feeding conditions (high feed base up to 15 g / m³ of phytoplankton, a long growing season with water temperatures of 20–28.5 °C, etc.).

It is known that the white silver carp is a phytoplanktophagus by its nature, but in the case of a lack of phytoplankton, it actively consumes detritus [2, 8, 9, 10].

Analysis of the intestinal contents of the silver carp living in the Kuban basin showed that the food lump consists of phytoplankton, zooplankton, and detritus — organic substances and mineral particles coated with bacteria (Table 4).

The content of phytoplankton in the intestines of silver carp ranges from 27.2 to 33.7%, averaging 30.6 ± 0.08% of the mass of food lump. Detritus occurs in the intestines of all investigated fish from 64.2 to 71.9%, averaging 67.7 ± 0.31% of the mass of the food lump, including mineral particles - 15.8 ± 0.33%. The greatest amount of detritus in the intestines of fish was observed in the spring, when phytoplankton biomass is minimal (1.45 g / m³).

The intensity of the feeding of white carp in different-age fish is different. Thus, the maximum intestinal filling index (232.6–223.9 ‰) were noted in 6+ and 7+, the minimum (130.8-157.8 ‰) - in 2+ and 4+. The average intestinal filling index in white carp is 190.4 ± 3.99 ‰ (Table 4).

Conclusion

Silver carp in the waters of the Kuban basin is growing relatively well. Individual specimens reach a length of 85 cm and a mass of 16.7 kg. In addition, the silver carp, annually utilizing a significant part of phytoplankton production, significantly reduces the level of eutrophication of reservoirs. Since in the reservoirs of the Kuban basin there are no adequate conditions for the natural reproduction of white carp it can be stocked only on the basis of artificial breeding and cultivation of fish seed material in pond farms.

Table 4 - Qualitative and quantitative composition of silver carp food, % by weight

Food components and indicators	Age groups										M ± m	Cv
	1+	2+	3+	4+	5+	6+	7+	8+	9+	10+		
Phytoplankton	33,7	27,8	30,4	28,5	27,2	32,1	29,9	33,1	32,2	31,1	30,6 ± 0,31	5,70
Zooplankton	2,1	2,4	1,7	0,8	0,9	2,3	0,7	1,6	1,7	2,8	1,7 ± 0,08	28,73
Detritus (Seston), including - organic, - minerals											67,7 ± 0,31	
	64,2	69,8	67,9	70,7	71,9	65,6	69,4	65,3	66,1	66,1	0,51	2,64
	48,8	51,6	56,1	59,0	53,1	45,9	58,1	49,8	46,4	50,2	15,8 ± 0,33	5,87
	15,4	18,2	11,8	11,7	18,8	19,7	11,3	15,5	19,7	15,9		12,36
The average mass of the fish, g	452	1200	2300	3150	4520	6135	7300	9100	10300	11450	5591 ± 57,49	19,21
The mass of the food bolus, without minerals, g	9,5	15,7	44,8	49,7	85,4	142,7	163,5	187,4	194,7	195,0	108,8 ± 7,28	16,65
Intestinal filling index, without minerals, ‰.	210,2	130,8	194,8	157,8	188,9	232,6	223,9	205,9	189,0	170,3	190,4 ± 3,99	12,43
The number of treated intestines, pc	46	37	52	61	50	44	27	17	9	6	Σ= 349	

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阿瓦恰湾海岸带人为改造对沿海鱼类的影响
**INFLUENCE OF ANTHROPOGENIC TRANSFORMATION
OF AVACHA BAY SHORE ZONE ON THE CONDITION
OF ITS COASTAL ICHTHYOFAUNA**

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注解。阿瓦恰湾海岸线的人为化对其生物群产生了不利影响。鱼类及其食物的物种组成发生了变化。通过最常见的鱼类组织中大量重金属含量的例子显示了该储层的显着污染 - 棕色鸡冠花

关键词：人为影响，污染，鱼类动物，棕色鸡冠花，重金属，阿瓦恰湾，堪察加半岛。

Annotation. *The anthropogenization of the coastline of the Avacha Bay adversely affected its biota. There was a change in the species composition of both fish and their food objects. Significant contamination of this reservoir is shown by the example of a high content of a number of heavy metals in the tissues of the most common species of fish - the stone cockscomb*

Key words: *anthropogenic impact, pollution, ichthyofauna, stone cockscomb, heavy metals, Avacha Bay, Kamchatka.*

With the development of Petropavlovsk-Kamchatsky in the 20th century, the coastal zone of the Avacha Bay within the city for the past several decades has been subject to intense anthropogenic impact (the location of fishing and transport vessels, dredging, construction of various port facilities, residential areas and road networks, pollution with industrial and household waste, fishing, poaching, etc.), which disrupted its natural state and had a significant negative impact on the composition and structure of coastal biota. As it was shown earlier using macrophytobenthos as an example (Klochkova, Be-rezovskaya, 2001), by the beginning of the 21st century, the macrophyte algae zone in the Avacha Bay underwent strong destructive changes, and in some of the most polluted coastal areas (for example, in the Nikolskaya Hill area) it was almost completely destroyed. Comparison of the available information on the species composition of the coastal ichthyofauna of the Avacha Bay, as well as the number and occurrence of certain

fish species in the 1930s (Popov, 1933; Vinogradov, 1947) and 1990-2000s (Tokranov, Sheiko, 2015), allows in the first approximation to assess the consequences of anthropogenic impact on this group of hydrobionts of this reservoir.

Although the species composition of the ichthyofauna of the Avacha Bay at the beginning of the last century and nowadays is generally quite similar (the degree of similarity is about 78%), and its basis (respectively, 74 and 78%) in both of them forms the other 10 of the same families (Tokranov, Sheiko, 2015), in some areas of this reservoir most susceptible to anthropogenic impact, the species diversity of fish decreased noticeably by the beginning of the 1980s – 1990s (Matyushin, 1989; Tranbenkova, 1999; Tokranov, Murasheva, 2018). Some representatives of the benthonic ichthyofauna, fairly common in the first half of the 20th century, in certain areas of the littoral and upper sublittoral (for example, the brightbelly sculpin (*Microcottus sellaris*), spawning individuals of the smooth lumpsucker (*Aptocyclus ventricosus*) were only singly or not met at all (Tranbenkova, 1999; Tokranov, Murasheva, 2018).

Monitoring results 2014-2018 indicate that in the period from April to September in the pebble-boulder biotopes of the littoral zone of the northeastern part of the Avacha Bay, in the Nikolskaya Hill and near the Seroglazka village (Fig. 1), at present, only the stone cockscomb (*Alectrias alectrolophus*), whose share in numbers is about 99.8% (table 1) (Murasheva, Tokranov, 2017a; Tokranov, Murasheva, 2018).

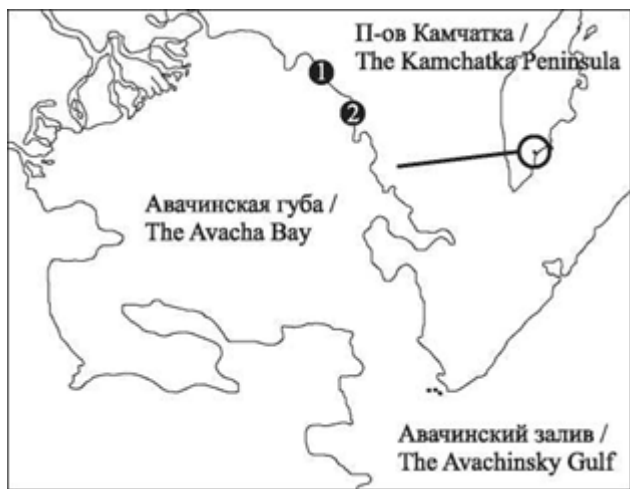


Fig. 1.

Schematic map of places for catching of the brown sea cockscomb in Avacha Bay

1 - near the Seroglazka village (2014–2018),

2 at the Nikolskaya Hill (2016–2018)

Table 1. Species composition and ratio of fish during ebb in the surveyed areas of the littoral of the Avacha Bay in May – September 2014–2016.

Rate	View			
	<i>Alectrias alectrolophus</i>	<i>Rhodymenichthys dolichogaster</i>	<i>Pholis fasciata</i>	<i>Myoxocephalus stelleri</i>
Near the Seroglazka village (2014-2018)				
Number of fish, pc.	2132	2	1	1
Share, % by number	99,80	0,10	0,05	0,05
Length, mm	30-143	192-201	134	34
At the Nikolskaya Hill (2016 -2018)				
Number of fish, pc.	1071	1	-	-
Share, % by number	99,90	0,10	-	-
Length, mm	33-134	153	-	-

In contrast to the species composition, the number and occurrence of individual fish species in various areas of the Avacha Bay in the 1930s and 1990-2000s changed significantly, which is obviously due to intensive fishing, poaching and pollution of the water area (especially coastal zones) by industrial and household waste, as well as by the transformation of the coastline and its development by many different port facilities. A vivid example of this is the group of Pacific herring living here (*Clupea pallasii*), which was quite numerous in the Avacha Bay as early as the beginning of the 20th century and was a traditional local fishery, and by the mid-1970s. only singularly found in catches (Tokranov, Sheiko, 2015; Tokranov, Murasheva, 2018).

Along with the reduction in the number and occurrence of certain species of fish in the coastal zone of the Avacha Bay, changes in their trophic relationships are also observed today compared with the first half of the last century and a high content of pollutants in the tissues. Comparison of the results of our research on the food composition of the stone cockscomb in the Nikolskaya hill and near Seroglazka in 2014-2017. (Murasheva, Tokranov, 2017b) with data for the 1930s (Vinogradov, 1947) allows to make a conclusion about the change of the dominant food organisms of this mass representative of the littoral ichthyofauna of the Avacha Bay. If in the first half of the XX century the main food objects of the stone cockscomb here are according to K.A. Vinogradov (1947), were polychaete (mainly *Eteone longa*) and gastropods of the genus of *Littorina*, then at present the

basis of its food in the surveyed areas of the intertidal zone is made by amphipods (66-89% by weight), while the proportion of polychaete does not exceed 3- 4% by weight (Murasheva, Tokranov, 2017b). One of the possible reasons for the change of the dominant food organisms in this type of coastal fish in the Avacha Bay over the past decades is a significant increase in the second half of the 20th century anthropogenic pollution of the coastal zone of a given water body with organic waste contained in industrial and domestic wastewaters, and the resulting increase in the number of scrap in coastal.

According to the results of the analysis performed by us in 2017, the content of such metals as Fe, Mn, Cu, Zn, Pb, Ni, and Co in the tissues of the stone cockscomb in the two studied areas of the tidal zone of the northeastern part of the Avacha Bay at the present time very large (Tokranov., 2018). The excess of background values for Fe is 1.8-5.2, Mn – 6.4–6.7, Cu - 171.0–195.7, Zn– 96.4–99.6, Pb - 109.0– 126.2 and Ni– 79.2-80.0 times. Comparison of the content of heavy metals in the tissues of the stone cockscomb in 2017 and fucus in the same areas of the Avacha Bay in 1999 (Khristorova., 2001) suggests that their concentration in the first one is much higher than that of the second (Tokranov., 2018). However, it is possible that this is due to the accumulation of heavy metals over the past years in the coastal zone (Table 2).

Table 2. Average concentrations of heavy metals ($\mu\text{g} / \text{g}$ dry weight) in the tissues of the cockscomb in the Avacha Bay in July 2017

Area	Fe	Mn	Cu	Zn	Pb	Ni	Co
1*	1038	349	411	1060	366	296	322
2*	2978	333	359	1096	316	293	203

* Area numbers are shown in fig. one

As it is known (Khristorova et al., 2001), the content of Zn in hydrobionts is an indicator of human exploration of the coast. Therefore, a high concentration of this metal in the tissues of a stone cockscomb indicates a significant anthropogenic effect on the surveyed areas of the coast of this reservoir. Higher values of Pb are due to its entry into the coastal waters from various sources, including in the form of combustion products of automotive fuel-lead dioxides, since the central city-highway lies in close proximity to the coastline of the Avacha Bay. The high concentration in the tissues of the stone cockscomb Cu and Ni, which fall into the Avacha Bay with industrial and communal drains (Klochkova and Berezovskaya, 2001), confirms the presence of a powerful anthropogenic pressure on the tidal zone of the studied areas.

The changes in the species composition of the coastal ichthyofauna of the Avacha Bay, as well as the reduction in the number and occurrence of a number of

fish living in the coastal area, are, in our opinion, primarily due to the intensive pollution of the coastal zone of this reservoir with industrial and domestic waste, a violation of the natural state many areas of the littoral and upper sublittoral as a result of their anthropogenic transformation, which resulted in a reduction in the area of natural spawning and feeding areas, destruction or complete disappearance of macrophyte algae (Klochkova, Berezovskaya, 2001), employee home to many members of the fish fauna, especially in the early stages of ontogeny. In order to prevent the further degradation of the ichthyofauna of the coastal zone of the Avacha Bay within the city, in our opinion, it is necessary, first of all, to reduce the flow of industrial and household pollution into it, clean the coastal zone from wrecks and debris, and, finally, preserve the remaining relatively not subjected to anthropogenic transformation of a few areas of the littoral and the upper sublittoral reservoir.

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Balkash-Alakol盆地土着鱼类的某些物种的种群特征
**CHARACTERISTICS OF THE POPULATION OF SOME SPECIES
OF THE INDIGENOUS ICHTHYOFAUNA
OF THE BALKASH-ALAKOL BASIN**

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注解。 本文回顾了鱼类生物多样性的变化，并确定了Balkash-Alakol盆地土着鱼类的物种组成。 给出了一些天然鱼类动物的生物学特性。

关键词：原住民鱼类动物，Balkash-Alakol盆地，红皮书，Balkash marinka，平原gubach，Severtzov的石泥鳅。

Annotation. *This article reviewed the changes in the biodiversity of the ichthyofauna and determined the species composition of the indigenous ichthyofauna of the Balkash-Alakol basin. The biological characteristics of some species of native ichthyofauna are given.*

Key words: *aboriginal ichthyofauna, Balkash-Alakol basin, Red Book, Balkash marinka, plain gubach, Severtzov's stone loach.*

Introduction

Balkash-Alakol basin is one of the largest lake ecosystems of the planet. Being a trans-border basin, it is of great interest for neighboring countries, both from a scientific and economic point of view. The largest reservoir of the basin is Lake Balkash belongs to the category of closed drainage reservoirs, the water surface area is more than 20.0 thousand km². It is a reservoir of republican significance.

Currently, under the influence of natural and especially anthropogenic factors, Lake Balkash has significant changes in the qualitative composition and number of ichthyofauna. Lake Balkash and the delta of the river of Ile still possess the

largest fish reserves among the inland waters of Kazakhstan. The total catching is about 20% of the nationwide annual fish catch.

Aboriginal ichthyofauna is presented by following species and subspecies. There are Balkhash marinka (*Schizothorax argentatus argentatus*), Illi marinka (*Sch. argentatus intermedius*), scaled osman (*Diptychus maculates*), scaleless osman (*D. dybowskii*), common minnow (*Phoxinus phoxinus*), short-tailed minnow (*Ph. brachyurus*), Balkhash minnow (*Lagowskiella poljakowii*), Spotty gubach (*Triplophysa strauchii*), plain stone loach (*T. Labiata*), Tibetan stone loach (*T. stoliczkai*), Gray stone loach (*T. dorsalis*), Severtzov's stone loach (*Nemcheilus sewerzowii*), Balkhash perch (*Perca schrenkii*). Perhaps, Siberian dace (*Leuciscus leuciscus*) should also be considered as an aboriginal species. Illi marinka, Severtzov's stone loach, Plain gubach and Balkhash perch are endemics of the Balkhash basin.

According to literary data, as a result of the introduction of new species of fish into the reservoirs of the Balkhash-Alakol basin, the species richness of its ichthyofauna increased in Lake Balkash from 11 to 36, in Alakol lakes from 9 to 21 species, and invasive species began to form the basis. The most intensive settlement of new species of fish in Lake Balkash took place in 1930 and 1950–70, and Alakol lakes had increasing in the number of acclimatized species in the 60–90 years of XX century.

Materials and techniques

The material for this paper was the analysis of long-term dynamics, as well as field gatherings and observations carried out as part of complex fishing expeditions together with employees of «Kazakh Research Institute of Fishery» in the Balkhash-Alakol basin and literary sources. The material was collected and processed according to the methods generally accepted in ichthyology. The materials on the biological state and size and age structure of the herd of fish are given, and trends of their changes in recent years are analyzed.

Results and discussions

The main fishing waters of the Balkhash-Alakol basin include Lake Balkash, the river Ile, the Kapshagay reservoir, and the Alakol system of lakes (Lake Alakol, Koshkarkol and Sasykkol).

The Alakol lakes system. Alakol lakes are a link in a chain of lakes, starting from B. K. Terletsky Balkhash and ending with Ebi-Nor in China. They are located almost in the center of the same name cavity in the south-east of Kazakhstan, and are limited to the Tarbagatai Range from the north, the Dzhungar Alatau from the south, and the Barlyk Range from the east. The most western of the lakes of the Alakol group is Lake Sasykkol, to the east lies Lake Koshkarkol, southeast of Lake Alakol. In periods of high water content there is a connection between them (Figure 1).

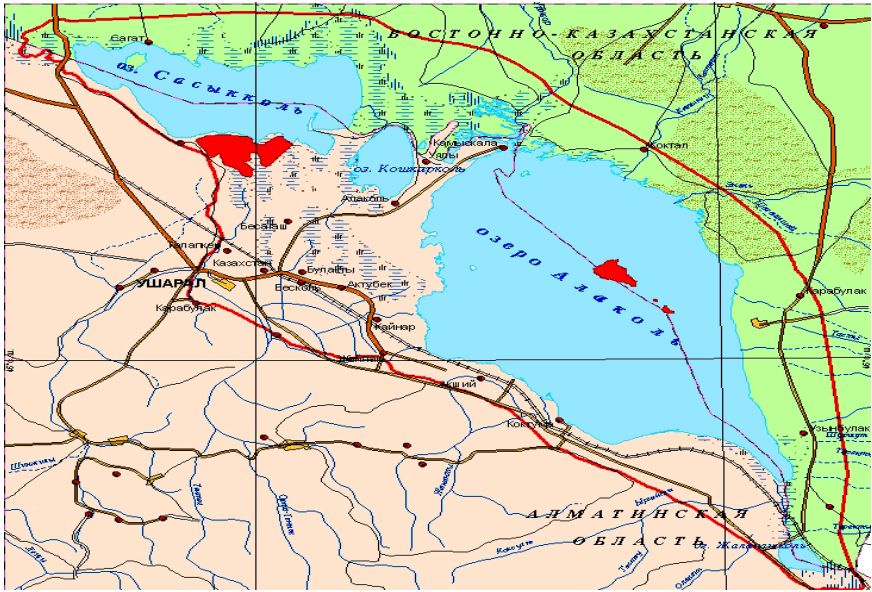


Figure 1 - Hydrographic network of lakes of the Alakol system

Lake Alakol is the largest reservoir of the Alakol system. It is located in the lowest part of the Alakol cavity. It accumulates in itself the waters not only of its own tributaries, but also of other large lakes of the Alakol group. The lake is basinal irregular pear-shaped, stretched from north-west to south-east.

A brief overview of changes in the biodiversity of the ichthyofauna. The study of the ichthyofauna of the Balkhash basin began in the second half of the XIX century. In 1874, K.F. Kessler based on the analysis of materials collected by the expedition A.P. Fedchenko, first published information about the species composition of the river Ili including in this material the descriptions of fish from Lake Balkhash and the Alakol lakes basin. In 1903 L.S. Berg toured the river Illi and Lake Balkhash. The materials of this trip are included in the "Fish of Turkestan" report. In 1937, the Zoological Museum of Moscow State University under the direction of G.V. Nikolsky surveyed flat stream of the river Illi. The research results are summarized in the "Bulletin of the Moscow Society of Naturalists" in 1940. From 1945 to 1947 fisheries research of the river Illi were conducted under the direction of V. I. Dobrokhovoy. The results are summarized in her article "The successes of acclimatization of commercial fish species in the waters of Kazakhstan" and in the Ph.D. thesis of A.I. Goryunova "Marinka of the river Illi". From 1947 to the beginning of the 1960s, studying of loaches of the river Illi was conducted

by P. F. Martehov. As a result of the analysis of literary sources relating to ichthyofauna of the river Illi in 1963 N.P. Serov I was forced to state that “the hydrofauna of the river Illi in the zone of the future reservoir (Kapshagay) has almost not been studied. » Since the late 1960s, the ichthyofauna of Lake Balkhash, the river Illi and the Alakol lakes began to receive great attention in connection with the acclimatization of a large number of alien fish species, which, according to the ideas of that time, were more valuable commercially. Since then, more attention has not been paid to the taxonomic composition of the aboriginal ichthyofauna, although already after a short period after large-scale acclimatization work, it became obvious that alien species were displacing native species into the accessory system of water bodies. Conducted in the late 1990s, studies have shown the presence of a large number of alien fish species in accessory aquatic systems of the river Illi, Lake Balkhash and the Alakol lakes.

Based on the carried out work, a preliminary list of fish inhabiting the Balkhash-Alakol basin, consists of 14 native fish species, such as Siberian dace (*Leuciscus leuciscus*), common minnow (*Phoxinus phoxinus*), short-tailed minnow (*Ph. brachyurus*), Balkhash minnow (*Lagowskiella poljakowii*), Siberian gudgeon (*Gobiocynocephalus*), Balkhash marinka (*Schizothorax argentatus argentatus*), scaled osman (*Diptychus maculates*), scaleless osman (*D.dybowskii*), Spotty gubach (*Triplophysa strauchii*), plain stone loach (*T. Labiata*), Tibetan stone loach (*T.stoliczkai*), Gray stone loach (*T.dorsalis*), Severtzov’s stone loach (*Nemcheilus sewerzowii*), Balkhash perch (*Perca schrenkii*).

Not a single species from the aboriginal fish of the Alakol basin has yet been included in the Red Book of Kazakhstan. Since 2006 The Red Book of the Almaty region included such species of fish as:

According to the status in need of protection is Balkhash marinka of the *Schizothorax* genus;

According to the status of the endemic of the Balkhash basin and necessity to be protected according to the second category is Severtzov’s stone loach of bearded stone loach genus – *Barbatula Linck*, 1790;

Plain gubach is listed according to the status in need of protection in the 4th category (undefined).

Balkhash marinka is an aborigine of the basin. Of the subspecies described for Kazakhstan in the Alakol basin lives - *Sch. argentatus Kessler*

The number of marinka in the lake part of the basin began to decline after acclimatization in the Alakol lakes of the carp. Although the adult individuals of the marinka ate mainly plant food, the young at certain stages consumed mainly benthos and competition with a carp could play a certain role in reducing the number of this species. However, the main reason for the decline in the number of the marinka was the wrong organization of the fishery, which was carried out

without taking into account sexual dimorphism and biology of this species (fishing was carried out mainly in the spawning period with a concentration on males and immature individuals) and obviously exceeding the reproductive capabilities of the populations. Thus, by the end of the 40s lakes Sasykkol and Koshkolkmarinka practically lost commercial value. In the 60s the marinka population decreased in the maturation periods of females and an increased in the fertility index variability compared with the 40s. During these years, on the Alakol lakes there was an increase in the water level. At the same time there was another overfishing carp. All these factors favorably affected reproduction and some increase in the number of marinka. However, the next peak of the intensity of fishing in the late 60s finally undermined the stocks of marinka. In the future, this species, although noted in the catches, but its catch was insignificant and the marinka finally fell out of the catches as a commercial species. In 1968-1969 it happened on lakes Alakol and Koshkarkol, and in 1977 - in Lake Sasykkol. The relatively long stay of the marinka in the form of by-catch in catches of lake Sasykkol can be explained by the fact that the largest watercourse of the basin are the river Tentek and its inflow – the river Shynzhly.

Today Balkhash marinka populations of the Alakol basin is concentrated in a narrow strip of foothills, their distribution from “below” is limited to acclimatizers, and “from above” to native mountain species of the *Diptychus* genus. The Balkhash marinka was ousted by acclimatizers from the lake biocenoses, which were not typical for it, and occupied its evolutionarily characteristic niche in the rivers of the foothills. The main limiting factors for reducing reproduction and, as a consequence, the number of marinka were the press of species of acclimatizers, especially predatory (perch), changes in the hydrological regime of habitats (regulation of rivers by dams), irrational fishing, and now poaching.

During the study of the current year of the trans-border river Emel, in its estuary part, 6 specimens of marinka whitebait of length of 21 to 36 mm and a weight of 0.1 to 0.9 g were caught by fry dragnet. Also, marinka whitebait was also noted in the river Shynzhly (inflow of the Tentek river), in its lower course before flowing into the river Tentek. If in 2014 at this station only this year's brood was caught, then this year 6 specimens of Marinka at the age of 1+ year were noted in the catches. According to the survey data in Lake Sasykkol (the mouth of the Tentek River) fishermen caught sexually mature individuals weighing up to 3 kg. The appearance of marinka whitebait in other streams of ASO lakes is apparently associated with a decrease in the number of pike perch. If marinka and perch are native species, the high abundance of pikeperch acclimatization in the 1990s led to the complete disappearance of the perch in the Sasykkol and Koshkarkol lakes and down to the lower limits of target orientation in Lake Alakol. Then there was the question of closing Lake Alakol for commercial fishing in order to preserve

the unique population of pelagic perch. With the beginning of the transition of the perch to the category of a valuable commercial species, the number of its population began to sharply decline, and has now reached the average target orientation limits, not posing a threat to the aboriginal species that continue to increase in number.

Plain gubach - *Triplophysastrauchi* (Kessler, 1874). The main limiting factor in the number of a species is the introduction of alien fish species and the conversion of habitat habitats by changing the hydrological regime of rivers.

Severtzov's stone loach – *Nemacheilus sewerzowi* G. Nikolsky, 1938. Factors limiting abundance are similar to previous species, the main of which is habitat disturbance as a result of changes in the hydrological regime of rivers, as well as the press of acclimatizers.

The species living in the upper flow of the Alakol water bodies are not threatened by the infiltration of acclimatizants from the lower flow, since the beds of most of these rivers are blocked by blind dams, the design of which prevent or hinder the penetration of fish into the head water of hydraulic structures. So, on the river Tentek there is a waterworks in the area of the river Yintaly, on the river Karakol the dam near the village of Taskesken, on the river Urzhar - the dam of the underwater channel of hydroelectric station, on the river Khatinsu - waterworks MK "Koktalsky." The flow of the river Yirgayty is not regulated by hydraulic structures, but it practically does not reach Lake Alakol and its mouth part is an insurmountable obstacle for fish.

Thus, hydrotechnical structures are the artificial boundaries of the settlement of fish and prevent the penetration of acclimatizers upstream, thereby playing the role of protecting the native highland-Asian ichthyofauna.

Currently, four species of fish from the composition of the modern ichthyofauna of the Balkash lake basin are listed in the Red Book of Kazakhstan:

1. *Acipenser nudiventris* Lovetsky, 1828 - Bastard sturgeon;
2. *Barbus brachycephalus* Kessler, 1872 - Aral barbel, represented by the subspecies *B. b. brachycephalus* K., 1872 - Aral barbel;
3. *Schizothorax argentatus* Kessler, 1874 - Balkhash marinka;
4. *Perca schrenki* Kessler, 1874 –Balkhash perch

Kapshagayivr reservoir of the river Illi (the upper part of the border with the People's Republic of China), as a whole in the Balkash basin, 4 species of fish were registered in the Red Book of the Republic of Kazakhstan: *Acipenser nudiventris* Lovetsky, 1828 - Bastard sturgeon, *Barbus brachycephalus* Kessler, 1872 - Aral barbel, represented by the subspecies *B. b. brachycephalus* K., 1872 - Aral barbel, *Schizothorax argentatus* Kessler, 1874 - Balkhash marinka, in particular, Illi population, its subspecies Illi marinka (*Schizothorax argentatus pseudaksaiensis*, Herzstein, 1888) – «kokbas» ecotype, *Perca schrenki* Kessler, 1874 –Balkhash perch.

As it shown by analysis of many years of research, of the above fish only “Kokbas” can be considered practically extinct, since the last reliable case of its capture was noted in 1977. The other three types of Red Book continue to occur, including barbel - in the river Ili, perch - in the overgrown sections of the lower reaches of the inflowing rivers and in fairly isolated bays.

Conclusion

Summarizing the above, it can be noted that the number of native ichthyofauna of the Balkash-Alakol basin is quite undermined. To restore the population size in the basin, it is necessary to organize its artificial reproduction (breeding).

We believe that the preservation and restoration of the aboriginal population of the Balkash-Ili basin namely the Balkhash marinka and the Balkhash perch which are evolutionarily “weaker” than the numerous acclimatizers is probably impossible without creating Special Protected Natural Areas that could be reserves of their gene pool. Artificial breeding of these species is not excluded, in order to maintain the number of acclimatized in the bastard sturgeon and barbel basin. Such events are recommended, in particular, in the relevant essays of the Red Books of the Republic of Kazakhstan and Almaty region.

The limiting factor for all these species was the conversion of habitat biotopes by changing the hydrological regime of rivers and the acclimatization of alien fish species.

Our prerequisites for improving the species structure of the aboriginal fish ichthyofauna are:

1. Follow the established measures for the conservation of species diversity, in which the initial species diversity of commercial fish species does not diminish in any scenario of human development.
2. Providing reasonable security in conjunction with a mobile organization will not only help increase inventories, but also save them.
3. In order to increase the population of indigenous fish species, and practical application in fisheries, it is necessary to systematize state regulation and control in the areas of water and biological resources management, to complete the development and implementation of measures aimed at solving the main tasks of increasing populations, and to coordinate actions aimed at to ensure the sustainable development of the fisheries of the Republic of Kazakhstan.

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保护北极地区社会生态系统“人 - 鹿牧场”的特点和问题
**FEATURES AND PROBLEMS OF PRESERVATION
OF THE SOCIO-ECOSYSTEM "MAN-DEER-PASTURE"
IN THE ARCTIC ZONE**

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注解。基本的，历史上形成的黑社会“人 - 鹿 - 牧场”构成了驯鹿饲养的独特社会生态系统的核心。18个土着人民和亚种族群体的20多万名代表与俄罗斯北极地区的驯鹿饲养有关。自二十世纪三十年代初以来，驯鹿放牧分为种族（传统）和工业 - 商业区。这些地区的牧民游牧农场可以根据通用，地域或生产原则进行组合。在俄罗斯，根据传统法律，种族形式的驯鹿饲养仍然被剥夺了牧场的合法权利，但却使用了“事实上”的牧场。传统的生活方式和管理的引入，消费者情绪的迅速增长，导致对牧场的过度开发，不符合土着人民可持续发展的原则。在传统的驯鹿饲养中引入新技术和新技术应该更加平衡和合理。驯鹿饲养的进一步经济基础可以通过增加畜群中每只动物的盈利能力，通过将获得的原料更加完整地加工成商品，引入生产多样化来加强。为了保持社会生态系统“人类 - 驯鹿 - 牧场”的稳定性，您必须应用放牧牲畜的监管限制。

关键词：北极，驯鹿放牧，种族，游牧，传统经济，社会生态系统，牧场生态

Annotation. *The basic, historically formed triad "man-deer-pasture" forms the core of the unique socio-ecosystem of reindeer husbandry. More than 200,000 representatives of 18 indigenous peoples and sub-ethnic groups are associated with reindeer husbandry in the Russian Arctic. Since the beginning of the 30s of the twentieth century reindeer herding has been divided into ethnic (traditional) and industrial-commercial areas. These areas are herding nomadic farms can be*

combined according to the generic, territorial or production principle. In Russia, the ethnic form of reindeer husbandry is still deprived of legal rights to pasture, but uses "de facto" pastures, according to traditional law. The uncritical introduction of innovations in the traditional way of life and management of the Arctic natives, the rapid growth of consumer sentiment, leads to excessive exploitation of pastures and does not comply with the principles of sustainable development of indigenous peoples. The introduction of new techniques and technologies in traditional reindeer husbandry should be more balanced and reasonable. The further economic basis of reindeer husbandry can be strengthened by increasing the profitability of each animal in the herd, by more complete processing of the obtained raw materials into a commercial product, the introduction of diversification of production. To preserve the stability of socioecosystem "man-reindeer-pasture" you must apply the regulatory restrictions grazing livestock.

Keywords: *Arctic, reindeer herding, ethnicity, nomadism, traditional economy, socio-ecosystem, pasture ecology*

The reindeer herding in the Arctic zone is the only type of traditional economic activity of the aborigines, which does not have an appropriation, but produces an economic basis. Reindeer herding has maintained the traditional sustenance and ethnic culture of the indigenous peoples of the Arctic for many hundreds of years. The basic, historically established triad "man-deer-pasture" forms the core of a unique socio-ecosystem of reindeer herding. A person protects a deer, a deer gives a person everything necessary for life, pastures provide livelihoods and reproduction of deer, but require careful treatment on the part of a person during their operation.

At the beginning of 2019 in the Russian zone of the Arctic more than 200 thousand representatives of 18 indigenous peoples and sub-ethnic groups are associated with reindeer herding. In the works of Russian scientists Khomich L.V. [1], Yuzhakov A.A., Mukhachev A.D. [2] substantiated the special ethno-preserving role of reindeer herding in the history and current state of indigenous peoples. In international practice, the term "reindeer people" is used, emphasizing the connectedness of a deer and a human being in joint survival in the extreme climatic conditions of the North. The preservation of traditional reindeer herding as the main element of the ethnic culture of these peoples and the economic basis of their livelihoods actualizes scientific analysis and the development of a new concept and modern model for the development of the industry in the context of intensive industrial development of the Arctic. The introduction of a new economic model should enhance the socio-economic sustainability of the industry, the introduction of new technologies, and the creation of conditions for the sustainable development of small indigenous peoples of the North, Siberia and the Far East.

The study of the historical experience of nomadic farms shows that their livelihoods are inextricably linked with associations for grazing and keeping of deer, which can be combined according to the genus, territorial or production principle. Combining family and clan enterprises by their generic and territorial features is a natural way to increase their viability and was practiced in different time periods [3].

The closed triad of binaries of the “man-deer-pasture” ecosystem makes it possible for reindeer herders to be in relatively complete homeostasis with the environment, basically not requiring additional resources and energy for their livelihood. At the same time, in favorable environmental conditions, a deer herd can produce much more than is required by a single family farm, i.e. there are surplus products that can be exchanged. Thus, the ecosystem of reindeer herding is initially an economically viable and competitive basis for carrying out economic activities on the breeding, maintenance and use of deer [4].

As a result of the introduction of alien population in the traditional complex of Aboriginal people of the Arctic cultural and technological innovations formed the dependence of the family-generic reindeer husbandry from the receipt of various "benefits of civilization" in everyday life. In turn, this contributed to the inclusion of excess reindeer products in commodity-exchange operations and the formation of its market value. Subsequently, with the development of commodity-money relations among reindeer-breeding peoples, the factors responsible for the formation of the value of products became determined by the type of reindeer-breeding farms.

From the beginning of the 30s of the twentieth century, nomadic reindeer husbandry was integrated into the system of planned agricultural production, primarily as a source of meat products. For a historically short period (10-15 years), completely different types of production relations and types of farms in the form of production and commercial agricultural enterprises — collective and state farms — were introduced into traditional reindeer herding. Collectivization was aimed at scrapping the traditional form of reindeer husbandry established over the centuries, but many reindeer herders were able to adapt to new conditions, retained private herds and rights to use pastures.

Thus, in the middle of the 20th century, the division of reindeer herding into ethnic and industrial-commercial components occurred. Ethnic reindeer breeding was defined as “a historically established system of traditional technologies and views on grazing and the use of domesticated reindeer, characteristic of a single ethnic community and part of the cultural-economic complex of a given ethnic education (nation), transmitted through tradition from generation to generation” [2:27]. The ethnic form of reindeer husbandry is included in production, in the form of brigades or units, and forms with the second a peculiar symbiosis. The ethnic form is not formally endowed with reindeer pastures, it relies on its own strengths and traditional aboriginal support mechanisms. The production and com-

mercial form operates on the legally established lands of the organization, has access to centralized supply, banking services, state subsidies. This places these two forms of reindeer husbandry in unequal competitive conditions.

Political and economic periods imposed particularities on the types and forms of economic management in reindeer herding, but left the core of the socioecosystem as a whole intact: “man-deer-pasture”. In the 1990s, too, Soviet reindeer enterprises were transformed into joint-stock companies, state and municipal enterprises, and agricultural cooperatives. These organizational and legal forms of reindeer herding farms remain today, but at the core of their activities are still family-clan enterprises and their associations, formed in accordance with the typical economic complex of the local area [5]. The peculiarity of the post-Soviet period is the mass return of family-clan enterprises to the traditional way of life and management based on northern reindeer husbandry. However, to date, not all such enterprises have received legal status, land, therefore, they operate outside the legal field, but, in accordance with the legislation on guarantees and rights of the SIM, use all types of state support.

In Soviet times, the norm of the number of deer allowed in the personal use of one farm was approved, for example: 60 deer-females, 40 heads of sled bulls and males and an unlimited number of young stock [6]. In the post-Soviet period, there is no administrative restriction on personal herd in deer herds. These advantages allowed the reindeer herders to increase their personal flocks uncontrollably. The size of the reindeer herd on Yamal began to make up not hundreds, but thousands of individuals, which negatively affected the quality of reindeer pastures, because when the permissible rate for one deer is exceeded, not so much rational feed consumption takes place, but pasture overcrowding [7].

The emergence of market relations in the post-Soviet period, the expansion of the range of goods and services offered, the desire to increase the level of consumption by the families of reindeer herders in many ways provoked modern problems of reindeer husbandry - the development of commercial-type farms based on ethnic reindeer husbandry. A part of ethnic farms acquired the legal status of individual entrepreneurs, peasant farms, small business organizations and national communities in order to breed deer and sell reindeer products. The opening of the markets of Asian countries (China, Korea) formed the demand for antler products and led to the development of antler reindeer husbandry, which largely contributed to the growth of welfare of family and family farms.

Studies of the financial situation and technical support of the reindeer farms of the Yamalo-Nenets Autonomous District in 2012-2014 allow to make a conclusion about the growth of the welfare of family-clan enterprises in relation to 2003 [8]. The modern family of the reindeer herder has, in addition to the traditional means of production, snowmobiles, ATVs, electric generators, TV, computers, smartphones, and other devices. During the year, one family spends an average

of 1-2 tons of fuel (gasoline) per year for the work of the generator and transport equipment. A quarter of nomadic families have their homes in townships and cities, boats and cars appeared in the property. Children of reindeer herders study in higher and secondary educational institutions throughout Russia. The material support of all these needs requires funds that can only be obtained from the management of the reindeer commodity economy.

The conditions created by market relations for the commercialization of reindeer herding products contributed to the differentiation of ethnic reindeer husbandry into different types of farms [9], depending on the opportunity to profitably realize their products (accessibility of markets) and minimize costs (production and social security) .: A commodity reindeer herding for profit should have convenient logistics, the availability of deer slaughter stations and antler collecting centers. Sale of antlers and horns for the commodity economy is gradually becoming the main source of income, and the delivery of meat - auxiliary. In the Arctic zone there are farms for which reindeer husbandry is not the basis of the family economy. They are located in the vicinity of villages and trading posts, near good fishing grounds (coastal-tundra type), the deer here are mostly riding, some of which serve as an additional source of food for the family.

For reindeer families, social payments and the availability of consumer goods purchases in retail play a significant role. The traditional way of life inherent in family-clan farms forms the basic composition of costs, which determines the optimal cost of reindeer herding products, which includes non-traditional food, a limited list of non-food items, materials and energy supply. The need to improve the standard of living and the material condition of the family-clan economy, form an additional burden on the reindeer herding economy, including the acquisition of transport equipment and the cost of its operation. In the past, emerging needs have usually been met by increasing the reindeer herd and the area of pastures used. Today, full use of pastures, their low productivity, limit the possibilities for quantitative growth of the herd, the formation of surplus of commodities and, accordingly, meet the needs of family and family farms. At the same time, economic efficiency and productivity of commodity farms have increased due to technical innovations used in reindeer grazing. The consequence of the quantitative increase in the livestock of herds by individual farms was the reduction in the possibilities of continuing the traditional way of life for low-income families. As a result of the competition for pastures in the Yamalo-Nenets Autonomous District, the number of Aborigines is increasing, forced to stop roaming with deer and go to the settlement.

Thus, the uncritical introduction of innovations into the traditional way of life and management of the aboriginal people of the Arctic, the rapid growth of consumer sentiment, leads to the excessive use of pastures and does not comply with the principles of sustainable development of indigenous peoples. In order to pre-

serve the traditional culture and lifestyle of indigenous peoples, the introduction of new equipment and technologies into traditional reindeer herding should be more balanced and reasonable. A further economic basis can be strengthened by increasing the profitability of each animal in the herd, by more fully processing the raw materials obtained into a commercial product, and by introducing production diversification. To maintain the stability of the human-deer-pasture socioecosystem, it is necessary to apply a regulatory limit on the livestock grazing.

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养猪软件

SOFTWARE IN PIG-BREEDING

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注解。在领先的外国公司中，育种的有效性显著高于具有高水平饲养和维护技术的国内综合体。应该注意的是，在许多接近其生物学最大值的动物生产力指标和获得繁殖转变的情况下，它变得更加困难。因此，畜牧业育种任务的解决与专业计划的制定和实施有关。该研究的主要目的是将自动化程序的开发结合到一个软件包中。该计划提出了许多新的算法和更有效的方法来评估猪的基因型。自动化系统是单一软件产品中育种和技术问题的综合解决方案，其中形成了俄罗斯联邦动物农场的数据库。

关键词：动物育种，软件，自动化系统，育种和技术问题解决方案，信息，数据库。

Annotation. *The effectiveness of breeding in leading foreign firms is significantly higher than in domestic complexes with a high level of feeding and maintenance technology. It should be noted that in many indicators of animal productivity close to their biological maximum and to obtain breeding shifts it becomes more difficult. Therefore, the solution of breeding tasks in animal husbandry is associated with the development and implementation of specialized programs. The main purpose of the research was the development of automated programs combined into a single software package. The programs proposed a number of new algorithms and more effective methods for assessing the genotype of pigs. The automated system is a comprehensive solution of breeding and technological problems in a single software product with the formation of databases of animal farms of the Russian Federation.*

Key words: *animal breeding, software, automated systems, solution of breeding and technological problems, information, databases.*

Digitalization and automation of the maximum number of agricultural processes is included as a conscious need for the development strategy of the largest agro-industrial and engineering companies in the world [1].

The high level of selection in Western countries is explained by the use of information and analytical systems [6, 8]. The USA, Germany, Denmark and other countries has the rule that only the animal that is necessarily registered in the national information system is recognized as breeding. All this allows organizing objective monitoring of the state of livestock breeding, improving the culture and efficiency of the industry through improving work methods and using modern information systems and networks [7, 9, 10]. In Russia, unfortunately, the creation of specialized software for solving breeding and production problems in animal husbandry is not sufficiently developed. Particular attention is paid to the transfer of agriculture to the new level in the state program “Digital Agriculture” [1]. The use of modern technical means and methods of mathematical modeling will make it possible to develop methods for optimizing selection in the scales of individual regions and the country as a whole.

Thus, one of the unreached areas remains the development of automated accounting systems, processing, storage and transmission of information containing new methods for assessing the breeding value of animals, contributing to improving the effective operation of the enterprise. The problem of creating databases is approbation under production conditions and the introduction of automated systems [14]. This work is one of the fragments of the thematic plan of the research of Don State University. The author's certificates are received for the development: № 2007613462 - for the complex of the ACC programs; № 2007620300 - on the database [13, 14].

Material, methods and research results. The material for research was applied programs. The object of research was the zootechnic and breeding information about the pigs of the farms of the Russian Federation in which the approbation was carried out. In the process of developing the ACS AC (1989-2009), installation, debugging and maintenance of the software product was carried out.

The first stage of research began in 1989 with the compilation of electronic forms of zootechnic accounting. Regulatory supplemental information (RSI) was created. The arrays of permanent and semi-permanent data were selected. Tables for entering variable data were compiled, algorithms for programs were developed. In the process of developing programs of zootechnic accounting, not only numbers, but also the words of the alphabet of the Russian and Latin languages, consisting of letters [1, 2, and 11], were used as source data. Therefore, in the development of logical-technological algorithms, identifiers were used.

The experience of coping and operating the first versions of programs at large pig-breeding complexes allowed improving the ways of processing information and expanding the functionality for solving technological problems, management goals, and reporting [10, 11].

The main task of the second stage of work was the modeling of various technological features of the production process for the development of programs for analyzing and evaluating the results for sites and workshops in accordance with the technological rhythm. The modules: “Tasks”, “Technology” were developed for solving technological and selection problems [1, 2, 5, 6, 8, 10].

The final stage of the work. Creating a set of ACC programs, each of which can work as a separate module, but all of them are designed to work as a whole, using a single database [13, 14]. Due to the modular principle, the ACC program complex operates in the local network at the following sites: breeding reproducer, product reproducer, artificial insemination station, laboratory of immune genetics. Conducting zootechnic, pedigree accounting, sperm production is automated. In the automatic mode, the collection of information flows into a single database ACC on the server computer [10].

Experimental testing of new modules of the ACC program and database complex was carried out in the period from 2005 to 2018 in the Shelonsky State Farm of the Pskov Region and in the Jubilee Plemzavod of the Tyumen Region. Processing the results of information about the biological capabilities of pigs with the help of programs significantly increased the process of making managerial, selection and technological decisions [9, 10, 11]. As a result of the introduction of the automated system and the operational work of the zootechnician-breeder, productivity indicators increased: sows for the first farrow - multiple births was by 0.54 goals, mass of one head at weaning was by 2.68 kg, mass of the nest in 2 months was by 24.89 kg. The average multiple for all sows was 11.79 goals. Considering herd replacements there was a decrease in the age of attaining a live weight of 100 kg for 10 days, a fat thickness in boars by 0.6 mm and in pigs by 2.9 mm.

Within the framework of the “TASKS” module, the breeding value of animals was evaluated by breeding indices. The organization of the work of the module for the evaluation of animals is reduced to solving the following tasks: reception and primary processing of information; selection of analyzed data arrays; the withdrawal of breeding indices or the use of calculated formulas, taking into account the target standards; analysis and issuance of the assessment result. Comprehensive assessment is much more effective than traditional methods [5]. This assessment allows for the selection index. Sows were assessed by the index ITMG-6. Boars were assessed by the J_1 index. Evaluation of boars from large white breeds according to the JITMG-6 and J_1 breeding indices is given in Table 1.

Tab. 1. Assessment of boars - producers by breeding indices

Nickname	Individual number	ITMG-6	J1
LEOPARD	1829	29,3	45,3
Bully	1925	91,3	98,5
BULLY	1929	94,6	104,8
SELF-TRAIN	2087	-41,6	-4,2
BULLY	2099	20,9	45,8
LEOPARD	2235	30,0	49,4
LEOPARD	2239	-34,3	1,7
SWAT	2269	19,1	44,4
SWAT	2277	104,0	100,2
SELF-TRAIN	2311	-79,7	-34,7
BULLY	2171	35,2	50,0
SWAT	2299	36,2	58,1
SWAT	2301	92,7	103,2
SELF-TRAIN	2317	156,2	135,9
Leopard	2319	32,9	55,4

The best producing boars in terms of reproductive qualities (J1) in large white breed are: Self-Train 2317 - the value of the selection index is 135.9 units, Bully 1929 - the values of the selection index of 104.8 units, Swat 2301 - 103.2, Swat 2277 - 100, 2. The offspring of these male boars should be used to the maximum extent in improving the reproductive qualities of large white breed pigs in terms of selection with the best sows that have received the highest score in the ITMG-6 index. High differences in the value of the breeding index between boars producing were noted. So the boar-producer Self-Train 2317 received an estimate of the value of the index $J = 135.9$ units, and the boar-producer Self-Train 2311 received a negative value of the selection index of -34.7 units, the difference in the estimate is 170.6 units. This indicates the presence of significant variability in reproductive productivity of boars producing large white breeds and creates good opportunities for selection. Thus, sows and boars producing producers with a high index value were found in the herd, which exceeds the target standard by 75.4 -134, 8 units.

Conclusion It is necessary to restructure the breeding work of industrial enterprises with regard to the use of automated systems. The programs allow you to quickly process a large amount of primary information stored in the database [3, 7, 11]. The development of programs is carried out jointly with the laboratory staff of the theoretical foundations of animal breeding at Don State Agrarian University. Works on the improvement of program modules are carried out constantly, expanding the functionality, introducing new methods of assessment.

Thus, the complex of ACC programs should be considered as a management tool for those who make decisions. This tool frees the livestock breeder from routine, repetitive work, leading to the "intellectualization" of its activities.

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猪幼龄生长早熟特征的模式
**PATTERNS OF EARLY MATURITY CHARACTERISTICS
OF YOUNG GROWTH OF PIGS**

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注释来自Don SAU和育种植物Yubileiny的同事的研究人员研究了猪的生长,它们的第一次授精和屠宰性质的年龄。发现体征之间的相关性:生长速度和脂肪厚度之间的关系 - 0.20,活体重和平均日增长之间的0.81,肌肉深度和屠宰率之间的比例为0.33。它们有助于发现生物体内生长和形成肌肉和脂肪的模式。

关键词:猪,年龄100公斤活体重,第一次授精年龄,肌肉厚度,肌肉深度,杂交和纯种幼苗生长,选择方案。

Annotation *Researchers from Don SAU and associates of Breeding plant Yubileiny have studied the growth of pigs, the age of their first insemination and slaughter properties. Correlations between the signs are found: between the growth speed and fat thickness - 0.20, between live weight and average daily growth 0.81, between the depth of muscles and slaughter-out-percentage 0.33. They help to find the patterns of growth and forming of muscular and fat in the organism.*

Keyword: *Pigs, age of 100 kg achievement of live weight, first insemination age, muscle thickness, muscle depth, hybrid and purebred young growth, the selection program.*

In 2018 8861 F₁ hybrid young gilt was examined according to indicators of productivity. Table 1 shows the indicators of F₁ hybrid young gilt grows in period from 2014 to 2018.

Table 1 - Growth of F₁ young gilts

Indicators	2014	2015	2016	2017	2018
Age of 100 kg weight, days	162	164	160	160	152
Fat thickness of 100kg, mm	13	13	13	14	15.4
Depth of the longest back muscle, mm	53	53	52	54	54.6
Slaughter-out-percentage, %	50	53	54	54	55.0
Average daily growth, g	651	797	811	819	892
Body length at 100 kg	121	121	122	121	118.5

From 2014 to 2018 the age of reaching 100kg of live weight decreased by 10 days in comparison to 2014. Maximum age of achievement of 100 kg live weight from 181 to 192 is 1%, from 169 to 180 days - 5%, from 159 to 170 days - 20% was noted in the group of hybrid young gilts. The most of animals of the group of age from 148 days to 160 - 43.4%, from 137 to 150 days - 23.6%, minimal age from 122 to 136 days - 7%.

In 2018, muscle depth increased by 0.6 mm compared to 2014. In 2018, the average muscle depth was 54.6 mm. In the range of muscle depth from 42 to 50 mm-75 heads or 15.6%. The majority of animals had the depth of muscles from 51 to 60 mm - 344 heads or 71.4%. There were animals with the depth of muscles more 60 mm - 63 heads or 13%.

In 2018 fat increased by 1.4 mm in comparison to 2014 results. The average daily growth increased by 73 g. 13% of pigs have growth in range from 600 to 790 g, the majority of pigs - 72.1% have daily average growth from 790 to 1000 g, 14% of pigs have daily average growth more that 1000 g.

105 heads or 23.3% have muscles from 50 to 53.4%, the highest amount of animals - 294 or 65.3%heads have range of muscles from 54 to 57.4 mm, there were animals - 51 head or 11.4% which have more than 58-62%.

Table 2 shows the compared hybrid of F₁ young pigs and young gilts of following breeds: Landrace and large white.

Table 2 -The growth of young gilts of Landrace breed (2018)

Indicators	F ₁	Landrace	Large white
Age of 100 kg weight, days	152	132	147
Fat thickness of 100kg, mm	15.4	11	13
Average daily growth, g	892	949	932
Depth of the longest back muscle, mm	54.6	55	55.4
Body length, sm	118.5	120	119

Comparative analysis showed that Landrace young gilts have earlier maturity characteristics - 132 days, age of 100 kg reaching of large white breed pigs is 147 days and 152 days for hybrid pigs F₁.

The researchers analyzed the age of first insemination among young gilts in period 2018-2019. F₁ pigs were distributed in age intervals between groups 15 days. Thus, 2697 parent hybrid pigs were divided into 8 groups. Table 3 shows the indicators.

Table 3. Grouping of gilts (age at first mating)

group	age of first mating	number of heads	average live weight, kg	farrowed, heads	Piglets, heads	
					total	alive
hybrid young gilts of F ₁ breed						
I	203-217	56	146	21	267	251
II	218-232	1025	153	640	7765	7282
III	233-247	1097	162	798	9923	9310
IV	248-262	344	173	243	3058	2851
V	263-277	116	185	88	1106	1052
VI	278-292	48	195	36	487	455
VII	293-307	8	206	5	67	64
VIII	309-323	3	214	2	23	21
landrace						
I	207-221	183	155	100	1186	1072
II	222-236	576	163	381	4496	4142
III	237-251	187	173	129	1572	1432
IV	252-266	72	187	57	688	620
V	267-281	30	195	25	306	284
VI	282-296	12	206	10	100	85
large white						
I	212-226	45	143	27	305	289
II	227-241	69	148	42	455	413
III	242-256	31	160	18	213	193
IV	257-271	15	167	8	96	93
V	275-289	3	182	1	12	12

The majority of hybrid pigs - 2122 F₁ - 78.6% are inseminated at the age of 218-247 days (7.3-8.2 months) for the first time, 460 - 17.0% - at the age of 248-277 days (8.3-9.2 months). F₁ pigs of I group were inseminated at the age of 203-217 days (6.8-7.2 months). They made 2.0%, their average live weight was 146 kg. By the 1 February 2019 the condition of the group was that 3 heads were faulty, 21 head farrowed, 267 piglets arrived, 251 of them were alive. F₁ pigs of VII and VIII groups were 0.4%. They were inseminated at the age of 293-323 days (9.8-10.8 months) for the first time. Their average living weight was 210 kg. By the 1 February 2019 the condition of the group was that 3 heads were faulty, 7 head farrowed, 90 piglets arrived, 85 of them were alive.

Landrace pigs were distributed in age intervals between groups 15 days. Thus, 106 pigs were divided into 6 groups. The majority of Landrace pigs - 946 pigs or 89.2% were inseminated at the age of 207-251 days (6.9-8.4 months) for the first time, 114 heads or 10.7% were inseminated at the age of 252-296 days (8.4-9.9 months).

Big white pigs were distributed in age intervals between groups 15 days. Thus, 163 pigs were divided into 5 groups. The majority of big white pigs - 1456 pigs or 88.9% were inseminated at the age of 212-256 days (7.0-8.5 months) for the first time, 18 heads or 11.0% were inseminated at the age of 257-289 days (8.6-9.6 months).

The age of pigs at the first insemination was 6.9-8.4 months that is 143 - 173 days. The average result for purebred Landrace pigs which were inseminated at the age of 237-251 days - 12,2 piglets, 11,1 were alive ; for big white pigs - 11,8 piglets, of which 10,7 alive.

Pigs have an increase of alive- born piglets with increasing live weight at insemination; however, these changes are little. Hybrid pigs of 163 kg of live weight procreated 12.19 heads, 11.5 of which were alive piglets; of 188 kg of live weight procreated 11.96 heads, 11.28 of which were alive piglets; of 191 kg of live weight procreated 12.41 heads, 11.64 of which were alive piglets.

Purebred Landrace pigs with live weight of 163 kg procreated 10,82 heads, 10.8 of which were alive piglets; of 188 kg of live weight procreated 10.83 heads, 10.8 of which were alive piglets; of 191 kg of live weight procreated 11.11 heads, 11.0 of which were alive piglets.

Purebred pigs of big white breed of 163 g of live weight procreated 11.46 heads, 10.6 of which were alive piglets; of 188 kg of live weight procreated 10.91 heads, 10.0 of which were alive piglets; of 191 kg of live weight procreated 12.0 heads, 11.0 of which were alive piglets.

Conclusion. Conducted biometric analysis, grouping and correlation analysis, allowed to establish the degree of connection between the signs: negative connection between early maturity and the fat thickness - 0,20; early maturity and the slaughter-percentage was 0.34; early maturity and live weight - 0,83; fat thickness and depth of muscle - 0,11; fat thickness and slaughter-percentage to 0.46; positive connection between live weight and muscle 0,38; live weight and average daily growth - 0.81; the depth of muscle and weight of 0.45, and between the depth of muscles and slaughter-percentage of 0.33. The revealed connections allowed to find out the patterns of growth and formation of muscular and fat in an organism.

Fig. 1. Comparative analysis

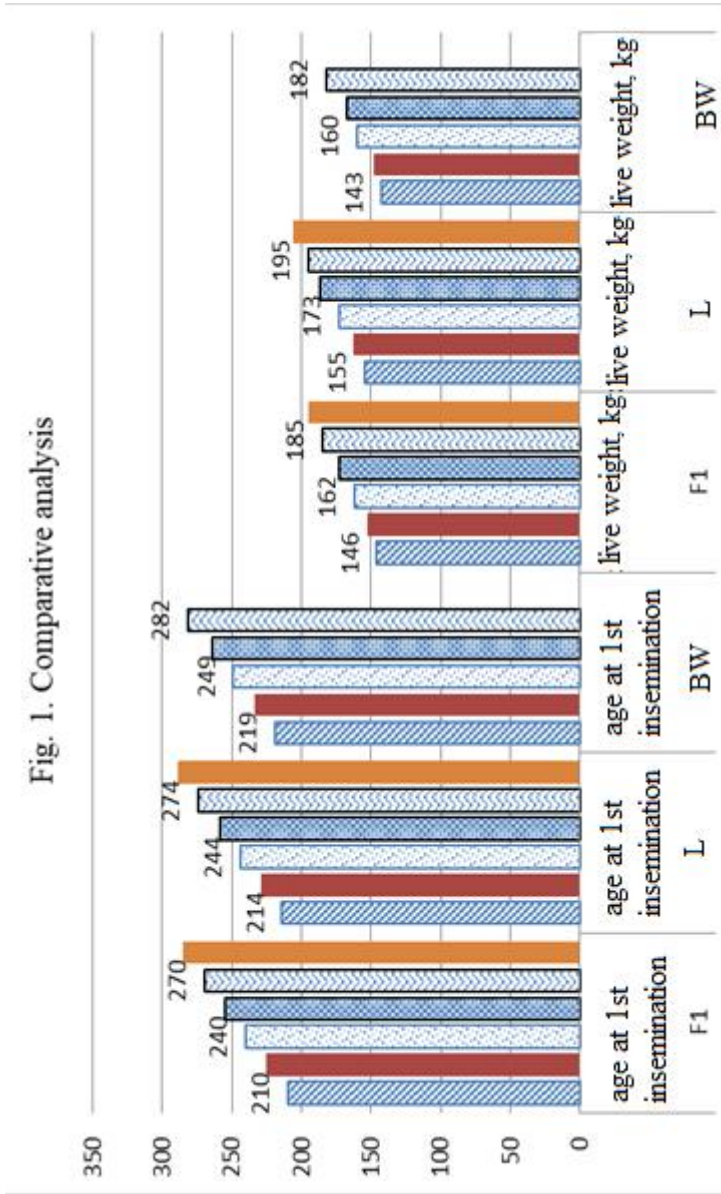


Figure 1 shows a comparison of pigs by age of the first insemination

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通过第一次授精分析年龄小母猪的年龄
**ANALYSIS OF YOUNG GILTS BY THEIR AGE
BY THE FIRST INSEMINATION**

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注释对小母猪第一次授精的生长和年龄的研究显示了第一次授精和活体重的最佳年龄。第一次授精的年龄，活体重和活仔猪的数量之间存在联系。在第一次授精的年龄与活体重0.9之间，第一次授精的年龄与活体仔猪的数量之间存在相关的连接0.59，活体重与多次妊娠之间的相关性0.57。

关键词：幼小母猪，第一次授精的年龄，纯种，长白，大白种，亲本杂交猪，育种计划。

Annotation *The studies of growth and age of the first insemination of young gilts showed the optimal age of the first insemination and live weight. There is a connection between the age of the first insemination, live weight and the amount of alive piglets. There are correlative connactions between the age of the first insemination and live weight 0.9, between the age of the first insemination and the amount of alive piglets 0.59, between live weight and multiple pregnancy 0.57.*

Keywords: *Young gilts, the age of the first insemination, purebred, landrace, big white breed, parent hybrid pig, breeding program.*

Reasearchers made the analysis of the age of the first insemination of the pure-bred pigs, landrace pigs, big white pigs and parent hybrid pigs (LxBW) for the period from 01.01.2018 to 01.01.2019.

The aim of the research is to calculate the optimal age of the first insemination, live weight and number of live pigs for purebred and hybrid pigs.

2697 heads of parent hybrid pigs were studied. Pigs were divided into 8 groups according to the age of the first insemination (table.1). The minimum age of the first insemination was 203 days. It appeared that the first group had 56 heads -02%, the most pigs were in the second group (218-232 days) - 1025 heads or 38% and the third group (233-247 days) had 1097 heads or 40.7%, the fourth group (248-262 days) - 344 heads or 12.7%, the fifth group - 16 heads or 4.3%.

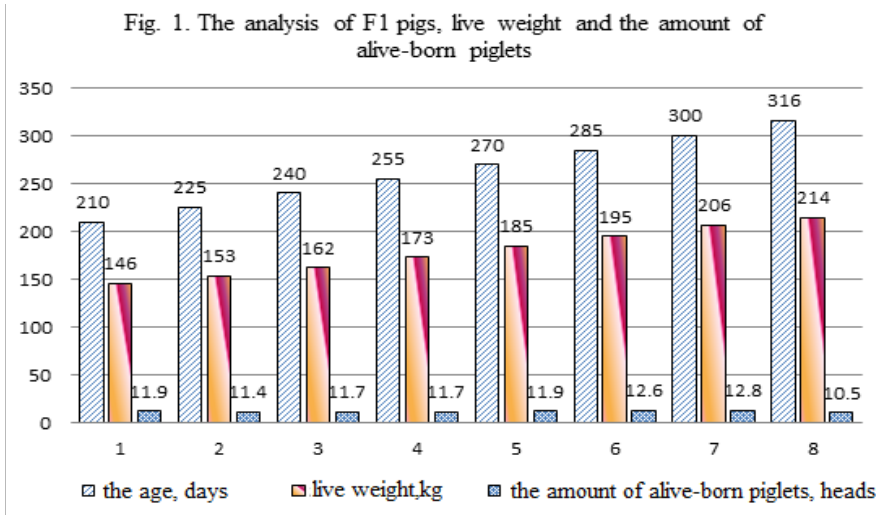
The number of pigs in VI, VII, VIII was quite small.

Table - 1. Grouping of F₁ parent pigs by age of first mating

group	age of first mating	number of heads	average live weight, kg	Termination of pregnancy, days			farrowed, heads	Piglets, heads	
				0-32	32-114	TP		total	alive
I	203-217	56	146	1	2	2	21	267	251
II	218-232	1025	153	49	73	64	640	7765	7282
III	233-247	1097	162	45	68	69	798	9923	9310
IV	248-262	344	173	10	28	25	243	3058	2851
V	263-277	116	185	3	7	7	88	1106	1052
VI	278-292	48	195	0	3	3	36	487	455
VII	293-307	8	206	1	1	2	5	67	64
VIII	309-323	3	214	0	1	1	2	23	21

By 1 January 2019 49 pigs had their pregnancy terminated during the period 0-32 days with the average weight was 153 kg, they were inseminated at the age of 218-232 days for the first time of the 1025 pigs of the second group. During the period 32-114 days, 73 heads had selected out pregnancies caused by different reasons. 640 heads of pigs farrowed with 7765 piglets, 7282 of which were alive. 1097 heads from the III group were inseminated at the age of 233-247 days (7/8-8.2 months). Their average weight was 162 kg. During the period 0-32 days 45 heads had their pregnancies terminated, during the period 32-114 days - 68 heads, 69 heads were selected out pregnancies caused by different reasons. 798 head farrowed with 9923 piglets, 9310 of which were alive. The pigs of the IV group were inseminated at the age of 248-262 days (8.3 - 8.7 months) for the first time. Their average live weight was 173 kg. 10 heads had their pregnancies terminated in the period 0-32 days, in the period 32-114 days 28 heads had their pregnancies terminated and 25 heads were selected out because of different reasons. 243 head farrowed with 3058 piglets, 2851 of which were alive. 116 pigs from the V group were inseminated for the first time at the age of 263-277 days (8.8 - 9.2 months) with the average weight of 185 kg, 3 heads had their pregnancies terminated during the period 0-32 days. During the period 32-114 days, 7 heads had selected out pregnancies caused by different reasons. 88 heads of pigs farrowed with 1106 piglets, 1052 of which were alive.[1,3,5]

Figure 1 shows the connection between the age of the first insemination, live weight and the number of alive pigs per farrow



The graph illustrates that, increasing in the age from 7.3 months to 10 months, the live weight increases from 153 kg to 206 kg, the number of live pigs increases from 11.4 heads to 12.8 heads. At the age of 10.5 months of the first insemination, parent hybrid pigs have the decrease of amount of alive piglets.

Correlation analysis showed that there is a direct connection between the age of the first insemination and the live weight of pigs 0.99, between the age of the first insemination and the number of alive-born pigs 0.59, between the live weight of pigs and the number of alive-born pigs 0.57.

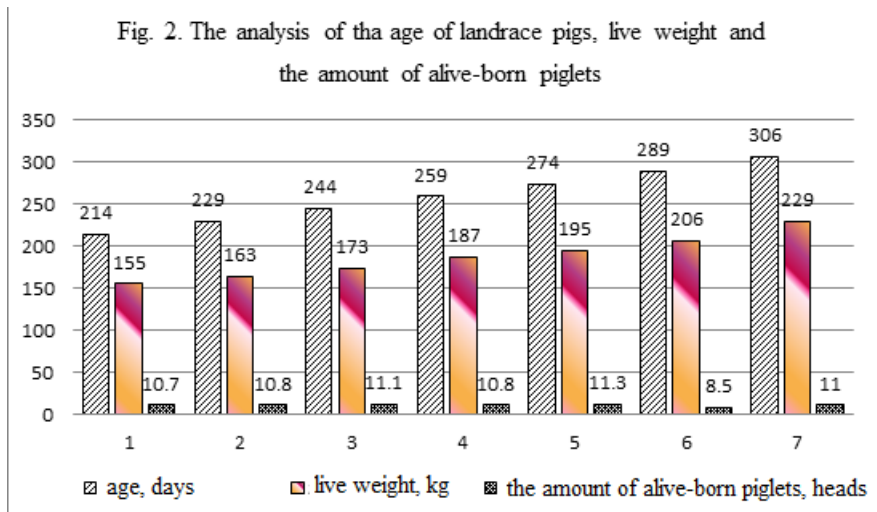
Landrace pigs were distributed in age intervals between groups 15 days. Thus, 1060 pigs were divided into 6 groups. Table 2 shows the indicators.

Table - 2. Grouping of landrace pigs by age of first mating

group	age of first mating	number of heads	average live weight, kg	Fertility problems			farrowed, heads	Piglets, heads	
				0-32	32-114	TP		total	alive
I	207-221	183	155	13	9	16	100	1186	1072
II	222-236	576	163	52	8	22	381	4496	4142
III	237-251	187	173	9	13	26	129	1572	1432
IV	252-266	72	187	4	3	4	57	688	620
V	267-281	30	195	0	0	2	25	306	284
VI	282-296	12	206	1	0	1	10	100	85

The majority of landrace pigs - 576 heads or 54.3% were inseminated at the age of 222-236 days (7.4-7.9 months). They had live weight 163 kg. 52 heads had their pregnancies terminated throughout the period 0-32 days. 8 heads had their pregnancies selected out - 10 heads throughout the period 32-114 days. 381 head farrowed with 4496 piglets, 4142 of which were alive. In the first group the amount of pigs was 17.2%, they were inseminated for the first time at the age of 6.9-7.4 months, their live weight was 155 kg. During the period of 0-32 days, 13 heads had their pregnancies terminated, during the period 32-114 days, 3 heads had their pregnancies selected out because of different reasons - 2 heads. 100 head farrowed with 1186 piglets, 1072 of which were alive. The III group had 17.6% of pigs inseminated at the age of 7.9-8.4 months with the live weight of 173 kg. Termination of pregnancy was noted in 14 heads, 5 heads were selected out for various reasons. 129 head farrowed with 1572 piglets, 1432 of which were alive.[2]

Figure 2 shows the analysis of the age of the first insemination, live weight and the amount of alive-born piglets per farrow.



The graph illustrates that, increasing in the age from 6.9 months to 9.1 months, we increase the live weight from 155 kg to 195 kg, the number of live pigs increases from 10.7 heads to 11.3 heads. At the age of 9.5 months of the first insemination, landrace pigs have the decrease of amount of alive piglets. At the insemination at the age of 10.2 months pigs have increase of multiple pregnancy. Fluctuations in the indicator of alive-born piglets are connected with external factors that were not taken into account in the studies.[7]

The analysis of the connection between characteristics of the Landrace breed showed that the age of the first insemination is connected with the live weight 0.99. And between the age of the first insemination and multiple pregnancy occurrence there is negative connection -0.28, between live weight and multiple pregnancy occurrence - negative connection -0.22.[6]

Big white pigs were distributed in age intervals between groups 15 days. Thus, 163 pigs were divided into 5 groups. Table 3 shows the indicators.

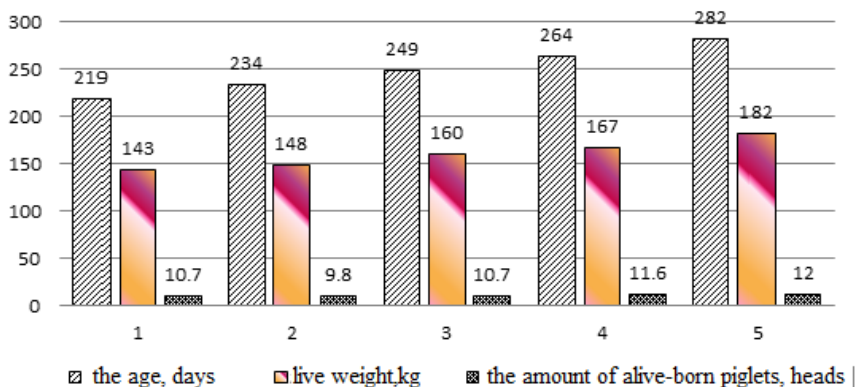
Table 3. Grouping pigs of big white breed by age of first mating

group	age of first mating	number of heads	average live weight, kg	Fertility problems			farrowed, heads	Piglets, heads	
				0-32	32-114	TP		total	alive
I	212-226	45	143	8	1	2	27	305	289
II	227-241	69	148	12	2	4	42	455	413
III	242-256	31	160	6	2	2	18	213	193
IV	257-271	15	167	2	2	2	8	96	93
V	275-289	3	182	0	0	0	1	12	12

The majority of big white pigs - 1456 pigs or 88.9% were inseminated at the age of 212-256 days (7.0-8.5 months) for the first time, 18 heads or 11.0% were inseminated at the age of 257-289 days (8.6-9.6 months).

Figure 3 shows the analysis of the age of the first insemination, live weight and the amount of alive-born piglets per farrow.

Fig. 3. Analysis of the age of big white pigs, their live weight and the amount of alive-born piglets



The graph illustrates the fluctuation of the number of alive-born piglets per farrow from 10.7 head to 12.0 heads that is mostly caused by the external factors.

There is close connection between the age of the first insemination and live weight 0.99, the age and multiple pregnancy 0.81, between live weight and multiple pregnancy 0.85.

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麦芽提取物的X射线衍射研究

X-RAY DIFFRACTION STUDY OF MALT EXTRACTS

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注释有兴趣提高质量,使非酒精饮料和啤酒的种类多样化,生产新品种。它通过替代种类的植物原料来完成,包括食谱的技术成分 - 粉状作物 - 大麦,荞麦,豌豆和玉米。进行X射线和结构分析以及提取物的机械和结构性质的竞争性研究,评估它们的溶解度。

关键词: 谷物, 麦芽, 提取物, 粉状成分, X射线分析。

Annotation *There is an interest to increase quality and diversify the range of non-alcohol beverage and beer, producing new kinds of the goods. It is done by means of alternative kinds of vegetable raw materials including technological ingredients of recipes - powdery crops - barley, buckwheat, pea and corn. X-ray and structural analysis was made together with competitive studies of mechanic and structural properties of extracts, their solubility was assessed.*

Keywords: *grain, malt, extracts, powdery ingredients, x-ray analysis.*

Malt extracts are produced in breweries and in special enterprises according to the technology which includes producing of malt wort by means of wort concentrating by vacuum-evaporation; powdery products are made by drying of concentrated wort by spray, film and conveyor dryers.

Sample №1 - PPE-1 malt extract of three components was made to study some technological properties of powdery extracts. Components: (buckwheat: corn: barley - 1: 1: 1); Sample №2 (of PPE-2 three-component malt extract - buckwheat: pea: barley - 1: 1: 1); Sample №3 (PGrSE extract of buckwheat malt); sample №4 (PGSE extract of pea malt) [1].

Spray drying was used to produce powdery products. Elaborated physical and mathematical model helped to find optimal technological parameters with which

a complete, strong film of powdery product appears [2]. Powdery extracts with required structural and mechanical properties were produced at the process implementation at its maximum efficiency (table 1).

Table 1 - Main structural and mechanical properties of PSE and PPE

№	Name-of semi-finished product	The humidity of the product, %	Volume weight, kg/m ³	Angle of natural slope, deg.	Average particle size, mkm
1	PGrSE	3.00	536	56	5.15
2	PPE-2	3.50	532	54	5.20
3	PPE-1	4.00	534	52	5.35
4	PGSE	3.00	535	51	5.10

Studies of powder structural properties were led to control solubility of powdery malt and multimalt extracts in the laboratory of x-ray analysis.

I (2 θ)X-ray diffractograms (the dependence of the intensity of x-ray on the sample on the double Bregg angle) were measured using a DRON-3.0 diffractometer in the reflection geometry using Bregg-Brentano quasi-focusing.

X-ray diffraction experiment is one of the most accurate methods of studying the structure of matter at the atomic and molecular level [3]. X-ray diffractometry helps to calculate and compare typical distances between atoms in the substance by the position of peaks on diffractogram and identify them - estimate the distance between atoms of different elements. It is possible to estimate the order of the structure and detect typical size of polymer formations by the width of diffractogram peaks. X-ray diffraction helps to study the composition of the substance by means of comparison of diffractograms of mixed substances.

For x-ray diffraction studies, samples of PSE and PPE were prepared after spray drying under optimal conditions, which were placed in a cylindrical recess of a copper cuvette and compacted with a binding x-ray translucent substance. X-ray diffractograms were made as graphs in Excel which helped to lead Fourier-transformation and make diagrams of other type with clear physical sense, analysis and comparison of data of structural transformations of powder disperse particles (figure 1 *a,b,c,d,e*).

The results showed how to improve one of the main technological characteristics of powders - solubility. PPE-2 was made by ordinary mode of spray drying and by adding treacle with low amount of sugar in amount of 10% of mass of dry substances of the extract to the drying extract.

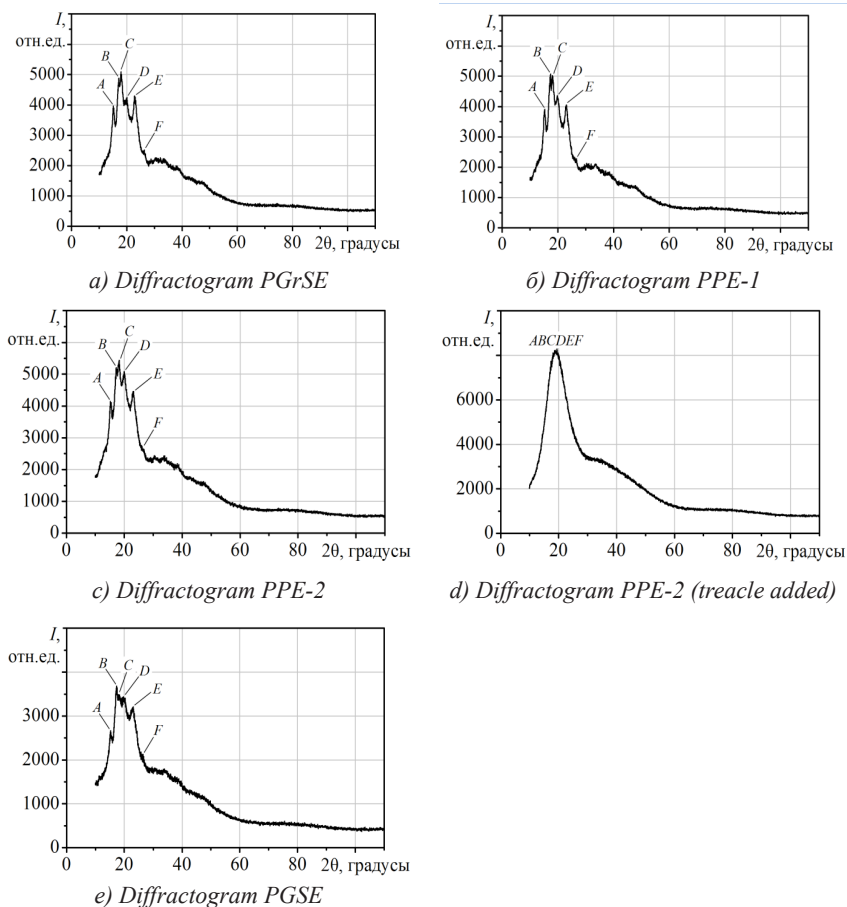


Figure 1-x-Ray diffractograms

All diffractograms, except for that which is presented in figure 3.22, *d*, x-ray peaks are seen clearly *A, B, C, D, E, F*.

The most important result is a qualitative difference of diffractograms from PPE-2 and PPE-2 (with treacle) (figure 1 *c, d*). Adding treacle to the extract made sharp peaks *A, B, C, D, E, F* to disappear from the diffractogram. The absence of peaks means a very small size of coherent dispersal, if the structure is prone to polymerization, the polymer molecules are quite short. This fact is proved by the method to analyse the presence of maltodextrins with molecular weight 2900-3700 Daltons [4].

The small size of the coherent scattering regions indicates a high rate of solubility of the substance. For PPE, the speed of solubility is one of the main technological parameters. We estimate how many times the solubility of PPE-2 (with treacle) is higher than PGE's.

The width of the peaks on the x-ray diffractogram help to estimate the size of the coherent dispersion using the Scherer formula.

$$L = \frac{\lambda}{\Delta(2\theta)\cos\frac{(2\theta)}{2}}, \quad (1)$$

where L - typical size of coherent dispersion area; (2θ) and $\Delta(2\theta)$ - angle position and half of width of studied peak (calculated in radians). The half th width is calculated as its width on the half of the height.

For A, B, C, D, E, F peaks approximate $\Delta(2\theta)$ peak width is about 1.6° . The $\Delta(2\theta)$ width is about 12° for the wide peak presented in the figure (3.22.d). To calculate by the formula (1) let us take the $2\theta = 20^\circ$ position of the peak. Then the calculations make the following size of coherent disperse area: for PPE-2

$L = 56.07 \cdot 10^{-10}$ m; for PPE-2 with (treacle) $L = 7,470 \cdot 10^{-10}$ m;

The size of coherent disperse it approximately 10 times bigger that the size of polymer cell in PPE-2 while in PPE (with treacle) it is approximately 1.5 times bigger.

The area of coherent disperse L for PPE-2 and PPE 2(with treacle) has approximately 7.5 times of difference, hence it is likely that their solubility is significantly different The assessment of solubility improvement can be carried out by the Gibbs-Ostwald-Freundlich formula:

$$s(L) = s(\infty) \cdot 10^{\frac{\alpha}{L}}, \quad (2)$$

where $s(L)$ is the solubility of a substance with L typical particle size; $s(\infty)$ is the solubility of an infinitely extended surface of the substance; α is a parameter depending on the surface energy of the phases, temperature, molar volume of the substance.

The characteristic value of the parameter α has the order of $2 \cdot 10^{-10} \text{ m}^{-1}$. Therefore, the solubility of S_1 and s_2 of a substance in two dispersed States L_1 and L_2 is

$$\frac{s_2}{s_1} = 10^{\alpha \left(\frac{1}{L_2} - \frac{1}{L_1} \right)}. \quad (3)$$

Matching the obtained values $L_1 = 56,07 \cdot 10^{-10}$ m and $L_2 = 7,470 \cdot 10^{-10}$ m, we obtain the correlation of solubilities $s_2 / s_1 = 1,706$. That is, TPP-2 (with treacle) has higher solubility than that of TPP-2 is approximately 1.7 times.

The results of x-ray diffraction studies and calculations correlate with the data of PPE solubility, which is expressed in cm^3 of insoluble raw sludge produced in the tube after centrifugation of the dissolved dry powder sample.

The comparative studies of structural and mechanical properties of powdery malt and multimalt extracts were done by means of x-ray analysis method and the solubility was estimated.

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豌豆 (*Pisum sativum* L.) 植物蒸腾速率
**RATE OF TRANSPIRATION OF PLANTS OF *PISUM SATIVUM* L.
FOR GRAIN USE**

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抽象。进行了长期 (2010–2012, 2017–2018) 田间和植被试验, 以确定豌豆 (*Pisum sativum* L.) 植物用于谷物的蒸腾作用的具体特征。培养物的光合器官的蒸腾强度在很大程度上取决于植物生长季的天气条件, 并且多年来不同: 从小叶从 3.14 到 12.67 mmol H₂O / m²s, 从托叶从 2.25 到 13.45 mmol H₂O / m²s。在明显缺水和气温升高的条件下观察到其最低值 (2.70 – 3.39 mmol H₂O / m²s), 当天气不是极端时, 观测到最高值 (9.76 – 12.91 mmol H₂O / m²s) 中生豌豆培养。

在植物的个体发育中, 最初的蒸腾活性 (从 4–5 片真叶的相) 稳定地增加 (直至豆的形成), 然后随着生理老化的进行, 均匀地降低。在这些叶的第 8 阶段, 叶子的水蒸发速率为 3.99 mmol H₂O / m²s, 托叶—4.94 mmol H₂O / m²s, 在平板状相中, 它们在这些植物器官中的值增加到 9.07 和 10.42 mmol H₂O / m²s, 分别为。在豆的绿色成熟阶段, 它们的蒸腾强度平均下降了 2.1 倍。该过程的最高活性的特征是小叶和托叶, 主要位于植物的上部节点。在前 3 位, 它们的水蒸发速率分别为 9.55 和 11.08 mmol H₂O / m²s, 比下层蒸发率高 30% 和 40%。

关键词: 豌豆, 植物生理, 蒸腾, 小叶, 托叶, 生长期, 表型和延绳变异。

Abstract. Long-term (2010-2012, 2017-2018) field and vegetation experiments were conducted to identify specific features of transpiration in *Pisum sativum* L. plants for grain use. The transpiration intensity of the photosynthetic organs of the culture depended significantly on the weather conditions of the growing season of the plants and varied over the years: from leaflets from 3.14 to 12.67 mmol H₂O / m²s, from stipules from 2.25 to 13.45 mmol H₂O / m²s. Its lowest values (2.70 - 3.39 mmol H₂O / m²s) were observed under conditions of pronounced moisture deficit and increased air temperature, and the highest values (9.76 - 12.91 mmol H₂O / m²s), when the weather was not extreme for mesophytic pea culture.

In the ontogeny of plants, transpiration activity initially (from the phase of 4-5 true leaves) steadily increases (up to the formation of beans), and then, as the physiological aging proceeds, decreases evenly. In the phase 8 of these leaves, the evaporation rate of water by the leaves was 3.99 mmol H₂O / m²s, the stipules - 4.94 mmol H₂O / m²s, and in the flat bob phases its value in these plant organs increased to 9.07 and 10.42 mmol H₂O / m²s, respectively. By the phase of green ripeness of the beans, the intensity of their transpiration decreased on average by 2.1 times. The highest activity of the process was characterized by leaflets and stipules, located primarily in the upper nodes of the plants. At the top 3, the evaporation rate of water by them was 9.55 and 11.08 mmol H₂O / m²s, respectively, which was 30% and 40% more compared to the lower ones.

Key words: *plant pea, plant physiology, transpiration, leaflets, stipules, growth phases, phenotypic and longline variability.*

Relevance

Transpiration serves as an important physiological mechanism of plant self-regulation in ensuring full growth and development: it protects the plant from overheating, which is especially important for photosynthesis, and creates a continuous flow of water from the root system to all aboveground organs with which soluble mineral and partially organic nutrients move [4].

At the same time, transpiration is an energy-intensive process, since the amount of evaporated water many times exceeds its volume in the plant itself [3]. K.A. Timiryazev called transpiration "a necessary physiological evil" [10].

Transpiration depends on both the species characteristics of plants [11] and the climatic conditions of their growth [9], having a significant impact on crop yields [7].

Therefore, the study and identification of effective ways to regulate this process is one of the most important tasks of agricultural practice.

Materials and methods

The studies were conducted at the collective use center of Orel State Agrarian University "Plant Genetic Resources and Their Use" under a joint program with breeders of the Federal State Budgetary Institution "Federal Research Center for Grain and Bean Crops" (FSBI FRC GBC).

The objects of research were plants of 9 new and promising varieties of pea seed. Experienced material was grown in vegetative and field experiments. In the field, the experimental material was sown on plots with an area of 7.5 m² in 4-fold replication, the placement is randomized.

Assessment of the intensity of transpiration was performed on intact plants using portable gas analyzers of the brand LI-6400 XT (2010-2012) and GFS-3000 FL (2017-2018). Leaflets and stipules of plants without visible damage by pests

and diseases were studied. The lighting mode was regulated in the instrument measuring chambers.

Mathematical and statistical processing of experimental data was carried out using modern computer programs and the "Methodology of field experience" [2].

Research results and discussion

Studies have confirmed that in pea seed, as in other cultivated plant species [12, 13], the intensity of transpiration depends significantly on the weather conditions of the growing season. Its value varied over the years from 2.70 to 12.91 mmol H₂O / m²s, including leaflets from 3.14 to 12.67 mmol H₂O / m²s, and from stipules from 2.25 to 13.45 mmol H₂O / m²s.

The lowest transpiration activity (from 2.70 to 3.39 mmol H₂O / m²s) was observed under conditions of pronounced moisture deficit and high air temperature (2010 and 2011), and the highest (from 9.76 to 12.91 mmol H₂O / m²s), when the weather was not so extreme for the mesophytic culture of peas - 2017 and 2018 (Fig. 1).

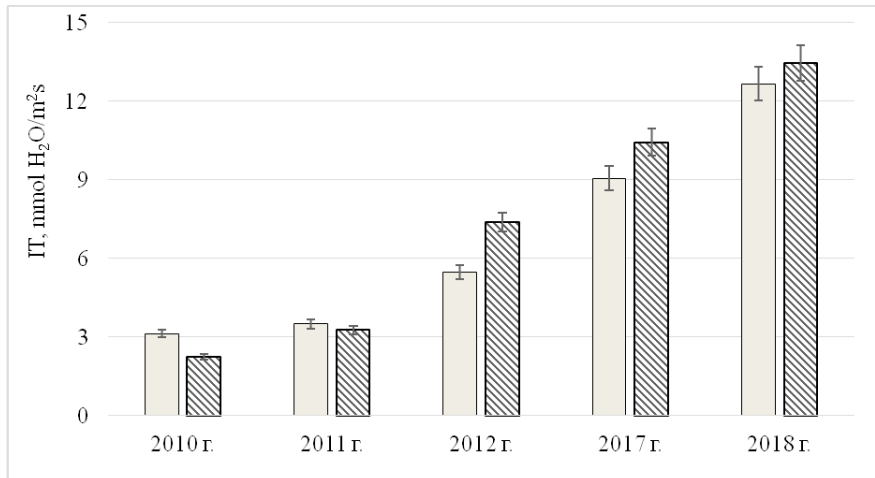


Figure 1 - Intensity of transpiration (IT) of leaflets and stipules of pea plants in the years of research

At the same time, the illumination of plants, as compared with the amount of precipitation and air temperature, had a smaller effect on the transpiration activity of the photosynthetic organs of the pea. For example, when the intensity of light changes from 300 to 1000 mmol / m²s, an increase in transpiration is observed in the leaflets by only 5%, and in stipules - by 10%. And with a further increase in insolation (up to 1500 mmol / m²s), even its decline was noted: the intensity of leaf transpiration decreased by 15% and stipules by 2% (Fig. 2).

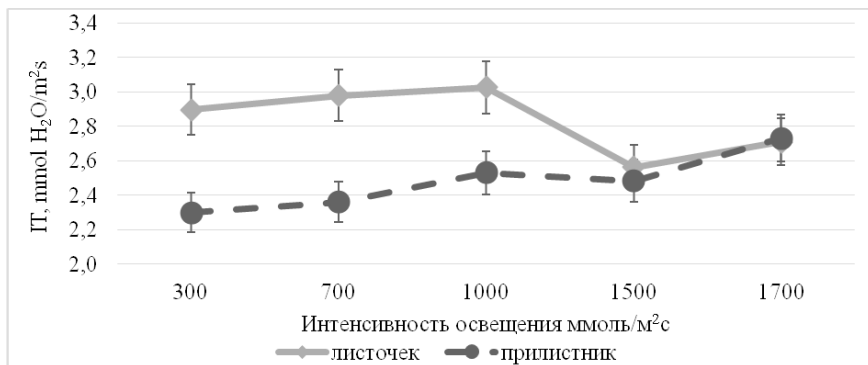


Figure 2 - Intensity of transpiration (IT) of leaflets and stipules of pea plants depending on light intensity, average for 2010-2012, 2018

In the ontogeny of plants, the dynamics of water evaporation by leaves and stipules were in many respects identical. The intensity of the transpiration of these photosynthetic organs increased with the beginning of the growing season and persisted steadily until the formation of beans. In phase 8 of these leaves, its value was: for leaflets 3.99 mmol H₂O / m²s, stipules - 4.94 mmol H₂O / m²s, and in the flat bean phase - 9.07 and 10.42 mmol H₂O / m²s, respectively. By the phase of green ripeness of the beans, the intensity of their transpiration decreased on average by 2.1 times (Fig. 3).



Figure 3 - Intensity of transpiration (IT) of leaflets and stipules of plants of modern varieties of pea seed depending on the growth phase, average for 2010-2012, 2018

Such a nature of the variability of the process in the second half of the growing season of pea plants is most likely due to their physiological aging - with the attenuation of the activity of growth processes [1] and the onset of reutilization [5,6].

The intensity of transpiration of photosynthetic organs of pea plants significantly changed depending on the time of day. It was most pronounced in the morning and evening hours and was: for leaflets 6.04 mmol H₂O / m²s at 8:00 and 10.53 mmol H₂O / m²s at 18:00 Moscow time, and for stipules 5.62 and 5.41 mmol H₂O / m²s, respectively. The minimum values of the activity of the process were noted from 10:00 to 16:00 Moscow time (Fig. 4).

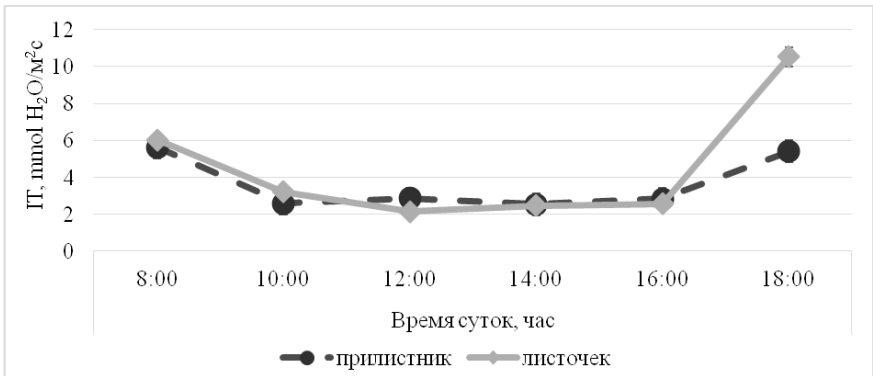


Figure 4 - Intensity of transpiration (IT) of leaflets and stipules of pea plants depending on the light intensity, according to the data of 2018

At the same time, the highest transpiration activity was characterized by leaflets and stipules, located primarily in the upper nodes of the plants. At the top 3, the evaporation rate of water by them was 9.55 and 11.08 mmol H₂O / m²s, respectively, which was 30% and 40% more compared to the lower ones - 5-node below (Fig. 5).

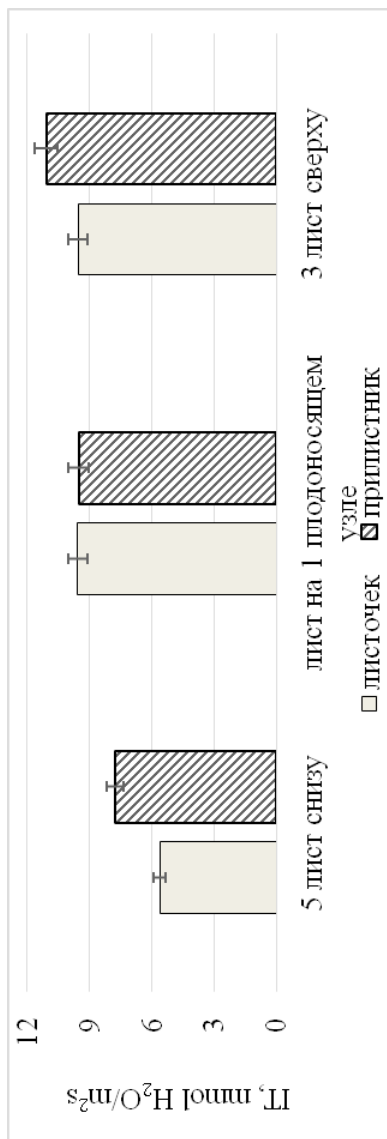


Figure 5 - Intensity of transpiration (IT) of leaves and stipules of pea plants depending on the longline location on the stem, average for 2010-2012, 2018

The low intensity of water evaporation by the lower leaves and stipules may be associated with both the age of these leaves and the decrease in their stomatal conductance [8].

Conclusion

The study of the peculiarities of pea seed showed that the intensity of transpiration of crop plants depends on the weather conditions of the growing season, the intensity of illumination of photosynthetic organs, the growth phase, the time of day and the longline arrangement of leaves, which must be taken into account in the selection and evaluation of the source material.

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采用添加剂技术制造产品
**MANUFACTURING OF PRODUCTS
WITH APPLICATION TECHNOLOGIES**

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注解。考虑使用添加剂技术创建合理设计端铣刀的情况。

关键词：添加剂技术，高科技设备，工艺设备，有限元建模，有限元法

Annotation. *The creation of a rational design of the case of the end mill cutter using additive technologies is considered.*

Keywords: *Additive technologies, high-tech equipment, technological equipment, finite element modeling, finite element method*

Production of products in various industries using additive technology is an actual topic for a number of specific reasons. The use of these technologies allows producing products with the lowest cost of materials compared to cutting materials. This technology allows producing products of optimal design without taking into account technological limitations, as well as without the use of specialized industrial equipment, as today highly technological equipment and a wide range of used equipment are used to manufacture products in various industries.

According to the Unified System for Technological Preparation of Production (USTPP), the share of the cost of technological equipment in mechanical engineering increases during the transition from small-scale and individual production to serial and mass production from 3 ... 4 to 10 ... 15 and 25 ... 30%, respectively, of the cost of the product. The complexity of the design and manufacture of tooling is up to 80%, and the duration of this cycle - up to 90% of the total complexity of the TPP of the new product. [1]

3D printing technology has been developing in recent years and now covers a wide range of materials. At the same time, the cost of the 3D printers themselves has decreased so much that it made possible their use even at the household level. Materials such as metals, plastics, ceramics, food products and even human fabrics begin to print using this technology. 3D metal products are used in the aerospace industry, motor vehicles and energy, biomedicine, and robotics. [2]

The purpose of this work is to create a rational design of the case of the end mill using additive technologies.

To accomplish the task, it is necessary to create a constructive model using numerical simulation using the finite element method.

When constructing a finite element model of a part, the working drawing was taken as the basis with some justified simplifications. The possibility and admissibility of such simplifications is explained by the low degree of their influence on the stress distribution and, ultimately, on the assessment of the strength and rigidity of the part. The load on the support part of the cutter is introduced according to state standard (GOST) 2876-80 on one blade of the forceps whose inner diameter is in the range from 50 to 65 mm and a force of 10,800 N is applied.

Finite element modeling was performed in the environment of the MACS software complex. (Modeling and Analysis of Contact Systems). [3, 4]

On (Fig. 1) a finite element model of an end mill is presented. The shell wall thickness is 5 mm. The diameter of the cutter body is 65 mm, the length of the cutter is 135 mm.

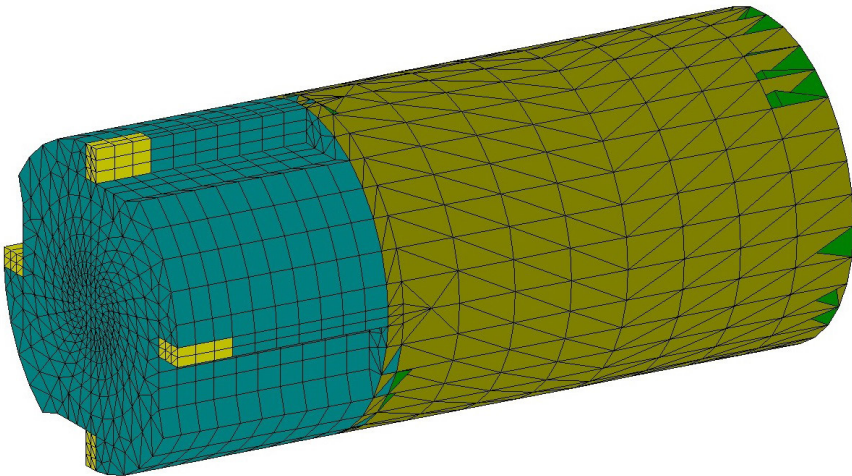


Fig. 1. Finite element mill model

The internal construction of the end part of the end mill with a view of the conical stiffeners is shown in Figure 2. The wall thickness of the stiffeners is 2 mm.

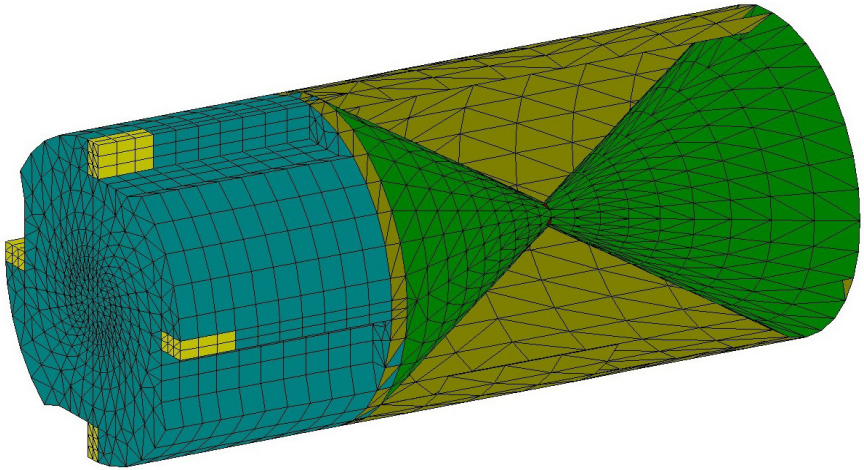


Fig. 2. View of the tapered stiffeners

Figure 3 shows the placement of the internal channel supply lubricating coolant. Canal wall thickness is 1 mm.

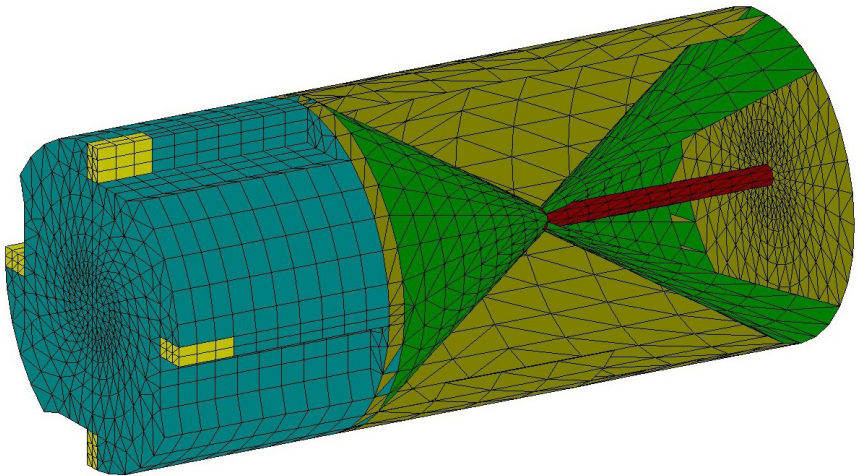


Fig. 3. View of the internal channel supply of lubricating coolant

The finite element model of the subsystem under study includes a set of finite elements:

- the mill body is modeled by 2040 triangular lamellar elements having a total of 1016 nodes and 6096 nodal degrees of freedom;
- the head of the mill is represented by 6816 arbitrary first-order pentahedrons having a total of 4075 three-dimensional nodes and 12225 nodal degrees of freedom.

The aggregate finite element model of the mill contains 9368 finite elements forming 5235 nodes, with the maximum number of degrees of freedom of the node equal to 6.

As a result of the calculation of the numerical model, it was obtained that the maximum value of equivalent stresses is 19.94 MPa. Figure 4 shows a plot of equivalent stresses when the cutter is tightened in a five-blade forceps chuck.

Figure 5 shows the distribution of equivalent stresses inside the mill body.

Figure 6 shows the diagrams of displacements arising at a tightening of a mill. The greatest deformation of 0.003682 mm occurs on the outer cylindrical surface that is offset to the base of the mill.

The advantage of numerical modeling is the ability to view various design options, choose the design that best suits the task without making material samples. The accuracy of mathematical modeling is quite close to the results obtained by other research methods.

Based on the modeling considered in the work, the following conclusions can be made.

1. This design of the mill body withstands the loads that occur when fastening in the five blade collet, the cutter diameter is 65 mm, 135 mm long, the body wall thickness is 5 mm, stiffening ribs 2 mm thick and the wall thickness of the internal lubricant coolant supply channel is 1 mm.

2. In this design, it is possible to redistribute the tension and reduce the wall thickness by adding an additional stiffening rib, which can lead to even greater material savings and a reduction in the weight of the cutter.

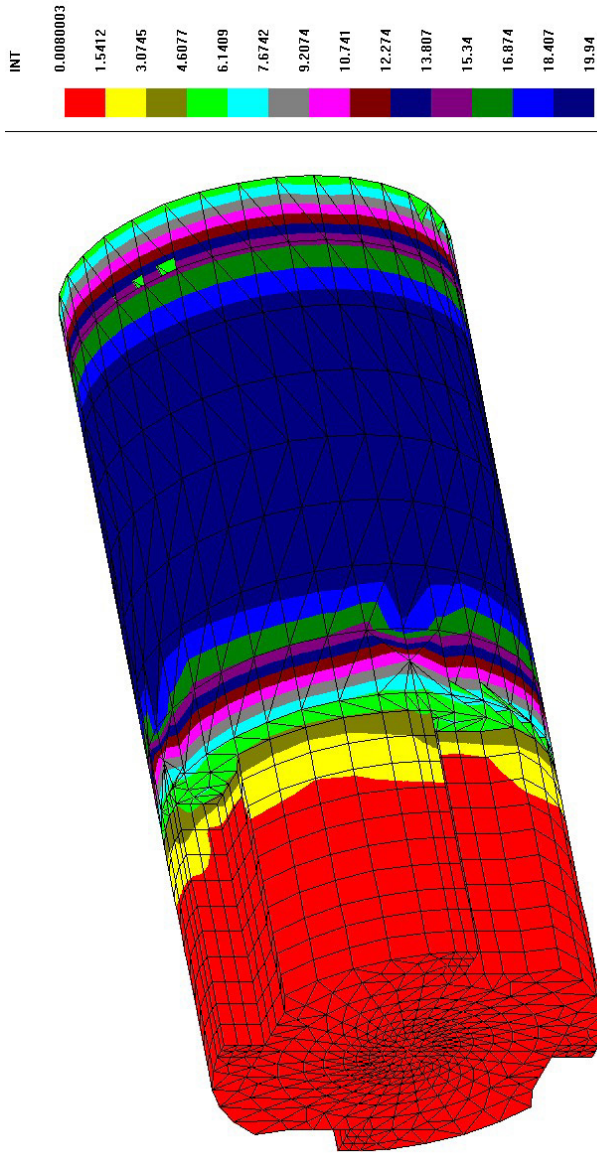


Fig. 4. Plot of distribution of equivalent stresses in a finite element model of a mill

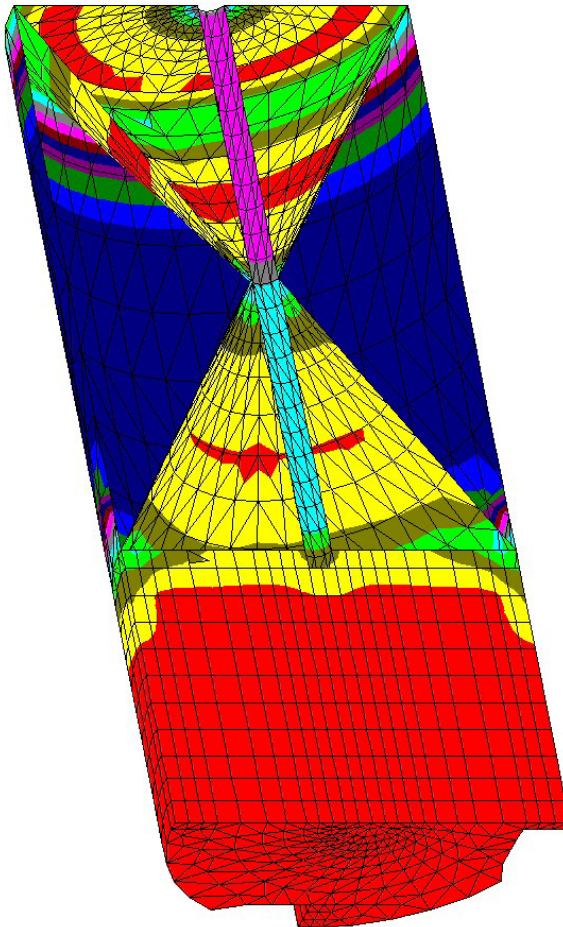
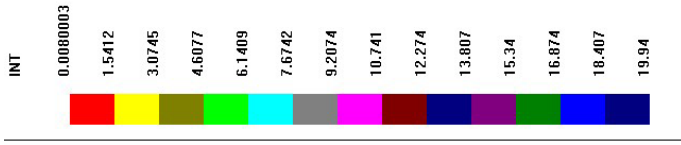


Fig. 5. Plot of equivalent tension inside the mill body

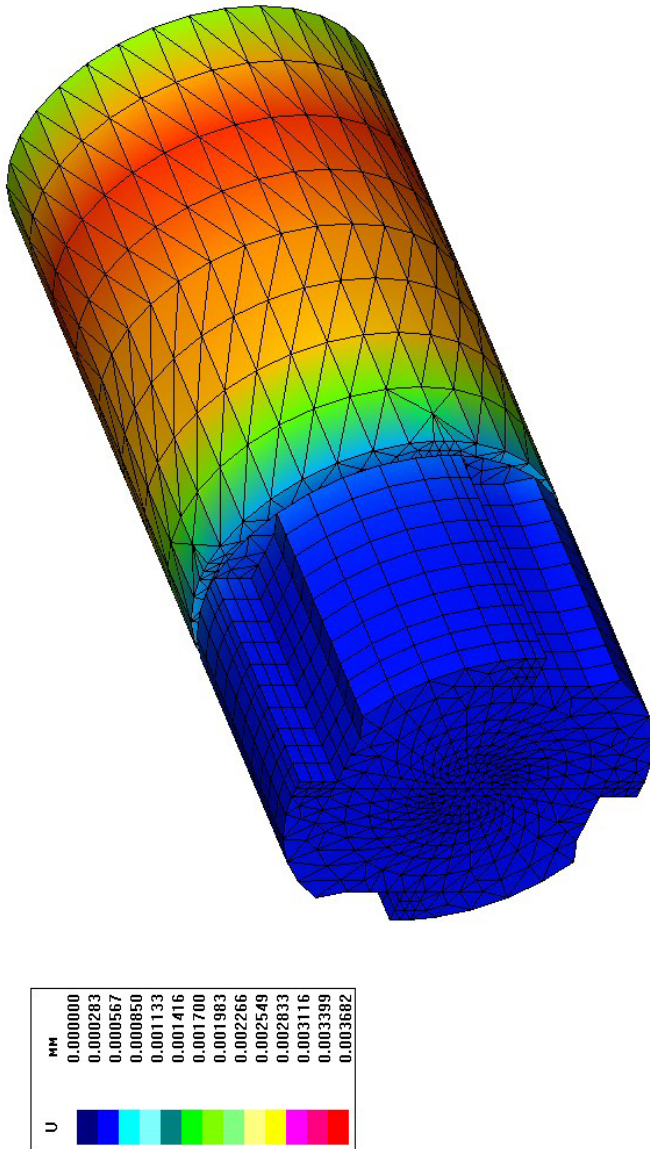


Fig 6. Diagrams of displacements

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自动饮用水后处理复合体

AUTOMATED DRINKING WATER POST-TREATMENT COMPLEX

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注解。 文章重点介绍了与俄罗斯联邦拉多加湖提供的小屋清理相关的水罚款问题。

通过凝聚法和通过本体介质进一步过滤：二氧化硅和水 - 无烟煤，显示了基于中试装置的水精炼研究的结果。 与二氧化硅相比，使用水 - 无烟煤作为过滤器的本体介质似乎更合理，因为过滤可以在12m / h的速度下更快地进行并且使用更少的凝结。

基于技术研究，饮用水精炼自动化系统，容量为600立方米/天。

关键词：饮用水，后处理，颗粒状二氧化硅，水力 - 无烟煤，凝结，过滤。

Annotation. *The article focuses on issues connected to water fining for cottage settlement provided with water by Ladoga lake in Russian Federation.*

It shows the results of the researches about water fining based on pilot plant by means of coagulation method and further filtration through bulk media: silica and hydro-antracite. Using hydro-antracite as a bulk media for filters seems to be more reasonable in comparison to silica as the filtering can be done faster at speed of 12m/h and using less coagulation.

Based on technological researches an automated system of potable water fining with capacity of 600m³/day.

Keywords: *potable water, post-treatment, granulated silica, hydro-antracite, coagulation, filtering.*

One of the most important conditions for human life is quality of potable water. Water from surface sources does not always meet the requirements of potability [1]. One of the reasons why water from surface sources is not satisfactory is that it contains excessive amount of ferric iron connections in form of organic and mineral colloidal complex which make it colorful and increase its oxidability.

During transportation of water through pipelines to the consumer water is contaminated with sediment products present on the internal surfaces of pipeline. As a result it increases turbidity, color, amount of total ferrum and permanganate oxidability to values significantly exceeding the values of these indicators in the source water. Therefore there are problems with providing cottage settlement inhabitants with potable water of satisfactory quality.

Nowadays to make the mentioned above indicators equal to indicators of potable water treatment is used such as ozone, chlorine, potassium permanganate, coagulant with further filtering through bulk media [2-5].

The work [3] shows that treatment using ozone filtering through different bulk medias of water from Ladoga lake which has been fined by mesh filter (size of mesh is 0.5 mkm) and decontaminating by active chlorine make water contain small amount of contamination (not exceeding statistical error). The results can be explained by the fact that during the treatment of water by active chlorine goes together with the destruction of complexes containing ferrum with dissociate ferrum salts.

According to the forms of ferrum in Ladoga water and to researches based on pilot plant of capacity up to 1 m³/h, positive results of water treatment by means of coagulation method and filtering through bulk media were produced: silica and hydro-antracite.

Table 1 presents the indicators of water quality in Ladoga lake in accordance with the coagulation "aqua-aurat 30" dose and filtering through media - granulated silica at the speed of 8m/h and hydro-antracite at the speed of 12m/h.

Table 1
Indicators of water quality depending on the dose of coagulant

The dose of coagulant in Al_2O_3 mg/l	Indicators*		
	Color, grad.	Total Ferrum, mg / l	Permanganate oxidation, mg O2/l
0	88	0.4	6.5
1	58/55	0.35/0.3	6.25/6.0
2	42/35	0.3/0.2	6.1/5.6
3	25/15	0.25/0.11	5.8/5.2
4	12/5	0.15/0.05	5.0/4.4
5	5/5	0.05/0.05	3.2/3.3

* the numerator is water indication after filtering through granulated silica, the denominator - water indicator after filtering through hydro-antracite.

Studies of changes in color, suspended solids content, ferrum concentration, permanganate oxidation of water depending on the processing time, the dose of coagulant and filtration speed showed that the loading the filter with hydro-anthra-

cite was more effective because it allows filtration at a higher speed (more than 12 m/h) and lower doses of coagulant as well as it has a higher contaminant capacity compared to the loading of the filter with granulated silica.

The results were used to create automated post-treatment complex for potable water with a capacity of up to 600 m³/day.

The complex of post-treatment of potable water:

- booster pump station-1 piece.;
- installation of reagent dosing-1 piece.;
- fast pressure filter-6pcs.;
- micron filter-6pcs.;
- bactericidal installation-2pcs.;
- control unit and automation-1 piece.

Water under pressure up to 0.6 MPa is supplied by the pumping station [6] to 2 groups of fast filters with granular media installed in parallel. Each group has 3 filters with diameters of 1000 mm.

As media are used:

- substrate - granulated silica with particle size 2÷3 mm;
- hydro-anthracite with particle size up to 1.5 mm (or granulated silica).

The height of the media layer is 1000 mm.

The coagulant dosing unit consists of a tank, an electric stirrer, upper and lower level sensors, a counter with a pulse output and a dosing pump.

The flow rate of the reagent consumption (coagulant "Aqua-aurit 30") supplied by the pump dispenser is equal to

$$q_P = 0,19 Q I_K (1 / K_P),$$

where q_P - is consumption of coagulant, l/h; Q - productivity of plant, m³/h; Cd - coagulant dose, g/ m³; Cc - coagulant concentration.

Micron filters of bag type of 25 mkm are used to detain rubbed waste products of media which are in fast pressure filters in drains.

Water decontamination is done by means of ultraviolet radiation which provides high bactericidal effect and saves organoleptic properties of water.

As maximum productivity of the complex is 60 m³/h there are two bactericidal plants installed [7] UOV-15m-30 with capacity up to 30 m³/h which work in parallel. Each plant has 7 55W lamps. Table 2 represents the plant productivity depending on physical and chemical indicators of water quality supplied to be decontaminated.

Table 2

Production capacity of UOV-15m-30

Type of plant	Conditional productivity, m ³ / h		
	Surface source	Underground source, faucet	Water after additional fining
UOV-15m-30	27	34	43

The equipment to fine water is in block-box which is a construction with metal framework, plated with sandwich panels. It is installed on concrete basis and its sizes are 11500×3500×3000 mm (l-w-w). The thickness of sandwich panels is 50 mm.

External communications for connection of the potable water fining complex are installed inside the block-box through the prepared openings in the floor. Connection of the equipment to external networks is made inside the block box.

Connection to the power network is made through the opening in the floor. The block-box has a special pipe to install power cable. The cable is installed to a special shield which provides electrical supply of control unit and automation of water fining complex and inner engineering systems of block-box through this pipe.

The system of electrical equipment and control of the complex includes:

- coagulant preparation and dosing unit;
- ball valves with servos;
- control unit and automation of the complex;
- bactericidal installations;
- booster pump station.

The data of electrical work of the block-box with water-fining equipment is thesented in table 3.

Table 3
Electrical loads of the block-box

The name of the consumers	Number	Capacity of el. ducts kW	Total installed. capacity Ru kW	Cs	cosφ	tgφ	Pp, kW	Qp, quar	Sp, kVA
1	2	3	4	5	6	7	8	9	10
Booster pump station	1	11	11	0.9	0.98		9.9	1.73	
Bactericidal plant	2	0.385	0.77	1.0	0.98		0.77	0.16	
Reagent dosing unit	1	0.03	0.03	1.0	0.92		0.02		
Servo valve	7	0.004	0.03	0.2	0.92		0.006		
El. heating (bacteria)	2	1.5	3	1	0.98		3	0.42	
Electric lighting	3	0.04	0.12	0.7	0.95		0.08	0.025	
Total:			14.95		0.98	0.17	13.8	2.28	14

Ball valves with servo drives are used to control water flows. They are equipped with a quick-mount Electromechanical reversing servo, with a shaft power of 3.5 watts.

To ensure the design head of 40 m. V. art. after the cleaning installation, the booster pump station Wilo comfort COR 3 Helix V3602 K CC is placed with a nominal motor power of 5.5 kW and a rotation speed of 2850 rpm, which provides the necessary pressure at a capacity of up to 60 M³/h.

The control unit and automation should provide automatic washing of filters at a given time and power supply of bactericidal lamps.

To eliminate faults including failures of pimps, achievement of limit pressure drop of filters in time, electrical scheme of control unit and signalization of installations has light and sound signalization as well as systems of external, internal lightening and heating.

The project of the automated complex of water post-treatment is realized in the cottage settlement of the Leningrad region of the Russian Federation By research and Production firm "VINKO".

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