

SUMMARIES OF THE ARTICLES IN ENGLISH

PHILOLOGY

P. 7. *Wang Xiaohuan*. Shenyang Ligong University (Shenyang, China). **LINGUISTIC UNITS WITH MEANING OF SENSE PERCEPTION IN A.P. CHEKHOV'S SHORT STORY "ANNA ON THE NECK"**. Sense perception is one of the main means of cognition of the world. The world is first perceived by the senses (visual, auditory, tactile, smell and taste), and then by categorization based not only on their own experience, but on stereotypes of national culture. Sense perception has their denotation in language. In the story "Anna on the Neck," the dominance of visual sensations is observed. There are basic verbs of vision and their variants, for example, *глядеть, видеть, осмотреть, поглядывать, окинуть взглядом, не отрывать глаз от ...*, and a number of adjectives denoting play of light, colour, shape, and size that are important in the formation of the text describing the appearance of space and character, like *среднего роста, полный, пухлый, сытый, с длинными бакеннами и без усов, бритый, круглый, резко очерченный, высокий, полный, худенькие, бледные, большой, темный*, etc. Along with the visual perception of fundamental importance in shaping the content of the story is the situation of perception of sound and smell. Linguistic units with the meaning of sound perception describe the internal state of the hero, the impression of the sounding character or object. Verbs in the predicate function in the statements of sound can be divided into two types: the verbs directly describing the process of sound, and verbs that describe the situation of sound. In the story, the first type of the verbs is expressed by units *слушать/услышать*. The second type is represented by a wide range of verbs of sound. The primary group includes verbs denoting the sound of human and inanimate beings: *шептать, хрюкать, кричать, шипеть и рычать*. Perceptions of smell have multiple functions. They form the living space of the characters, become part of their portraits, affect the emotional structure of the story (e.g., the smell of gasoline, fume is a characteristic feature of Peter Leontyitch). In the individual image system of A.P. Chekhov's, ideas of smells are signs of time, space, objects of feelings, occupation, character, social types. Thus, the analysis of linguistic units of sense perception in the story by A.P. Chekhov has shown that the expression of the corresponding semantics plays an important role in the structural and semantic organization of the work to form its text space.

Key words: sense perception; semantic organization; text space.

P. 9. *Mamontova Olga A.* Tomsk State University (Tomsk, Russia). **FORMATION OF N.D. TELESHOV'S CREATIVE SYSTEM IN 1880S LITERARY CONTEXT (EARLY LYRICAL WORKS)**. In the article the results of research of early lyrical creativity of Nicolay Dmitrievich Teleshov (1867-1957) from the point of view of the system approach are presented for the first time. This method allows to present his creativity in the form of a complete dynamic teleological system. Teleology is a concept that describes and explains the object of attention by means of concepts "purpose", "function", "motivation", etc. The teleological principle of emergence and dynamics of the creative system penetrates and connects all its elements and levels via "operating mechanisms" or, in other terms, "cultural replicators" – genre and style. The genre indicates not only the art purposes pursued by the writer, but also the image of the author-creator, his outlook. Genre management in the art system is important, as it is connected with various context (literary life, aesthetic system, journalism and literary searches of predecessors and contemporaries). The literary life made an immense impact on the formation of Teleshov's creativity. His first works were read and discussed in the literary circle "Parnass", which became the forerunner of the well-known Teleshov's "Sreda". This circle was organized by a friend of the writer, a future playwright and theatre critic S.D. Makhlov in 1883 and marked the changes in the Moscow literary life, which began at this time: the movement from the periphery of the literary process to the centre. Its specifics consists in the democratic character, openness, game. In the Moscow literary environment the circle of E.N. and D.I. Tikhomirov, publishers of *Children's Reading* and *Art and Literature Society* magazines and a small circle of N.V. Davidov, one of the close friends of L.N. Tolstoy, gained popularity. Teleshov was accepted practically in all the listed circles, however, he connected the uniqueness of "Parnass" with the possibility not only to communicate, but also to create. Under Makhlov's guidance and in close contact with "Parnass" Teleshov created a number of lyrical works, which we now consider for the first time as a necessary and valuable stage of formation of his creative system. His lyrical poetry includes different genres, which is caused by his various ideas connected with certain types of the author: the type of the author-"handicraftsman" is correlated with aspiration to become a part of the nation, the romantic type of the author-"artist" uses motives of loneliness and wandering, the author-"prophet" tells about the sense of life. In Teleshov's lyrics there is no complete and united image of the author, which generally is characteristic for the beginners, but it is also caused by the influence of literary life, which through the collective game and creativity stimulated the writer to actively look for the creative credo.

Key words: N.D. Teleshov's creative work; a creative system; literary mode; lyric poetry; genre.

P. 13. *Sedelnikova Olga V.* Tomsk Polytechnic University, Tomsk State University (Tomsk, Russia). **FRAGMENTS FROM TACITUS'S THE ANNALS IN APOLLON MAIKOV'S TRAVELER'S DIARY OF 1842-1843**. In the Roman part of A. Maikov's traveler's diary of 1842–43, which displays a considerable difference from traditional examples of the genre through its formal peculiarities, an important place is taken by various intertextual inclusions, e.g., translations and versions from Tacitus's *The Annals*. Maikov read Tacitus in the original in a bilingual French edition, where the Latin text was given parallel to its translation into French. From our viewpoint, Maikov's very choice of the chapters for translation and versions is interesting and representative for studying the creative and mental development of the poet. The first six books of *The Annals* depict the epoch of Tiberius's rule. Maikov the reader becomes ever more attracted to the emperor's personality described by Tacitus with a great bias. This is reflected in diary notes. The choice of fragments demonstrates that Maikov is mostly interested not in Tiberius the politician, but in Tiberius the person, with his complex and controversial nature, who gradually submits to his vices and becomes morally degraded. Another point of interest is the atmosphere of the time. The translation and versions of fragments I–VI of *The Annals* comprising a number of sketches devoted to important features of life of the Roman state reproduce the image of Rome created by the poet upon rethinking of Tacitus's work. One can note not only Maikov's interest to Tacitus and his admiration of the historian's works, but also a critical choice of information and a

desire to produce a philosophical and psychological investigation of the epoch and its ruler on its basis that would embody all the dialectics of the epoch and the historical personality. Maikov enters a creative dialogue with the Roman historian and builds his own text upon the basis of Tacitus's work. Doing this, he makes his own dominant points, together with semantic and formal-stylistic accents. This is demonstrated by traces of considerable corrections made while attempting to produce an accurate translation of certain chapters. In general, translations and versions from Tacitus's *The Annals* have a significant place in the Roman part of Maikov's traveler's diary of 1842–43. Their inclusion in the diary context is linked with the transformations, which the canonical genre of the traveler's diary undergoes in the author's mind. The translations and versions of fragments from Tacitus become here one of the numerous ways to use "the other's" words and reflect a broad range of Maikov's interests of the period that develop and mature within a constant dialogue with the facts of the European culture. Introduction of translations, as well as other forms of intertextuality, in the author's text of the diary becomes an important means of expanding the semantic space of the diary and illustrates the scale of the creative.

Key words: diary; literary translation; philosophy of history; poetics; style.

P. 18. *Serysheva Yulia V.* Tomsk State University (Tomsk, Russia). **POLYPREFIXAL VERBS WITH SEMANTICS OF ACCUMULATION IN PSYCHOLINGUISTIC EXPERIMENT.** Prefix HA- along with other productive secondary prefixes is an additional means of semantic expansion of the verb. Russian polyprefixal composites with this prefix are an open dynamic system that is constantly updated with new units. Such verbs operate mainly in colloquial speech and are characterized by high expressiveness. According to most researchers, the secondary prefix HA- attached to the verb appears only in one meaning – cumulative. This meaning is semantically close to the meanings of repeated action, multi-object and / or multi-subject features, intensity. Despite the current studies (as well as individual comments) devoted to the description of polyprefixal verbs, it seems urgent to use the psycholinguistic experiment to fill the existing gaps in research of the polyprefixal units. The experimental study of verbs with the prefix HA- aims to identify the perception of the considered units by the Russian speakers. Thus, a series of psycholinguistic experiments (forming, directed associative, free (chain) associative) among respondents with humanitarian, medical and technical education, the age of the subjects ranged from 17 to 40, was held. As part of the experiment informants were to correlate the verb with the prefix HA- with a corresponding meaning (cumulative, distributive deminutive, and others) given in the questionnaire. To identify the psychologically real meaning of polyprefixal verbs with cumulative semantics and meanings of certain verbs experiments were designed and carried out aimed at selecting similars (reactions with a similar or identical meaning in relation to the proposed units) and opposites (with opposite reactions to the word-stimulus meanings), and a free association experiment. The results of the experiments show that the cumulative semantics is recognized by the Russian speakers, but is diffuse, as in some cases respondents correlated the meaning of accumulation with the meaning of distribution. Furthermore, we can say that the perception of the action denoted by the composites is closely related to its evaluation as positive or negative, as the semantics of the analysed units has senses of estimation of the measure of action and its usefulness, usability, suitability or harm to humans. Thus, the psycholinguistic experiment allowed to identify and describe both the nuclear and peripheral meanings of polyprefixal verbs indicated by the prefix HA- revealed the development of polysemy of the units and a high degree of their use in modern Russian.

Key words: semantics of accumulation; polyprefixal verbs; secondary prefix; psycholinguistic experiment associative experiment.

P. 22. *Tulyakova Yelena I.* Tomsk State University (Tomsk, Russia). **CATEGORY OF WORLD CENTRE IN EARLY WORKS BY N.V. GOGOL.** The Russian literature of the first third of the 19th century cannot be understood without studying physio-philosophy, which gave speculative ideas of the world in general. In particular, in Gogol's synthetic world outlook Nature was a universal category to explain the organization of the universe in terms of gnoseology and axiology (ethics, morale and aesthetics). In this context the idea of the world centre turns out to be the key one in Gogol's physio-philosophy. The image of the world centre is a formal-substantial component integrating his creative works. In his early works Gogol emphasizes the archetypal meaning in the image, converting it therewith. Correlating archetypal senses with each other we will get their common semantic component – a point, which contains concentrated energy and essence of everything, which possesses the harmonizing centripetal force. However, even in his early works the centre of the world is different from the midpoint of stratification topology mainly proper to the medieval mind. The image of the centre of the world comes to be ambivalent, which is characteristic of young Gogol in general. Yet, this ambivalence is synthetic, which can be seen in his articles, letters and diaries. In these texts the writer creates an integral model of the world with a distinct center. In different texts they are objects with the semantics of the sacred centre: a tree, a garden, a house, a household, a church. The integrity of the world was sought by Gogol later in his first big literary work. In *The Evening on a Farm Near Dikanka* he represents "the domestic space" as a universe where the plot of his stories develops. The local symbol of universal harmony with a clear-cut idea of centralization in the cycle is a village (and its centre – house, church), while the anthropological centre is the tribal unity of people. The world and the person are most harmonious; the closer they are to the centre, the more clear-cut it is. Remoteness from the centre is associated with chaos and oblivion of tribal and natural laws. The author designs the world vertically by means of various objects with archetypal semantics of the world axis (which are mainly objects of nature, such as a tree, a mountain, an air ladder). This centre wants converging topology represented by an ideal landscape in the author's space. The anti-centre is a variant of the world centre in the fantastic space of his stories showing false relations of people in the world. In its turn, the idea of the anti-centre comes from Gogol's idea of the world without a sacral centre. In a situation like that the person has to look for individual guidelines and values, which depend on their spirituality, level of peccancy, and others. The image of the world centre remains important in later works by the author, in which he sought to show Nature as an objective givenness, as a scientific category.

Key words: N.V. Gogol; archetype; centre of world; poetic manner.

PHILOSOPHY, SOCIAL AND POLITICAL SCIENCES

P. 26. *Avanesov Sergey S., Khvastunova Yulia V.* Tomsk State University (Tomsk, Russia), Gorno-Altai State University (Gorno-Altai, Russia). **ON TYPOLOGICAL CHARACTERISTICS OF RELIGIOUS GROUPS AND ASSOCIATIONS IN THE ALTAI REPUBLIC.** The topicality of the research is determined by the lack of a common set of criteria on religion in human sciences, and by the debatable character of methodology used by different researchers and investigative schools. In the context of the study of the problem of distinguishing types of modern religious movements it is important to remember that extreme essentialization of religious

notions can often lead to simplification and profanation of such meanings that had been part of the religious experience, traditions and language. Realia of the religious experience are very "flexible" and are difficult to be strictly defined on the level of notions. Moreover, any classification is based on a choice of a core typological criterion, and such choice is very much subjected to change. In human sciences there is a popular understanding of a cultural and psychological environment, which has been formed with the help of a religious tradition, as a sort of provocation that only affects a person inclined to a certain form of addiction. In this behalf actions of new religious groups can be compared with the active search for demand among potential customers. Forms of addiction can be singled out according to various criteria, including the level of dependence on certain ways of self-realization. For example, one part of religious groups uses the principle of realization of the need to satisfy some sort of "mystic egoism". Another part of religious programs pays more attention to trying to avoid suffering and pain. A third part can make a focus on reaching an epistemological ideal. A fourth part acts as if having a motto that everything is allowed. It is required to take into account a psychological feature of the activity of new religious organizations, ecotourism and psychedelic literature that encourage the use of drugs. The so called manipulative technologies are used in modern culture more and more. They include methods that cause the benumbing of rational-critical abilities of mind; and in a number of cases the work of some new religious movements forms an inclination to suicide. In an anthropogenic postmodern society an increased exploitation of the emotional sphere of human consciousness is found. To develop one's emotions is as important as to develop one's intellectual skills. A low level of emotional quotient (EQ), minimization of positive emotions directly influences the effectiveness of learning and the general physical state of an organism. The question of working out of types for modern religious organizations is of much importance, although it is a rather difficult question; it needs a complex investigative approach that would be based on an interdisciplinary principle and a critical view upon the modern situation in the religious sphere of Russia and some other regions.

Key words: typology of religious groups and associations; methods of influencing a person; religious experience; manipulative techniques, emotional intelligence.

P. 29. *Malakhova Yulia N.* Tomsk State University (Tomsk, Russia). **ON POSSIBILITY OF CREATION OF UNIVERSITY OF CLASSICAL TYPE IN MODERN SOCIETY.** Principles of construction and functioning of classical university set by Humboldt encounter a number of difficulties in realization attempts in modern society, which is connected with the features of a modern sociocultural situation the university exists in. The problem in the work consists in the following question: is the transformation of modern education leading to the revival of harmonious fundamental educational system of the Humboldt type possible or the main feature of modern education is variability and pragmatism and consequently irreversible loss of possibility to revive the fundamental educational system similar to the classical one? The university of the Humboldt type was based on the principles of unity of research and teaching, and academic freedom. For modern university interaction of scientific community with the spheres of economy, policy and religion became mutually beneficial cooperation. At the same time, it still has a layer of issues of no direct practical application, but of long-term prospects. As to the principle of unity of research and teaching, now there are many examples of fruitful merge of the educational and scientific environments, which does not exclude existence of independent organizations engaged in scientific or educational activity only. It should be noted separately that the characteristic division of sciences into hierarchical ranks is not relevant for modern science. Privileged position of philosophy in a Humboldt university acquired a new form expressed in the principles of humanitarization. Transparent borders between sciences led to a new series of discoveries, also due to the fact that philosophy cooperates with other spheres of scientific knowledge. The major function of philosophical sciences is methodological: thus philosophy enters other spheres of scientific knowledge, helping to generate new knowledge, its processing, classification and translation. The education worthiness connected with the prospects of knowledge made by science shows its autonomy. The potentially applied knowledge expands its borders by setting both short-term and long-term prospects. Modern education is formed under the influence of such sociocultural phenomena as globalization, humanitarization, humanization, increase of the role of technology factor, science and education, and increase of the role of information. The outwardly similar theses about the unity of research and teaching, and academic freedoms in classical and modern universities have different meanings. Thus, it is possible to draw a conclusion that in the conditions of post-industrial society existence of the model of a university of the Humboldt type is possible since its main theses are preserved: unity of research and academic freedoms. However, these theses, with reference to modern society, are given new senses, reconsidered, they expand their meanings to enter the modern system of science and education.

Key words: education; information society; classical university.

P. 32. *Makhaev Mair R.* Tomsk State University (Tomsk, Russia). **PROBLEM OF METHODOLOGICAL BASES OF RECONSTRUCTION OF F.M. DOSTOEVSKY'S HISTORIOSOPHY CONCEPT.** Dostoevsky's philosophical thought is represented not in philosophical treatises, but in his novels and social and political essays. This specificity of the research topic demands a unique set of methods of comprehension and specific approach to it in general. This unusual situation needs philosophical reflection. Before starting the research of the content and sources of Dostoevsky's historiosophy, we have to think of the problem of comprehension. Thus, the main question of our research belongs to the area of methodology and can roughly be formulated as follows: how is it possible to reconstruct the historiosophy of Dostoevsky if it is expressed by literary means, not by "Logos"? The article consists of two paragraphs. In the first paragraph we explicit the problem of methodological difficulty to reconstruct the philosophy of Dostoevsky and point out the task to think of it. We also give a preliminary review of ways to handle this problem. We allocate two methodological positions. 1. Methodological monism (where Dostoevsky's philosophy is reduced to the "central" and is deduced from the "central" [be it the basic idea, central hero or the Absolute]). Such thinkers as S. Bulgakov, N. Lossky, V. Rozanov worked within this paradigm. I. Evlampiyev called this approach a "monistic" interpretation of Dostoevsky's philosophical ideas. 2. Methodological pluralism or, according to I. Evlampiyev's thought, M. Bakhtin's "model" concept: recognition of "pluralism" of Dostoevsky's philosophy, impossibility to reduce it to an element or an idea. The "monistic" interpretation of Dostoevsky's philosophy is so widespread and has such a general character that almost all Dostoevsky's researchers paid tribute to it to some extent, by I. Evlampiyev. It is thought that a certain methodological dualism, or the new "model" concept which could synthesize organically the positive moments of methodological monism and pluralism is necessary to solve this problem. In the second paragraph we introduce our hypothesis, which aims to propose a new research (methodological) "paradigm" for the analysis of historiosophy concept, not Dostoevsky's philosophy in general. Accepting Evlampiyev's methodological principles, we, nevertheless, differ in *where* and *how* to look for the central element ("the central axis", in our terms), and also *what*, eventually, it is. It is proposed firstly to look for "the central axis" of Dostoevsky' historiosophy not in historiography itself, but in the deep origins of the writer's world-views. Secondly, we will

look for "the central axis" not in the area of notions, but in the area of concepts. After analyzing the concept, it should be applied to Dostoevsky's ideas.

Key words: methodology; reconstruction; "the central axis"; concept.

P. 36. *Ostashkova Olesya A.* Katanov Khakass State University (Abakan, Russia). **PROFESSIONAL CAREER OF YOUNG SPECIALISTS IN POSTINDUSTRIAL SOCIETY.** Post-industrial society is characterized by many changes, some of which concern the labour market and career trajectories of young professionals. Work, profession, career - these are the concepts, without which a modern human can not imagine their lives. In an industrial society, they become so essential, and in post-industrial - they are transformed without losing its significance. In this paper we consider the following questions - which features a modern labour market acquires in post-industrial society? How does the concept of "career" change? What are the possibilities and limitations of young professionals based on today's agenda? The modern labour market can be characterized as a flexible, uncertain and full of risk – it is the market of part-time and short-term contracts. Young professionals do not expect to find employment (company) and even the profession for life. They are ready to move from one job to another without losing long-term contracts and commitments. Uncertainty and risk are becoming a norm, they are woven into the fabric of the social reality. There are no long-term rules of interaction between employees and employers. One possible solution to the problem of unemployment is secondary employment. The transformation of labour market institutions also concerns the emergence of new organizational structures. The transition from a bureaucratic organization to a network occurs resulting in a completely different type of work behaviour. The old bureaucratic structure limited the individual's behaviour, it required repetition, routine and typical actions. The network structure suggests openness to change, willingness to take risks, mobility, and establishing rules of engagement "on demand". A consequence of changes in the labour market is changing career trajectories. With the advent of network organizations, the linear orientation is changing careers and turns into a curve, zigzag, dotted line and in the end does not fit any of the coordinate axes. Despite the lack of predetermined paths of career development and the availability of opportunities to create their own unique career path in accordance with their wishes one cannot deny the pressure of the social structure. A conclusion is given that the ability to be open to new opportunities and move from organization to organization in search of more favourable terms works for high-resource specialists only, that is, those who already have high levels of education, wages and other resources that are considered to be significant. Low-resource specialists are forced to reconcile with a stable workplace frustration – this is the situation that Merton called the "Matthew effect".

Key words: flexible labour market; career; career opportunities of young specialists.

P. 39. *Sobolev Yuri V.* Siberian State Technological University (Krasnoyarsk, Russia). **REPRESSIVE POETICS IN MODERN CULTURE: GENESIS AND REPRESENTATIVENESS.** The topicality of the research of a modern phenomenon "poetic" (poetics in a broad sense – as ποιησις, "poesis" – creativity, creation, activity) is caused by the difficult processes occurring in modern culture on the threshold of the centuries. It is connected with the problem of definition of those phenomena of culture which are sometimes perceived as "original" poetics. The condition of modern culture represents the original dualistic picture: on the one hand, it is an attempt to keep those cultural traditions, which define the consciousness of the whole generations for more than one century, on the other hand, a steady tendency is observed of new socio-cultural bases search, allowing to be beyond the developed stereotypes, to rethink and change ethical and cognitive models. The tendency of specification fixed in the modern world and expansions of traditional definitions of senses are more and more distinctly shown in the idea of representation of a globalized society as spaces of all possible ideological masks hiding behind self senses, which are distinct from representatives. Repressive images in modern culture are the social fact requiring a philosophical reflexion and the objective scientific analysis as well. More or less, these images are both the tool of vital space registration of the modern person, and the influence mechanism on its consciousness and behaviour. At the same time, repressive poetic images form a picture of the daily world and public life acting as socio-cultural representatives. The mechanism of transfer of a subject or event "from the external world into the internal one" and, on the contrary, "covering and enduring it from within", is the major principle of poetics, which can be designated as an expression (from Lat. "*expressio*"), expressiveness; the force of display (images, feelings, experiences). As any poetic creativity is the language of images, the poetic sense (code) aspires to its "impression", to the expression through the poetic image. That is why it is necessary to notice that any original poetic image is expressive (the sense is expressed and opened by means of image). The repressive image in the context of our research is defined as an extra-rational, metaphorical way of reality reflexion, contrary to "expression" way characterized by properties of "non-openness" (isolation in itself), monologism, falsity. According to it, repressive poetics is understood as various phenomena in the culture, the essential feature of which is a poeticized form with "non-poetic" content. Representativeness of repressive poetics finds itself in all the spheres of culture. Repressive poetics, being a reality part (realities of imperious system), is perceived by the person as "especially indicative subject of the system of things" (authorities) (M. Foucault), as any image intended for non-transitive reading. There is an identification of ideological model to the existing reality, and the poetics creates the sensation of direct communication. A city myth (English urban myth) is a modern version of a myth, a short true story based on modern technical and public reality, usually mentioning deep problems and fears of the modern society. Plausibility of a city legend is based on the necessity of special knowledge for its analysis and check. Its difference from a joke is that the comic load (even if it is there) is not the main aim of a story, it differs from rumour as it is not adhered to concrete persons and places and can happen anywhere. It is usually retold as a story which happened with any person connected with the story-teller, a brother, a friend, a friend's friend, a distant relative, etc., thus the story-teller insists on their validity which one cannot prove. The event in the poetic form of a narrative is based on the same components. In other words, the subjects of city repressive myths are formed by the principles of either "pleasures" or "fear". And, there is no clear differentiation between the first and the second ones, because people can get pleasure even with a small portion of poetic adrenaline. As well as the media discourse, a city myth characterizes universality which can be understood as availability. The event (plot) in the base of narrative is clear to everybody, that is why the distribution of a city legend does not meet obstacles in the form of national or social borders. There is an ability to deliver "pleasure" with pseudo-reliability of a poetic image, its interpretation, and the idea of the myth which cannot be rejected as an illogical cognitive construction, because it is difficult to part with a poetic image as any beautiful legend or dream. As it is generally known the person often sees and hears things they wish to see and hear, almost any repressive image in the basis of a city repressive myth.

Key words: repressive poetics; repressive image; city myth.

CULTUROLOGY

P. 43. *Vityuk Yekaterina Yu.* Ural State Academy of Architecture and Arts (Yekaterinburg, Russia). **CITY ENVIRONMENT AS ART-OBJECT.** The article presents the current techniques of various forms of art used for the humanization of the architectural environment of cities. The presented list (painting (including graffiti), graphic design (advertising boards, etc.), TV broadcast and animation, lighting, installation) is not exhaustive, however, it gives an idea of the synthesis of the arts, directed to improve the quality of the urban environment. An important aspect of their application is to combine disparate social groups formed on the basis of various subcultures, reduce aggression, create positive emotions and a whole new atmosphere of the city. In addition, the means of these arts can harmonize the inclusion of new objects in the current environment and update the existing view of modern requirements without any "barbarian invasions". At present different images on the surfaces of the facades of houses, concrete fences, asphalt, etc. are quite often found in urban environments. Not all of them are of moral and ethical character and harmoniously incorporate into the urban composition. This allows us to talk about today's urban environment as a system of complex interweaving of different ways of expressing ideologies of the currently existing and ever-existing cultures. This occurs by elements of buildings, depending on the dominant styles and techniques at the time of construction, street furniture, design objects and various art techniques. The space of the city is saturated not only with the necessary equipment, but also with special characters that contain information about its history and development. So, empty facades are transformed into pictures by painting, light, etc. The buildings are no longer objects of architecture, they enter a new phase of existence – an object of art. Architectural environment of the city is a scene with changeable decorations, curtains, props, where a person is an actor and spectator simultaneously. Buildings also change their value from utilitarian objects to the necessary objects of art, combining the practical and aesthetic functions. Synthesizing methods of various forms of art you can create a comfortable urban environment, reconciling various subcultures. Therefore aggression and vandalism outbreaks reduce sharply. The urban environment should not only be properly constructed in terms of function, but also be an artistically justified system.

Key words: city; arts; facade; installation; architecture.

P. 49. *Gil Alexandra Yu.* Tomsk State University (Tomsk, Russia). **TRANSFORMATIONS OF MUSEUM ACTIVITY IN CONDITIONS OF CONTEMPORARY SOCIETY DEVELOPMENT.** The contemporary state of society represents a period of transition, which researchers call the process of information society development. This transforms social and cultural space radically, creating new methods of cultural heritage interpretation, and making new ways and forms of cultural development. Information society creates not only new forms of interpretation of cultural heritage, but provides new principles of organization of cultural heritage. Society's evolution presupposes transformation of the activity and function of the museum. In the historical context the functions of the museum are stable, but at the same time they are changeable, because social requirements to the museum change according to the political, economic or cultural situation. In the recent decades the process of changes can be observed very closely because of the social and cultural transformation of the society, which is connected with rapid development of information and communication technologies. Such problems as global crisis; diverse social environment; changes of modern cultural values; new subjects which interact with the museum (e.g., organization of management; social groups; firms, etc.); new relations of the museum with these subjects (partnership or competition); lack of information; deficit of high quality specialists in the museum sphere; lack of financial resources; lead to new tasks of organization and management formation. These tasks are connected with the need of modernization of many methods and modes of museum activity. So, the main trends of development of the contemporary museum are the following: development and management of activity according to the requirements of time and epoch, concentration of attention on needs of the recent consumer of museum service, understanding of the change of the audience; search of possibilities of involving different social groups and communities in museum activity; search of new forms of exposition, creating non-standard decisions on the base of recent information and communication technologies; creation of net of museum interactions with other organizations and enterprises for partnership formation; search of additional non-state financial support in the forms of funds, participation in competitions, including non-traditional museum services.

Key words: museums; culture; net structures; informational technologies; targeted audience; activity of exposition.

P. 54. *Maltseva Yelena S.* Perm State Institute of Arts and Culture (Perm, Russia). **ANALYSIS OF SONATA "PASSIONE" (1985-1989) BY V. RUNCHAK.** The works of a Ukrainian composer Volodymyr Runchak (1960) are known in many countries, and are often heard at contemporary music festivals. The composer wrote many works for accordion including Sonata #1 "Passione". Today there is an urgent need for performers to focus on the accordion, and the development of new composers and performing arts. In modern compositions for accordion, modern technology, new specific sound reflecting and textural possibilities of the instrument are increasingly used along with the traditional ones. The synthesis of tradition and innovation in the works of composers of the second half of the twentieth century characterizes the era of postmodernism. In "Passione" one of the means of expression is the system of musical-rhetorical figures. The known rhetorical figures ("the motif of the cross", circulation, catabasis, anabasis), which V. Runchak uses, transform into a polysemantic symbol. The combination of these figures (the first type of themes of the sonata) forms a system of leitmotifs identifying this song to the genre of Passiones. In addition to the rhetorical figures a twelve-note row (sequence of 12 heights with minimal repetition used as a melodic construction, themes of the second type) is used in the composition. The interpretation of Runchak's row is thematic, the combination of a twelve-metric row and an eight-bar period manifests the tradition of the New Vienna School. The third type of thematism is the sonorous harmony (harmony-timbre accord, clusters) built on elements of the small second, diatonic and chromatic clusters in the range of quarts and quints. The one piece of B. Runchak's sonata unites four of the sonata forms. The change of beats in the sonata represents the boundary of the four sections within the one-part sonata. This system of the keynotes keeps the sections of the sonata together. In the sonata the composer combines an appeal to the tradition via symbols, rhetorical figures, forms interpretation with the new techniques: vibrato, ricochet, sonority, aleatory rate, twelve-note row. Consideration of some aspects of logical thinking of the composer allows the player to have a completely different look at the reading and performing of the work.

Key words: Passione genre; rhetorical figures; series; form.

P. 57. *Nesterov Yevgeny A.* Tomsk State University (Tomsk, Russia). **LEGISLATIVE ACTS AS SOURCES FOR ALTAI MUSEUMS HISTORY STUDY (19-EARLY 21 CENTURIES).** An important place in the study of the history of Russian museums occupy the sources of legislative character. One of the first normative-legal acts concerning the preservation of cultural heritage in Russia is the Provision approved by the Minister of Internal Affairs in 1826. In the document it was the first time that the authorities

forbade to destroy the monuments of history and ordered to organize collection of information about them. The need to establish the connection of Museum Affairs and preservation of cultural values was designated in the regulations on the establishment of the Imperial Archaeological Commission approved in 1859 by Emperor Alexander II. The Imperial Archaeological Commission was considered to have the right to produce excavations of ancient monuments and to take all possible measures to prevent the destruction of ancient monuments, and transfer especially significant findings in the Imperial Hermitage Museum. The tradition the Russian Empire was later continued by the Soviet power. In 1918, in order to preserve, study and show the monuments of art and antiquities to broad masses of the people a decree of the government of the Russian Republic introduced a compulsory state registration of cultural property. Legislative sources of the first years of the Soviet period fixed the exclusive right of museum institutions to preserve the historical-cultural heritage. In the resolutions of the Soviet power of the 1920-1930s, the research component was strengthened in the work of the Soviet museums. After the Great Patriotic War the published legal documents contributed to the further development of the state system of protection of monuments of history and active use of cultural values for the solution of educational tasks. Of special importance for the development of the national museum were the normative-legal documents of the 1940-1950s: Regulation on the regional, territorial, and republican regional museum of 1948, Basic provisions on the construction of expositions of the regional, territorial, republican and large district regional museums of 1948, Basic provisions on the structure, acquisition, registration and transfer of funds of the museums of the Ministry of Culture of the Russian Republic of 1955. In spite of the change of the political system in Russia in the 1990s, all positive initiatives in the preservation of cultural heritage and development of museums continued. According to the 1992 law of Russia on culture, every person has the right to learn cultural values and access the state museum funds of the country. In the 1996 law of Russia on museums, museum institutions are defined as cultural institutions that perform the functions of collection, storage, study and presentation of cultural values, as well as cultural educational work with the population. The legislative work on the preservation of the cultural heritage of Altai starts its history in the Soviet time. In 1920, a decree of the Altai Provincial Department of Education was adopted directed on preservation, study and provision of broad access of the population to cultural values located in the territory of the Altai Province. One of the first regional legal acts on the preservation of cultural heritage of the Altai territory, founded in 1937, was the resolution of 1994, which guarantees the state protection of the land of historic significance with cultural objects and cultural institutions. The Articles of Altai Territory of 2002 guarantees the right of every Russian citizen to freely use the services of cultural institutions.

Key words: legislation; museum; cultural-historical heritage.

P. 61. *Chernyshov Alexandr V. Moscow P.I. Tchaikovsky Conservatory (Moscow, Russia). ON SOUND IN FANTASY FILMS.* In the silent and first sound "fantasy" films (as in any other) we could often hear compiled classical music. When fantasy films acquired original music, it could sound completely different in the stylistic and instrumental aspects. Yet some music-sound composition patterns appear in the fantasy films. For example, it is associated with the fantasy 'proper'. A British producer Alexander Korda makes a colour "Arab" film *The Thief of Bagdad* (1940) to express the traditions of fantasy (with a witch, a flying horse, a genie, a spider-guard, an all-seeing Eye, a magic carpet), in which a Hungarian composer Miklós Rózsa follows all standards of fairy tale operas of the Russian School: quasi-Eastern melodies, choral vocalizes, violin tremolos, harp arpeggios, ringing sounds of celestas, augmented triads and symmetrical modes similar to Rimsky-Korsakov's gamma. Later all this is repeated many times (*Evenings on a Farm near Dikanka, Star Wars, The Lord of the Rings*, etc.). In all fantastic genres the category of special effects (SFX) becomes immanent to draw the quasi-reality of the events in the film. Georges Méliès acts as the creator of the classic visual effects (*Le Manoir du Diable*, 1896). SFX prevailed in the fantasy film sound, too (*King Kong*, 1933, *Cat People*, 1942, etc.). It is not surprising that the searches of new sound effects are constant. For example, Gary Rydstrom, the sound designer of a blockbuster *Terminator 2: Judgment Day* (1991), the first film to successfully combine the "live" acting and computer graphics, suggested to use the sounds of canned meat falling out of the can, stirred, boiling on the fire, to depict the liquid-metal robot reincarnation. However, science fiction films often use electronic music and sound effects. Sound models, in which acoustic or electronic music is inextricably mixed up with sound SFX, are now widely represented in the film culture of blockbusters (*The Time Machine, Johnny Mnemonic, The Matrix*). Fantasy films influenced the mass production of special sound effects that portray unrealistic events or characters. Fantastic movies also contributed to the widespread adoption of electronic music in the art of "big screen". It is no coincidence that today, the main driving force of the fantastic film sound is a direct synthetic link between acoustic and electronic music and the sound special effects created in a natural way or synthesized.

Key words: fantastic film; fantasy; phantasmagoria; film music; SFX.

HISTORY

P. 65. *Kudriashev Vyacheslav N. Tomsk State University (Tomsk, Russia). SLAVOPHILISM TRANSFORMATION INTO PAN-SLAVISM AS RUSSIAN NATIONALISM CONCEPT CHANGE.* In the beginning of the 1870s in the conditions of enhancing the national movements among the Slavs in Europe and a sharp aggravation of the situation in the Balkans, there was a significant increase in the interest of Russian Slavophiles to the Slavic movement. It would be wrong to say about the serving, with respect to foreign policy interests of the empire, projects of the Slavophiles, but they responded to Russia's participation in the Eastern question, often requiring assistance to strengthen the liberation struggle of the Slavs. Gradually, the focus of the Slavophile intellectuals moved from Russia to Eastern Europe. The theoretical foundation of Pan-Slavism is a gradual transition from the Slavophile idea of the Russian national identity to the Slavic identity. Slavophiles actually abandon the category of the nation and extend the concept of nationality to the language group. But its formation was seen by analogy with the history of the national unification of Germany or Italy, which made it possible to see the Pan-Slavists' aim to form a much closer ethnic and political unity within the state. Lamansky tried to resolve this contradiction considering worlds (Slavic, Romance and Germanic) as the subjects of ethnic processes rather individual peoples. Thus, in his work equivalent ethnic formations interacted and opposed one another. The logical development was the theory of cultural-historical types by Danilevsky, which, according to Miliukov, replaced the category of "national ethos". At the same time, opportunities for such an interpretation of nationalism were laid in the early Slavophile approaches to the understanding of the Russian nation. They originally included the Russian and Little Russian and Belorussian ethnic groups, categorically denying their possibility of becoming independent nations. Little Russian and Belorussian peoples were seen as unhistorical, i.e. incapable of independent historical existence. Their future was associated with the development within a single state based on the Russian linguistic and cultural traditions declared universal and all-Russian. The preservation of national languages as local dialects and folk culture as a traditional element was allowed. In fact, Pan-

Slavists applied these principles by extending them to all the Slav peoples. While rejecting the accusations in an effort to spread the Russian statehood for all Slavic peoples, and their gradual Russification, Slavophiles emphasized the voluntary nature of the long and gradual evolution of the Slavs into a closer unity. At the same time, they made no secret that only the autocratic state and the Orthodox Church are acceptable for the Slavs, treating any other form as the impact of a foreign European tradition, which is fatal for the Slavic identity. The idea of the necessity of a common Slavic literary language, which the Russian language only could be, meant the inevitability of the universalization of social organization and cultural values, based on the Russian ones.

Key words: Slavophiles; Pan-Slavism and Slavic federation; nationalism; cultural-historical types.

P. 72. *Rudkovskaya Irina Ye.* Tomsk State Pedagogical University (Tomsk, Russia). **SPACE OF STATE AS POLITICAL AND RELIGIOUS WORLDS IN INTERPRETATION OF E. GIBBON AND N.M. KARAMZIN.** The article is devoted to the comparative analysis of views of the historians of Late Enlightenment E. Gibbon and N.M. Karamzin on the problems of correlation between the space of empire, political liberty and the extension of religion. Now, when the idea of interdependence of the future of democracy and the prospects of religion becomes wide-spread, their interpretation of this problems appears important and urgent. E. Gibbon writing *The History of the Decline and Fall of the Roman Empire* aspired to understand and to tell his readers how such a vast political system was supported and how it collapsed after such a long life. He underlined that the public freedom was lost in extent conquests. Karamzin in *The History of the Russian State* appealed to the history of Rome in different contexts, too. Parallels with Rome allowed the historian to emphasize the interrelation between the space of his country and the form of government. As Pitirim Sorokin later, Gibbon supposed that the political space cannot be measured mathematically. He compared the Roman Empire with the Russian Empire, where the Sovereign of Russian steppes commands a larger portion of the globe. The creation of juridical and cultural space, religious tolerance, not only military power, as Gibbon wrote, allowed to unite such an enormous geographical space for so long. Both Gibbon and Karamzin stated special significance of the language community. They reconstructed political history as the world of theatre, with its heroes and evildoers, intrigues and random turns of the plot. The historians concentrated attention on the role of the religious factor in the history of Rome, Europe, Russia. Gibbon wrote that the territorial expansion of the Roman Empire caused the variety of the religious map of the Roman world. Religious tolerance of the political elite, as Gibbon thought, became an important power resource. The freedom of religion, thus, supported the regime of restriction of liberty. Gibbon analyzed in detail the process of formation of a Christian republic – an independent and developing state – in the heart of the Roman Empire. In his book Karamzin represented numerous facts which allow to judge about the processes of development and reduction of a dialogue between the church and the state from the end of the 10th to the beginning of the 17th centuries. Karamzin wrote a narrative about his native country, not about a foreign civilization, which disappeared long ago, as Gibbon. Karamzin's conclusions were therefore more laconic and more cautious. Karamzin could not disturb the minds of the readers in the Russian Empire by assumptions about a probable reiteration of the fate of the Roman Empire. The history of Rome, which predetermined the historical works of E. Gibbon and N.M. Karamzin, continue to cast a long shadow on the reflections of contemporary researchers who try to interpret the perspectives of the postmodern civilization.

Key words: Late Enlightenment; historiography tradition; comparative analysis; political space; religious tolerance.

P. 80. *Sutormin Sergey O.* Tomsk State University (Tomsk, Russia). **PREFACE TO G.V. VERNADSKY'S ARTICLE "THE RISE OF SCIENCE IN RUSSIA. 1700-1917"**. The article is devoted to a historian-Eurasianist G.V. Vernadsky (August 20, 1887 – June 13, 1973). In the introduction to the article attention is paid to the establishment and development of scientific creativity of the scholar. In his early works G.V. Vernadsky expressed patriotic views, his first historical articles ("To Meet the Sun", "Movement of the Russian Tribes to the East", "Connecting the Churches in the Historical Reality" (1923) written for the anti-Catholic book "Russia and Latinism", and "Two Deeds of St. Alexander Nevsky" (1925)) prove it. However, in the mature period of his activity, G.V. Vernadsky conceptually outlines Eurasianism in spite of his emigration (1921) and moving to the United States (1927). Acquaintance and further cooperation with the leading historian of the Eurasianism movement P.N. Savitsky (1922) influenced the situation, too. G.V. Vernadsky in his five-volume work on Russian history examines the theory of space development and from this perspective reviews the historical development of the Eurasian space, rather than the history of any nation-state community (Russia, the Horde). This position proves by the historical and geopolitical concept of forest and steppe, and the rhythm of the state-forming process, thus introducing a certain law of the correlation of time and space. Another historical and geopolitical model developed by P.N. Savitsky and ultimately supported by G.V. Vernadsky in his writings is "The Pulse of History", which consists in the alternating periods of rise and fall in the historical process of analysis on the subject of generation changes. The scholar also paid attention to the theme of Russia's relations with the East, which interested him when studying at the Faculty of History and Philosophy of Moscow University (1905-1910). After a while, G.V. Vernadsky published an article "On the Influence of the Mongol-Tatar Yoke on Russia" (1927), and then wrote a then brand new work "The Mongols and Russia"; the novelty is that the object of his research was the reign periods of the Khans of the Golden Horde. G.V. Vernadsky as a historian is not well known to Russian readers, since many of his historiography work appeared in English, one of them is "The Rise of Science in Russia. 1700-1917" which has not yet been published in Russian. In the article, G.V. Vernadsky considers the formation and evolution of the scientific thought in Russia, the prominent scientists of natural sciences of the past and the present.

Key words: G.V. Vernadsky; Eurasianism; historiography; education.

P. 84. *Timoshenko Aleksey G.* Tomsk State University (Tomsk, Russia). **AMERICAN MILITARY ESCALATION IN VIETNAM (1965–1967).** After July 1965 Americans initiated full-scale military escalation in Vietnam with the aim to enforce government of North Vietnam and its allies in the South to stop fighting, and start negotiations resulting in preservation of pro-American government of South Vietnam. American military command executed massive aerial bombardment of the territory of North Vietnam, large ground operations in the South, and developed various economic, political, and subversive activities in rural areas to legitimize and strengthen the authority of South Vietnamese government among peasants (s.c. pacification). In a short time Americans were proved that the enemy has no intentions to surrender, and is increasing tempo and scope of battles. Supported by USSR and PRC North Vietnam developed strong anti-aircraft defense, provided weapons, equipment, and munitions for its troops transferring to the South. A local operation to suppress national liberation movement was turning into a broad international conflict fraught with unforeseen consequences. Indefinite fast military victory, growing casualties, and immensely rising cost of the war produced discussions inside administration of L. Johnson. President and his foreign policy advisers were mostly disturbed by the falling support of the public opinion, growing opposition in

Congress, and widespread mass antiwar movement comprising various social and political groups of American society. The president demanded to change the course in Vietnam and to propose the strategy of achievement of American goals. Basic contradictions that went into open were between civilians in the Department of Defense, led by the Secretary R. McNamara, who insisted on stabilization of military operations and search for compromise negotiations, and the military demanding unlimited increase in number of troops, more intensive bombings, and escalation of war into Laos and Cambodia. For reconciling of common position the president agreed to convene the meeting of prominent political, diplomatic, and military figures holding important positions in previous administrations and appreciated by the president. Their recommendation was quite ambiguous – 'no' to negotiations, but 'no' to further escalation. Instead the "wise men" suggested to concentrate on propaganda campaign in USA, to rally support of public and congressional opinion, and to convince Americans in the coming victory and in the "light at the end of the tunnel".

Key words: conflict; war; escalation; Vietnam; L. Johnson; R. McNamara.

P. 91. *Shirko Tatyana I.* Tomsk State University (Tomsk, Russia). **FORMATION OF EXECUTIVE POWER VERTICAL IN RUSSIA IN 1990–1993: REGIONAL ASPECT.** The Perestroika reforms of the late 1980s in all the spheres of public life began cardinal transformation of the system of public authorities of Russia. Revival of the principle of sovereignty of the Councils and introduction of local government as an alternative of administration from above became the main content of reforms. Registration of the Russian statehood took place on June 12, 1990 when the I Congress of People's Deputies of RSFSR accepted the Declaration on the state sovereignty and some other documents, in which the principle of division of the authorities entered the political system of the country, as a basis of the democratic organisation of the state without essential changes of the Soviet political system. But, despite the declaration of independence, Russia did not develop a complete concept of reforms of all spheres of public life. The tendency to combine principles of sovereignty of the Councils and division of power when developing conceptual documents regulating the activity of bodies of the central and regional powers is distinctly traced. The created power structure based on submission of executive committees to the Councils only revealed the practical shortcomings of the system. The Councils were not adapted for operative administrative activity, and to ensure social and economic transformations in the country the next stage of political reform was carried out. The institute of the President entered the political system of the country and need of formation of executive power on the basis of one-man management and vertical hierarchy of its bodies was proved. If organizational problems of formation of the Institute of the President and the head of administration of the local government managed to be settled, the agreement over organization of executive power of regions between various political forces was impossible to achieve. Uncertainty with the order of empowerment of the head of administration of regions – appointment or people's vote – became the main problem. Therefore, the introduction of the post of the head of administration appointed by the President at regional levels during the August Putsch of 1991 was one of the emergency measures directed at preservation of control of the situation in regions. In the autumn of 1991 on the basis of presidential decrees the vertical of executive power headed by the President who received additional powers for management of the republic was built. Formation of the two power verticals – executive and representative – in the conditions of a radical economic reform and continuing uncertainty of the conceptual bases of the Russian statehood caused sharp opposition between the President and the Supreme Council for control over the activity and formation of the vertical of executive power in Russia. As a result, the President headed for development of the new Russian Constitution and elimination of the system of the Soviet power in the country.

Key words: public authorities; executive power; administration; subjects of the Russian Federation.

LAW

P. 98. *Vedernikov Andrey N.* Russian State University of Trade and Economics (Moscow, Russia). **CONSTITUTIONAL COURT OF THE RUSSIAN FEDERATION IN PROTECTION OF RIGHTS OF LAWYERS (DEFENDERS) AS SUBJECTS OF CONSTITUTIONAL RIGHT OF PERSON TO JUDICIAL PROTECTION.** As it is known, the Constitutional Court of the Russian Federation being a judicial body of the constitutional control freely and independently carries out judicial power by means of the constitutional legal proceedings. A distinctive feature of the position of the Constitutional Court in our country is that according to Article 10 of the Constitution of the Russian Federation being one of the public authorities it simultaneously acts as the arbitrator between the state and citizens, and citizens thus are the party equal in rights in dispute with the state. It is lawful to assume that aspiring to provide this equal position of the person and the citizen in relations with the state, the Constitution of the Russian Federation declares the person, its rights and freedom a supreme value, and recognition, observance and protection of its rights and freedom – a state's duty (Article 2 of the Constitution of the Russian Federation). Truly, for an individual person to balance with the state, it must be placed above the state. By the judge of the Constitutional Court of the Russian Federation K.V. Aranovsky, "the Constitution of the Russian Federation prioritizes the constitutional values of the person, its rights and freedom". The Constitution of the Russian Federation assigns provision of the rights and freedom of the person and the citizen to justice (Article 18 of the Constitution of the Russian Federation) which, besides owing to the Constitution command, is carried out on the basis of competitiveness and equality of the parties (Part 2 Article 123 of the Constitution of the Russian Federation). The parties in any litigation on protection of public interests are the state in the name of this or that authority and the citizen. A quite reasonable assumption is that due to the complexity of legislation in any state and uneasy judicial procedural rules every person will need help of a corresponding expert, a professional lawyer, to protect the person's rights and freedom. So, the Constitution of the Russian Federation, without naming the Bar a separate, independent law-enforcement structure, actually solves the question on its mission and defines its role in legal proceedings on provision of the rights and freedom of the person and the citizen. Rendering of qualified legal aid is, thus, a constitutionally fixed duty for the Bar and lawyers (defenders) while every person has a right to receive such help from the lawyer, which is guaranteed by the state and carried out by lawyers.

Key words: constitutional laws; right to judicial protection.

P. 102. *Mazur Yekaterina S.* Western-Siberian Branch of Russian Academy of Justice (Tomsk, Russia). **PROBLEM OF ESTIMATING CREDIBILITY OF FORENSIC EXPERT'S CONCLUSION.** The logical continuation of the process of collection and examination of evidence is their estimation. It is necessary to say that both the Theory of Criminal Procedure and Criminalistics have no clear definition of estimation of evidence. Some authors characterize it as a "logical process of understanding the role of collected evidence in order to state the truth", others indicate that estimation of evidence is to be understood as an activity, as a result of

this activity and as a legal action. Emphasizing the significance of estimation of evidence, some authors say that on the whole it is the "heart" of criminal procedure. At the same time these authors make it clear that their opinion should not diminish the importance of other elements of evidence – its collection and examination. According to Clause 3, Part 2, Article 74 of the Criminal Procedural Code of the Russian Federation, one of the evidence in criminal procedure is an expert's conclusion, which contains information about the facts obtained by means of special knowledge. These facts, in their turn, are used for ascertaining necessary circumstances significant for making an objective decision in the given case. In many cases the algorithm of estimation of forensic expert's conclusion can be established on the basis of the Resolution of the Plenum of the Russian Federation Supreme Court of December 21, 2010 # 28 "On forensic expertise in criminal cases". The Plenum stressed that while estimating an expert's conclusion it is necessary to establish relevance, credibility and admissibility. Accordingly, the activity of the parties of the case connected with the estimation of a forensic expert's conclusion should be performed in the same order. The main task of estimation of the conclusion is to define whether the questioned can be used as evidence. It is necessary to take into account that within criminal procedure the estimation of forensic expert's conclusion has its peculiarities and difficulties. The main difficulty is that an expert's conclusion is a document containing the description of the research done by a person with special knowledge and the conclusions on the questions an expert is asked are estimated by the subject conducting a criminal case without special knowledge in the mentioned sphere. A large number of departmental instructions (often contradicting each other), methodological directions and special terminology the content of which needs some understanding represent peculiar difficulties when estimating the expert's conclusion by the subjects who are responsible for this estimation. All the mentioned circumstances predetermine the necessity of involving specialists into the cooperation both at this stage and at further stages of estimating the expert's conclusion. This will encourage not only formation of evidence in crimes but also finding the ways of its further usage as a basis for forming individual criminalistic versions are formed. These versions determine the corresponding behaviour of the investigator in such crimes.

Key words: analysis; evidence; assurance; expert's conclusion; criminalistics; forensic science.

ECONOMICS

P. 107. *Avdeeva Tatyana T., Reshetnyak Tatyana A.* Kuban State University (Krasnodar, Russia). **CONCEPTUAL APPROACHES TO DEFINITION OF ORIENTATION AND ASSESSMENT OF PUBLIC ADMINISTRATION QUALITY.** In the conditions of market economy in Russia the three-sector model (private, public and sector of non-profit organizations) is formed, in which the character of the relations between the participants of development changes – hierarchical communications give way to interaction of representatives of various sectors as partners equal in rights. The public power thus acts not only as the institute of management which carries out regulation of economic and social processes by means of administrative and market methods, but also as the subject of economic activity in the sphere of public sector. Respectively, there are new requirements to the content and quality of administrative activity. Results of the All-Russia monitoring of introduction of administrative regulations and sociological polls confirm the remaining urgency of the problem of ensuring the quality of territorial administration, especially at the local level. The sources of development of the modern concepts of quality of public and municipal administration are in economic researches, in public management and quality management researches. In this regard there is a particular interest in studying the modern approaches to the problem of quality of public and municipal administration, and the experience and the results of the administrative reforms carried out in many countries (the USA, Great Britain, Germany, France, etc.) in the 1980-90s. It is necessary to recognize that the theory and practice of New public management allowed to keep the individual welfare of citizens, both the quality of life, and the access to public services and the benefits, in the conditions of free competition. Thus, the public and municipal administration became less expensive; it aimed at achievement of concrete quantitative and qualitatively measurable results, provided a high level of satisfaction of the citizens receiving public services and benefits. The chain of concepts "quality – productivity – efficiency" became the leading principle of administrative reforms. As a whole application of New public management promoted an increase of efficiency of the public and municipal administration, orientation on quality of services and their profitability. The quality of territorial administration should be considered as a category in the system of interaction of the public power, business and the population. The assessment of quality of the public and municipal administration should not be based on the current direct results of the authorities' activities, but according to the degree of satisfaction of consumers with the quality and availability of the state and municipal services. To ensure a decrease in administrative barriers, improvement of quality and availability of the state and municipal services, development and application of effective organizational schemes and optimization of mechanisms of implementation of functions of executive authorities of local government are necessary.

Keywords: municipal reform; quality assessment; local government; quality of public administration.

P. 113. *Lozhnikova Anna V., Sazonov Aleksey M., Ogorodova Ludmila M.* Tomsk State University (Tomsk, Russia), Siberian State Medical University (Tomsk, Russia), RF State Duma (Moscow, Russia). **SCIENTIFIC AND TECHNOLOGICAL DEVELOPMENT OF RUSSIA: PROBLEMS OF EFFECTIVE MECHANISM FORMATION, OR HOW TO MAKE ESSENTIAL R&D "MOST ESSENTIAL".** The modern trend of scientific and technological development of Russia is described with the set of new instruments of public-private partnership. Technological platforms and programs of innovative development of companies with public participation are by far the most crucial. The strategic programs of technological platforms researching and programs of innovative development of public companies is suggested to be the mechanism of transition of macro- and mezzo-categories of "markets and sectors" of economy into micro-categories of "technologies and products". In this article some details of the realization mechanism of the strategic program of researching the technological platform and programs of innovative development of public companies basing on comparison of key economic provisions are discussed. The strategic program of researching the technological platform is aimed at providing the breakthrough in the domestic and world economy, forming new high-tech industries, and sectors in the economy. Herein opening new export opportunities and parts of companies-participants of the technological platform in the Russian and even in the world markets are being estimated. The concept of development in Tomsk region of the centre of education, research and development has such a vector. However, the program of innovative development of public companies acts with absolutely other indicators on the level of firm's economy (prime cost, labour productivity). In this regard the mechanism of "most essential" R&D has not worked out – for business the public understanding of their importance became neither obvious nor necessary. If business relies fully on private sources of R&D financing, like profit and amortization, then technological platforms are forced to put emphasis on the sources of raised funds, like credits, financial leasing, emission of securities. In Russia the major customer of R&D is traditionally the Ministry of Education and

Science of RF, while abroad this role is played by "profile" ministries (health care, agriculture, etc.). The issue of poor role of private business in defining and realization of priorities of scientific and technological development of the country for the long-term prospect is still on the agenda. Today responsibilities in terms of development of programs of innovative development are only fulfilled by companies with public participation; Russian private business keeps aside from the modernization-innovative-technological mainstream.

Key words: firm's economy; technological platforms; the programs of innovative development of companies; foresight.

P. 120. *Nekhoda Yevgenia V., Kuchinova Erkeley S.* Tomsk State University (Tomsk, Russia), Gorno-Altai State University (Gorno-Altai, Russia). **INTERDISCIPLINARY ANALYSIS AND SYNTHESIS IN LABOUR MARKET RESEARCH.** Work, professional work are the most important components of life that reveal to the person the enormous revenue opportunities and realize their potential. Work is also one of the fundamental values of economic culture, which is manifested through the relationship of person and society to work. The labour market, in particular, acts as the original criterion of social change in society. Massive changes in the labour market indicate social changes, their positive or negative direction. The labour market is a category of not only economic, but also social order. Labour market research in this regard is carried out by a number of sciences (Economics, Labour Economy, Sociology, Sociology of Work, Sociology of Labour Market). However, the basis of theoretical research in the science of work and labour market is laid by Economics. To analyze the economic behaviour of actors in the labour market there are four basic principles: 1) the principle of self-interest; 2) the principle of utility; 3) the principle of cost minimization; 4) the principle of maximizing profits. Recognition of "the principle of economic individualism" as obsolete, excluding individual characteristics of the person, group and society from the economic analysis, results in the appeal to the social sciences, in particular to the methodology of economic sociology in the study of economic behaviour of actors in the labour market. Economic sociology presents a socialized person, able to develop and implement new social roles; economic relations between people and organizations do not exist in the abstract model of an idealized market, but work through the social network, the social structure. Interdisciplinary analysis and synthesis allows to identify and summarize the specific features of the functioning of the Russian labour market and its segments; to produce adequate directions of state regulation of the labour market and the social and labour relations, including policies on income, employment, job creation, creating a safe labour environment; to predict the trends of the labour market, its potential problems, and develop preventive measures. It should be noted that the irrational behaviour of the Russians, the importance of social relations and links, cultural diversity, multi-ethnicity in our country, authority based on the social relations make the interdisciplinary studies in the economy, employment in particular, topical. Economics must also undergo changes and be adequate to new economic, social and political circumstances, and investigate the formation of the person (human behaviour) in life and work in the new global environment.

Key words: economic behaviour; labour; labour market; interdisciplinary studies; economic theory; economic sociology.

P. 127. *Nikonova Yana I., Kazakov Vladimir V.* Berdsk Branch of Novosibirsk State Technical University (Berdsk, Russia), Tomsk State University (Tomsk, Russia). **MECHANISM OF FINANCIAL SECURITY OF INNOVATIVE ACTIVITY OF ECONOMIC SYSTEMS.** The urgency of the subject of research is defined by the decision important both for modern economic science, and for development of scientific and methodological bases of the carried-out state financial and innovative policy of the problem of research of the mechanism of financial security of innovative processes. The mechanism of financial security of innovative processes demands development of an essentially new approach to the formation of methodological principles of realization of the system of relations providing effective financing and stimulation of innovative activity of economic systems at all levels of national economy. In the article the main sources of financing of innovative activity are investigated and basic elements and the financial mechanism of ensuring innovative processes are defined.

Key words: innovative activity; economic systems; financial mechanism.

P. 134. *Roshchina Galina S.* Plekhanov Russian Academy of Economics (Moscow, Russia). **POSSIBLE TARGETED CONTROL OF MODEL OF PERSON FOR SUSTAINABLE SOCIO-ECONOMIC DEVELOPMENT OF ECONOMY.** In the article the necessity and possibility of a new approach to the formation and implementation of social and economic policy based on the spatial model of strategic goal setting and model of person is discussed. The priority of the human role in the economy, the variety of motives of its economic activity are taken into account. When constructing the model of strategic goals the needs of the person are considered. Factors-conditions and factors-results are singled out. Self-realization is considered as an integrated factor-result, which consists of individual factors-results. The advantage of our approach is the ability to change the composition of the main factors and, if necessary, introduction of the new ones, more fully and adequately reflecting the specific historical features. The paper presents the algorithm for the formation of social and economic policies with regard to the model of the person. The proposed spatial model of strategic goals has the following levels: nano-level (human level) micro-level (e.g., company, etc.), meso-level (e.g., region, rural settlement, etc.), and macro-level (country). At each level the same set of factors is projected. This allows to ensure the unity of the proposed approach to forming the strategic goal and its achievement in the implementation of the model of person. The proposed spatial model of the strategic objective allows to visually show the possibility of achieving consistency and self-government. The proposed approach allows each particular person or social group in their own way to formulate a strategic goal, which does not contradict the strategic objectives of each level. This approach, on the one hand, allows to formulate a universal strategic target, and, on the other hand, to provide its differentiation by its focus on the individual person living in a particular area. It allows us to approach the development of the strategy in dynamics, not statics. Visualization of the strategic goal and provision of place for every person (social group) in it by providing an understanding of inclusion of one's own growth into the region (country) development, allows to feel one's participation in the results. The proposed model of strategic goals can improve efficiency of its achievement by emphasizing the sets of influence measures on the factors involved in or related to the corresponding area, not arbitrary sets of measures, indirectly influencing the interested parties. As a result, this space model of the strategic objective can provide the necessary degree of consistency of influence measures on factors prior for these specific historical conditions when implementing the model of person.

Key words: model of person; factors-conditions; factors-results; spatial model of strategic objectives.

PSYCHOLOGY AND PEDAGOGICS

P. 140. *Baranova Yelena A., Kapilevich Leonid V.* Tomsk Polytechnic University (Tomsk, Russia), Tomsk State University (Tomsk, Russia). **MUSCULAR WORK INFLUENCE ON VENTILATION PARAMETERS AND HEMODYNAMICS OF LEGS OF ATHLETES AND UNTRAINED INDIVIDUALS.** We studied the effect of muscular work on the parameters of external respiration and hemodynamics of the lower extremities of athletes and untrained persons. The study involved 40 men aged 18-20. Athletes under the influence of muscle work show an increase in the forced vital capacity of lungs in 1 second, maximum expiratory flow and forced expiratory flow between 25% and 75% of the forced vital capacity of lungs, while the forced expiratory time and the forced vital capacity of lungs was not significantly changed. In the control group, however, after the load growth is observed of such indicators as the forced vital capacity of lungs and forced expiratory time. The study of circulation of the lower limbs showed that the load test PWC170 causes the increase of of arterial blood flow intensity indicators such as the rheographic index, the amplitude-frequency performance and rapid blood flow indices. At the same time there is a reduction of the venous component, diastolic indexes with the increase of the venous outflow. In the leg muscles of athletes after the load test PWC170 we observed a decline in the intensity of both arterial and venous blood flows. In the control group the thigh muscles after the load test PWC170 do not show a significant increase of the rheographic index, the amplitude-frequency characteristic and diastolic index. In calf muscles after exercise, on the contrary, there is an increase of intensity of arterial blood flow and increased venous outflow. Apparently, during the exercise on a bicycle ergometer muscles of the hips are mainly involved, and it is in this area that the intensity of arterial blood flow is higher. The decrease reflects the venous congestion in the pelvic area – the result of constraint poses in a bicycle seat. Athletes' blood circulatory system reaction is optimal: it increases the blood flow in the thigh area where muscles are involved in performing the load. In the calf we observe a decrease in blood flow. Untrained persons show increased blood flow in all parts of the lower limbs and is not consistent with the distribution of muscle activity, which makes the reaction of the circulatory system to the load less effective. To sum up, it can be noted that exercise causes increased functioning of circulatory and respiratory systems, but the nature of the reaction of these systems to the load for trained and untrained individuals is fundamentally different. Athletes' reaction of the respiratory system is intense, it especially enhances the speed of the air passage via pneumatic routes, while untrained persons' reaction of the respiratory system is of extensive nature – it shows in increased volumes. The reaction of the zonal blood flow of athletes differentiated - it occurs mainly in the muscles involved in performing the load. In case of untrained individuals, by contrast, increased blood flow occurs in the whole limb. The results indicate that an important component of physiological mechanisms of endurance is differentiation of regulatory mechanisms of circulatory and respiratory systems.

Key words: breathing; hemodynamics; athletes training.

P. 143. *Buchek Albina A., Meshcheriakova Emma I.* Kamchatka State University (Petropavlovsk-Kamchatsky, Russia), Tomsk State University (Tomsk, Russia). **INTERPERSONAL RELATIONS IN POLYETHNIC ENVIRONMENT AS PERSON'S PSYCHOLOGICAL SAFETY INDICATOR.** The article describes the basic results of an empirical research of perception of interpersonal relations by respondents of different ethnic origin. The possibility of using the data on character of interpersonal relations for the analysis of psychological safety of the person in the conditions of different polyethnic environments is shown. The modern ethnic environment represents a multicultural formation where "ethnocultural" symbols and artifacts transformed in "consumption products" freely cross national borders, testing the influence of the variety of types of structures and values of "ethnic distinctions" and, in turn, influencing the formation of such a variety. The psychological analysis of a society as a polyethnic formation is based on the idea that many people in the modern world do not belong to a single ethnic group being members of two and more communities, carriers of several cultures that form highly diversified combinations, thus being in constant dynamics. The polyethnic society is thereby a society of social diversity, which, as scientists consider, is essentially changeable. The influence of the polyethnic situation on interpersonal relations is ambiguously estimated by researchers. On the one hand, opinions are expressed that a polyethnic environment expands possibilities of interaction with representatives of others ethnic communities, knowledge of features of one's own and other ethnic groups, forms and develops ethnic awareness and skills of cross-cultural interaction. The primary goal of research consisted in revealing and comparison of the perception of interpersonal relations (including participation in interaction, emotionality level, control of the situation when interacting with other people) by respondents from auto- and polyethnic environments. The research showed that polyethnic environment due to the frustration of the main needs increases sensual relations with a bigger number of people, there is a need to be accepted by everyone in the environment. Respondents from different polyethnic environments connect psychological safety with realisation of different needs. Thus, the perception of interpersonal relations by respondents from different polyethnic environments can act as the indicator of psychological safety feeling of the person. In this connection new aspects of research of psychological safety and possibility of carrying out of effective psychological work appear when creating conditions for realization of intra- and interpersonal needs of the person taking into account its ethnic belonging and features of the polyethnic environment.

Key words: environment; polyethnic; autoethnic; safety; person.

P. 148. *Byzova Valentina M., Chikurova Yekaterina I.* Saint Petersburg State University (Saint Petersburg, Russia), **PERSONALITY CHARACTERISTICS AND PSYCHOLOGICAL CORRECTION (BY EXAMPLE OF RUSSIANS AND UZBEKS).** The article focuses on an important problem of psychological correction of young people which is due to disorders in the attitude system and structure. In this regard, the psychological service of the higher school should direct their activities to optimize the behaviour and personal growth of students. Pedagogy develops the ability of an adult and young person to control their behaviour for self-discipline and self-regulation. While working in the service a psychological consultant can meet the following challenges: neuroticism of the modern youth, search for personal resources to prevent depression and suicidal tendencies. The purpose of the study is to specify the psychological targets and develop recommendations for correction work of the psychological service of a higher school. The research objectives are to determine the factor structure of personality characteristics and attitude system in the sample of Russians and Uzbeks; to highlight areas of psychological correction and psychotherapy of students' stresses. Two methods were used: J.M. Sacks and S. Levy's Sentence Completion Test (SCT) modified by the Research Institute n.a. V.M. Bekhterev and Freiburg Personality Inventory (FPI), Form B, created by German psychologists Fahrenberg, Hampel and Selg, and adapted at LSU Department of Psychology by A.A. Krylov and T.I. Ronginsky. 176 people aged 19-23 took part in the research – 73 Russians (30 men and 43 women), 2-year full-time students of St. Petersburg and Tomsk State Universities and 103 Uzbeks (54 men and 49 women), 2-year full-time students of Tashkent State University of Economics. The research came to the following conclusions: 1. The current universal problems for today's college

students are aggressive and suicidal tendencies, conflicts in relations with superiors. 2. The participants of the research showed high sensitivity and openness in assessing their personality characteristics. In this regard, the consultants should use not only the verbal forms of work, but also the emotional methods of therapy. Psychologists are recommended to use psychotherapeutic conversations, individual and group forms of work, to teach students methods of psychic self-regulation. 3. It is important to take into account the regional and ethnic specificity when working with students. Among young Uzbeks the greatest stress is concentrated primarily in the area of family relations, as well as in personal well-being and potential realization. Young Russians had behavioural difficulties with self-control and self-regulation that block positive aspirations.

Key words: psychological correction; psychological target; attitude system; personality characteristics.

P. 153. *Vasilieva Yelena N.* Tyumen State Academy of Culture, Arts and Social Technologies (Tyumen, Russia). **CONFLICTOLOGICAL DISCOURSE OF EDUCATION SYSTEM MODERNIZATION.** Education reforming as a social innovation is accompanied by an aggravation of social conflicts. Objective (interethnic and international intensity, strengthening of migratory streams, multiculturalism, inclusion in the Bologna Process, education separation from modern demands of practice, small rotation of personnel, growth of social tension in the society) and subjective (teachers are not ready to solve problems of conflict character, absence of moral and material incentives for teachers, professional degradation of the teacher's personality) factors stimulate conflicts, which, in turn, leads to various forms of protest behaviour of pupils. The reasons blocking education modernization were studied by researchers of Moscow region in 2005-2007. The purpose of research was detection of teachers' preparedness for education system modernization, and their ideas of conditions and factors of its implementation, as well as assessment of real existence of these conditions and factors. The author of this work repeated the analysis in 2012 to identify the "problem zones" of education modernization at the present stage of development of the Russian society and ways of conflictology competence increase of educational process subjects. The research showed that today schools successfully implement the Unified State Examination and profile training only. Teachers connect the status and professionalism increase with professional improvement in the field of productive activity, instead of the field of educational work with pupils where spiritual and mental components are more crucial. Teachers are alarmed by the low culture of communication, rudeness, disrespect for seniors, lack of interest in studies, laziness. The humanistic approach, developing training are still abstract notions for a considerable number of teachers. The research revealed contradictions and discrepancies between the intensively growing conflict nature of the pedagogical environment and the readiness of pedagogical community to overcome it. Problems in relations of teachers and pupils arise from the objective change of social values, decrease in culture of communication and tolerance of modern teenagers, on the one hand; on the other hand they reflect the inability of teachers to work in the conditions of education reforms. Development of a new area of interdisciplinary scientific knowledge, conflictology, active use of innovative technologies in the educational process, various forms of professional development can promote formation of conflictology competences, promote interpersonal interaction between various subjects of the educational process, form conflictology culture of the expert working in 'person-person' and 'person-society' systems.

Key words: conflict nature of education; conflict-initiating factors; conflictology competence.

P. 157. *Molchanova Ludmila N.* Kursk State Medical University (Kursk, Russia). **STRUCTURAL-PROCESSUAL ANALYSIS OF REFLECTIVE MECHANISMS OF REGULATION OF MEDICAL WORKERS' MENTAL BURNOUT CONDITION IN INTRAPROFESSIONAL DIFFERENTIATION.** At present, the research interest in studying the internal factors of burnout condition of representatives of trades of the "helping" type is concentrated on its relations with reflection, features of value and semantic sphere, motivation, styles of self-control. However, the general and specific laws of displays of mechanisms of self-control, is reflective-semantic and value and motivational mechanisms of regulation (occurrence, transformation) of the condition of mental burnout in the logic of the structural-processual approach remain beyond consideration. Transformation of mental burnout condition is considered as a natural and irreversible process of interaction of structural elements of this condition at its various phases in the context of the "helping" activity under the influence of external and internal regulatory factors. During this process the degree of expressiveness of relations both between all its structural elements and between structural elements and the regulatory properties of the person amplifies, which leads to transformation into the regulatory properties of the person. Inner regulatory factors which act at all phases of the mental burnout conditions, are considered as internal psychological mechanisms of its transformation, and at certain phases – as inner psychological mechanisms of its occurrence. The greatest role in regulation of the condition of mental burnout among doctors of hospitals and doctors-surgeons belongs to direct self-control of behaviour in the current professional situation demanding urgent analysis of the event and decision-making at a minimal time, to correlation of the actions with the situation and their coordination according to the changing circumstances and one's own condition. The tendency to analyse one's past actions, events, their motives and preconditions, mistakes, estimation of past experiences is a reflective mechanism of regulation of the condition of mental burnout for doctors of clinics, physicians, nurses and medical assistants. An important role belongs to the analysis of future activity, careful planning and seeing probable outcomes of treatment. Results of the research allowed to draw conclusions that the generality of laws of displays of reflective mechanisms of regulation (occurrence, transformation) of the mental burnout condition of medical workers with intraprofessional distinctions testifies to the typification of the transformation process, and their specificity – to the specification of substantial, structural and dynamic characteristics of mental burnout by the context of "helping" trades or duration of professional activity.

Key words: structural-processual analysis; reflective mechanisms of regulation; condition of mental burnout; intraprofessional differentiation; general and specific laws.

P. 164. *Sherin Vladimir S., Soboleva Marina V.* Tomsk State University (Tomsk, Russia). **ACROBATS' TRAINING PROCESS CONTENT AT SPORT PERFECTION STAGE.** Nowadays many kinds of sport are not fully equipped with modern programs, methods of training of skilled athletes. This fact complicates the process of sports skills perfection. One of such types of sports is sports acrobatics where the content of the training process of acrobats is not specified and systematized precisely enough. There are few scientific researches of the content of acrobats' training process and they have fragmentary nature. The purpose of this research is to specify and organize the content of acrobats' training process at the stage of sport perfection. The object of the research is the process of acrobats' training in groups of sport perfection. The subject of the research is the content of acrobats' training process at the stage of sport perfection. It was supposed, that specification and systematization of the content of acrobats' training process at the stage of sport perfection will allow to improve the technical preparedness of sportsmen and their competitive results. On the basis of the topical literature analysis and professional experience we have drawn up a week's micro-cycle training with variation of the volume of training

loads. Thus, the authors have defined an approach to acrobats' technical and physical training and load variation in groups of sport perfection. On the basis of this fact the content of the training process of acrobats at the stage of sport perfection has been specified. The structure of the proposed 4-hour training program includes 10% of the total physical training, 30% of special physical training and 60% of technical preparation of the training sessions (model load). On the basis of the example of training sessions of the model load the structure of training sessions with intensive, competitive and replacement loads was applied. During the annual cycle of training sportsmen practised specific exercises from the week's micro-cycle. There was a variation of training loads depending on the change of the periods of sports training and the number of competition starts. Each training session had a certain percentage correlation of training types, as well as their quantitative content, which defined the volume and intensity of training loads. Thus, the authors were able to specify the content of acrobats' training process in groups of sport perfection, to determine the load, and to vary it. In order to verify the effectiveness of the proposed content of the load it was introduced in the real process of acrobats' preparation for the main competitions. By applying systematized content of the training load the sportsmen were successfully prepared for major competitions.

Key words: acrobats' training process; content; specification; structure; load.

SCIENCES ABOUT EARTH

P. 167. *Kolubaeva Yulia V.* Tomsk Polytechnic University (Tomsk, Russia). **EQUILIBRIUM AND NON-EQUILIBRIUM CONDITION OF NATURAL WATERS OF NORTHERN PART OF KOLYVAN-TOMSK FOLDED ZONE WITH LEADING MINERALS OF ENCLOSING ROCKS.** This paper deals with the geochemical processes occurring in the water-rock system, an example of natural waters north of Kolyvan-Tomsk folded zone. Administratively, the study area is located in the southeastern part of Western Siberia, within Tomsk region and occupies the Tom-Yaya interfluvium. The material for the studies was the data of the problem hydrogeochemical research laboratory of the National Research Tomsk Polytechnic University in different years (1992-1993, 1998-2000 and 2008). In the interpretation and generalization of the data chemical analyses of more than 1000 sample points were used, the study of which showed that groundwater and surface water formed under these conditions are similar in composition, which is probably due to the peculiarities of the chemical composition of underground waters of the Paleozoic basement that goes to the day surface and provides spring feed for rivers. Natural waters have mineralization of up to 800 mg/l (with the average of 500 mg/l) and pH – up to 8.2 and represent water of leaching, whose formation is determined by the degree of their interaction with the surrounding aluminum silicates, which are most distributed in the study area among the water-bearing rocks. However, it should be noted that the majority of this fresh water is filled with calcite, which makes the accumulation of calcium impossible for it, and transforms it into magnesium and in some cases – in sodium. Our calculations to study the equilibrium-non-equilibrium state of the system 'water – aluminosilicate minerals' have shown that all primary aluminum silicates (anorthite, albite, forsterite, muscovite, potassium feldspar, etc.) are in non-equilibrium with the natural waters of the northern part of the Kolyvan-Tomsk folded zone and are able to be dissolved under these conditions with the formations of secondary minerals (gibbsite, kaolinite, montmorillonite, illite, calcite, etc.). A significant part of the chemical elements coming into the solution due to the incongruent dissolving of primary minerals is bound by secondary products, and the other part (the moving parts) concentrates in the solution. In the formation of both groundwater and surface water the calcium component is formed due to leaching of carbonates and by the calcium-containing feldspars (anorthite). The formation of calcium rather than sodium components dominant in the study area is due to the interaction time in the water-rock system (i.e., the intensity of water exchange). The equilibrium of natural waters of the territory with endogenous minerals is impossible, because secondary minerals formed in this system are the geochemical barrier to such an equilibrium.

Key words: Kolyvan-Tomsk folded zone; endogenous aluminosilicates; balance; clay minerals.

P. 173. *Kolmakova Maria V., Zakharova Yelena A., Kouraev Aleksey V., Zemtsov Valeriy A., Kirpotin Sergey N.* Tomsk State University (Tomsk, Russia), Laboratoire d'Etudes en Géophysique et Océanographie Spatiales (Toulouse, France), Tomsk State University (Tomsk, Russia). **TEMPORAL VARIABILITY OF CLIMATE, FLOODED AND WET ZONES IN WESTERN SIBERIA FROM DATA STATIONS, ATMOSPHERIC REANALYSIS AND SATELLITE ALTIMETRY.** It is difficult to make an assessment of climate variability and hydrological characteristics using only in situ data, especially on such vast and remote territories as Western Siberia where the network is sparse and has declined over the past decades. Therefore, atmospheric reanalysis and satellite altimetry provide regular and reliable data for the territory and are an additional source of information to in situ data. The main objective of this study is to assess the variability of climate parameters in different landscape zones from different data sets. First, we analyzed air temperature and precipitation of mid size watersheds of the Ob River system (the Poluy, Nadym, Pur, Taz, Nazym, Lyamin, Tromyugan, Vakh, Tym, Bol'shoy Yugan, Vasyugan, Severnaya Sosva, Konda, Tavda, Tura, Om Rivers, the inner watershed of the Ob-Irtysh interfluvium area) from meteorological stations and ERA-40 reanalysis data (1958-2001). Data analysis revealed the increase of air temperature in the northern, central and southern parts of Western Siberia. The most pronounced warming was found in the north (the Nadym, Poluy, Pur, Taz Rivers). Increase of precipitation for the same period was observed mostly in the western part of the territory (the Severnaya Sosva, Konda, Tavda, Tura Rivers), central part (the Nazym and the Vakh) and northern part (the Taz). Variability of flooded and wet zones is difficult to estimate from in situ data. Moreover, the presence of wetlands in most of the Western Siberia significantly complicates its monitoring. Therefore, to estimate the variability of flooded and wet zones we applied satellite altimetry method for watersheds of the Ob River system. Although the primary mission of satellite altimetry was to measure the altitude of the object above the fixed level, it also provides information about the surface of different natural objects (wetlands, lakes, rivers, etc.). In this work, we used radar altimetry data from TOPEX/Poseidon mission (T/P) covering the period from 1993 to 2001. To estimate the flooded areas we analyzed the backscatter coefficient which is the ratio between the power reflected from the surface and the incident power emitted by the onboard radar, expressed in decibels (dB). As calm water provides a much higher return signal than land, a threshold approach was used and validated with available in situ data and maps. Next we classified the watersheds into 4 groups according to the difference in seasonal signal: 1) the central part of the Ob-Irtysh interfluvium area and its inner watershed, 2) the western part of the territory and the northern part of the Ob-Irtysh interfluvium area, 3) the Ob-Yenisey interfluvium area, 4) Surgut swamp region and rivers in the north of Western Siberia territory. The proposed classification corresponds well to those proposed by Zemtsov (2003). Finally, a significant correlation between the flooded zones and summer precipitation from reanalysis data was found for several watersheds that validate good applicability of satellite altimetry data for estimation the variability of flooded and wet zones.

Key words: Western Siberia; climate change; flooded zones; reanalysis; satellite altimetry.

P. 181. *Podobina Vera M.* Tomsk State University (Tomsk, Russia). **RECENT DATA ON TURONIAN BIOSTRATIGRAPHY AND FORAMINIFERS OF WESTERN SIBERIA.** The previous studies on numerous borehole sections of Western Siberia have proved that the Kuznetsovskian Horizon is assigned to the Turonian and encloses two foraminiferal zones: the *Gaudryinopsis angustus* Zone (the Lower Turonian) and the *Pseudoclavulina hastata* Zone (the Upper Turonian). The systematic composition and distribution of the Turonian assemblages along the lateral and in the sections of Western Siberia were previously reported by the present author [1, 2, 3, 4, 9]. In the top of the Kuznetsovskian Horizon, numbers of the zonal species *Gaudryinopsis angustus* Podobina are reduced, while the quantity of the *Pseudoclavulina hastata* (Cushman) Species increases in the upper zone of the Turonian. Simultaneously, the content of *Reophax* and *Haplophragmiidea* in this zone grows, the species *Ammoscalaria antis* Podobina, *Textularia anceps* Reuss, *Trochammina arguta* Podobina appear. In the northern district of Western Siberia (northwards the lateral flow of the Ob River) several holes were first bored within the Van-Eganskaya area. Of them, in sections of boreholes 1002 and 2031 the deposits of the Kuznetsovskian Horizon were studied, in which the clearly defined Late Turonian *Pseudoclavulina hastata* Zone was established. In the bottom of the horizon the Lower Turonian *Gaudryinopsis angustus* Zone was established within the section of borehole 2031 (depth interval 936.5-934.9 m). In borehole 1002 (depth interval 942.0-938.5 m) beds with *Hedbergella loetterlei*, with the planktonic foraminifers dominant in the assemblage, correspond to the above stated zone. The sections of these two boreholes are illustrated in figures 1 and 2, where the data are combined on the lithological structure, zones, beds and characteristic species of the assemblages. The analysis of the systematic composition of the Turonian foraminiferal assemblages of Western Siberia, Northern Alaska and Canada entering the Arctic Paleozoogeographic Realm demonstrated their great similarity not only at the generic level, but also at the specific one. Among the compared assemblages, the common species, geographical subspecies and vicariants were distinguished. The *Gaudryina* (*Gaudryinopsis*) *irenensis* Stelck et Wall Species is the vicariant for the West Siberian zonal species *Gaudryinopsis angustus* Podobina. In a number of Canadian provinces, the "Pelagic" zone enclosing the planktonic foraminifers seems to correspond to West Siberian Lower Turonian beds with *Hedbergella loetterlei*. The new factual material on the Turonian foraminifers of the northern district of Western Siberia allowed to compare their systematic composition with that of the coeval species from both the other districts of Western Siberia and more remote regions: Northern Alaska and Canada. Four palaeontological plates illustrate the Turonian characteristic species of the northern district of Western Siberia (boreholes 1002, 2031 of the Van-Eganskaya area).

Key words: foraminiferal zones; Turonian; Western Siberia.

P. 185. *Popov Lev N., Zakharenko Vladimir N., Krakovetskiy Yuriy K., Parnachev Valeriy P., Odintsov Nicolay M.* Tomsk State University (Tomsk, Russia). **GEOLOGICAL AND GEOPHYSICAL FACTORS INFLUENCE ON OIL-AND-GAS PIPELINES SELECTION IN SIBERIA AND FAR EAST.** The choice of oil-and-gas pipelines laying tracks at the design stage envisages the advanced geological and geophysical studies, including the electric survey. Corrosion environment has the greatest influence on the operating conditions and the service life of underground metallic structures; it depends on the electrical properties of the earth surface (soil resistivity) being extremely high at the low electrical resistivity. It is primarily necessary for the selection of oil-and-gas tracks in the poorly studied and unexplored regions of Siberia and the Far East characterized by difficult natural conditions including the presence of permafrost. Currently, the electrical exploration works on the slopes of projected oil-and-gas pipelines are run by methods of the "heavy" geophysics – method of vertical electrical sounding, etc. The complexity of such works causes the weak study of the Siberia and Far East territories. According to the data of the Institute of Geophysics, only 10% of the territory is studied by electrical photographed methods (VES, VES-IP, MT, SD, ICC, PCHZ, WFP, etc.), but at the same time the main area (90%) is "the white spot" geophysically. It is important that according to the geophysical survey map of the USSR, the northern part of Western Siberia, almost all Eastern Siberia and the Far East are located to the north of the southern limit of permafrost. Almost all the routes of planned and existing oil-and-gas pipelines are concentrated in these areas. The authors propose to use the method of radio-electromagnetic sensing (REMS) for the electrical exploration of planned routes of oil-and-gas pipelines. The use of this method increases significantly the efficiency and the reliability, and reduces the time and cost of measurements by several times. The measurement results of the electrical properties of the underlying surface in the range of 10 kHz - 1000 kHz on the territory of Siberia the staff of Tomsk State University received by REMS method can serve as the starting material. According to the results of experimental studies by REMS method, a map of the electrical properties of the underlying surface of Tomsk region was built. This map reflects the corrosion aggressiveness of soils in the oil-and-gas routes. The analysis of the map shows that the pipeline routes in Tomsk region pass through the joints (boundaries) of sites with soils of different corrosion degree. It allows to identify dangerous areas in terms of corrosion, to take additional protective measures and to further adjust the selection of planned routes. REMS method is proposed for the implementation in innovative programs of oil-and-gas companies for mapping the corrosiveness of soils, including the design of the pipeline "Altai" in order to increase the reliability and to reduce oil-and-gas pipeline accidents.

Key words: oil-and-gas pipelines; corrosion; radio-electromagnetic sounding; resistivity of soil; Siberia; Far East.

P. 187. *Sidkina Yevgeniya S., Novikov Dmitriy A., Shvartsev Stepan L.* Tomsk Department of Trofimuk Institute of Petroleum Geology and Geophysics, SB RAS (Tomsk, Russia), Tomsk Polytechnic University (Tomsk, Russia), Trofimuk Institute of Petroleum Geology and Geophysics, SB RAS (Novosibirsk, Russia), Novosibirsk State University (Novosibirsk, Russia), Tomsk Department of Trofimuk Institute of Petroleum Geology and Geophysics, SB RAS (Tomsk, Russia), Tomsk Polytechnic University (Tomsk, Russia). **EQUILIBRIUM OF UNDERGROUND BRINES OF WESTERN PART OF TUNGUSKA ARTESIAN BASIN AND MINERALS OF ENCLOSING ROCKS.** This article describes the results of calculation of equilibria of brines in the western part of the Tunguska artesian basin with the most renowned carbonate, sulfate, chloride and aluminosilicate minerals. The diagrams are made of the degree of saturation of the brines of suprasalt, salt-bearing and subsalt formations with host rock minerals most common in the geological context of the study area. Underground brines in the study area occur ranging from depths of 500 m stratigraphically confined to the deposits of the Riphean, Vendian, Cambrian, Ordovician, Silurian, Permian and Triassic periods. In total 128 samples were examined with salinity brines from 107 to 528 g/dm³. Among them are the most common brines of sodium chloride, sodium, calcium, calcium-sodium, calcium and less common brines of sodium and magnesium by the classification of S.A. Shchukarev. The calculation of the activities of the components of the aqueous solution was carried out using the software package HydroGeo allowing the use of KS Pitzer model designed specifically for highly mineralized waters and brines. Minerals most frequently occurring in the of the section under study (carbonate (calcite, magnesite, dolomite, strontianite, siderite), sulfate (gypsum, celestite), chloride (halite, sylvite) and some aluminosilicates) have been chosen for charting the degree of saturation. Brines are mostly in equilibrium with calcite and dolomite. Undersaturation of carbonate brines is usually connected with low pH values. The balance of brine with gypsum is not often

observed due to the low content of SO_4^{2-} in the samples, which is connected with its reduction to hydrogen sulfide. The saturation of halite brine to the point of equilibrium is observed only in samples with salinity of more than 370 g/dm^3 and high concentrations of sodium and chlorine. The studied brines are in equilibrium with hydroxide (gibbsite), mica (muscovite) and clay (kaolinite, illite, montmorillonite), but not in equilibrium with the primary aluminosilicate minerals. The main factor controlling the degree of saturation of the brines with the primary aluminosilicates is alkaline reserve defined in these conditions by the degree of enrichment of the CO_2 solution and the current state of the carbonate system. The system 'underground brine - the rock' is in equilibrium-non-equilibrium, which determines the continuity of the interaction of rocks with water, sedimentation of some minerals and dissolution of others. Secondary mineral formation controls the concentration of cations in the solution, so the brine continues to dissolve the primary aluminosilicate minerals. It was found that despite the high concentration of dissolved substances, prolonged contact time of brines with rocks, they will never reach equilibrium with the primary aluminosilicates. The main reason for this is secondary mineral formation and neutralization of alkalinity by mineral and organic acids.

Key words: underground brines; equilibrium; interaction; rock; geochemistry.

P. 193. *Teterina Irina I.* Siberian State Industrial University (Novokuznetsk, Russia). **NEW TYPES OF PLIOCENE OSTRACODS OF SOUTH-EASTERN ALTAI.** The Chuyskaya and Kurayskaya depressions are the largest in the system of intermountain depressions of Southeast Altai formed in the Cenozoic in place of the Earlier Paleogene denudation plain. Lacustrine and alluvial deposits of the Neogene Chuysko-Kuraysky paleobasin of significant power (more than 1000m) include variable fresh-water ostracod fauna. Ostracod complexes are extracted from sediments of the Koshagachskaya (the Late Oligocene – the Lower Miocene), Tuerykskaya (the Middle Miocene – the Middle Pliocene), Kyzylgirskaia (the Lower – the Middle Pliocene) and Bekenskaya (the Upper Pliocene) formations. A review and comparison of the systems was made, the dependence of species composition on physical and geographical conditions of the paleobasin is traced. The Early Miocene phase is characterized by the Koshagachsky (Aral) ostracod complex and restores the conditions of a warm, shallow paleobasin. The Middle-Late Miocene phase is characterized by the Tueryksky complex with species typical to a paleobasin of the lake type. The Early and the Middle Pliocene stage of sedimentation is characterized by the Upper Tueryksky (Pavlodar) complex of ostracods (from lacustrine facies) and the Kyzylgirsky complex (from coastal lacustrine facies). The Late Pliocene stage is characterized by the Bekensky complex with species typical for this time of sedimentation. The stratigraphic division of the Pliocene sedimentary formations of this area is complicated by their extreme facial variability. In the ostracod fauna the Pliocene species *Denticulocythere*, *Advenocypris* appeared. The Kyzylgirsky complex has endemic species of ostracods. Endemic species are allocated for *Candona*, *Advenocypris*, *Turkmenella*, *Potamocypris* genera. The Kyzylgirskaia formation sediments are known in the north-western part of the Chuyskaya depression, where they can be traced in some outcrops and described by the fauna of ostracods, and mollusks. In the central part of the Chuyskaya depression the Kyzylgirsky ostracod complex was first allocated in the sediments penetrated by Well 1. The complex shows the previously known species, as well as new *Candona* and *Potamocypris*, which are found in the sediments of the Kyzylgirskaia and Bekenskaya suites of the north-western part of the Chuyskaya depression, thus allowing correlation of these deposits. The biostratigraphic correlation of the sections of the Neogene intermountain depressions of Altai and paleogeographic reconstruction of the main stages of sedimentation can be used in allocation of stratigraphic units. The results of the analysis of species composition of ostracod complexes can be used to correlate the coeval deposits of adjacent areas.

Key words: Altai; Chuyskaya depression; Pliocene; core; ostracods.

P. 196. *Filandysheva Larissa B.* Tomsk State University (Tomsk, Russia). **ANALYSIS OF DYNAMIC VARIANTS OF WINTER SEASON STRUCTURE AND THEIR CLIMATIC CHARACTERISTICS IN SOUTHWEST OF WEST SIBERIAN PLAIN.** In the general problem of research of climatic seasons we allocate an independent and significant aspect of studying their structure in natural, not calendar, borders. The problem can be solved by substantiation of zone structural models of seasonal rhythms, definition of dynamic variants of structure for certain years, their climatic characteristics and modern tendency of development. The average long-term structure of winter in natural zones of the investigated region is three-phased. It includes the following structural units: "moderately frosty phase", (the first phase), "significantly frosty phase" (the second phase) and "threshold of spring" (the third phase). In certain years because of the circulating processes peculiarities we can observe some deviations in the structure of winter seasons from the zone model. By their structure deviations can be divided into the following types: "three-phase" winters, "two-phase" without the first or the third phase, "no-nuclear", with "unstable thermal regime" and "two-nuclear". The data bank on natural climatic seasons of natural zones of the southwest of the West Siberian Plain accumulated during 70 years (1936-2006) allowed us to carry out the spatial-temporal analysis of winter rhythms peculiarities, and develop models of climatic regimes for the established types of season structure, which can vary essentially from type to type. The received data gave a chance to compare the climatic indicators of winter seasons calculated for two periods – 1936-1970 and 1971-2006 – and reveal the tendencies for changes of the given characteristics. The timing data of different types of structure of the winter season of the considered periods differ essentially. Nevertheless, the general feature for them is later dates of the beginning of the season in the second period, and earlier dates of the end of the season and its reduction regardless the type of its structure. The data of the thermal regime also vary in the periods, though to a lesser extent, reflecting the tendency to the decline of winter severity. Our research shows that the climate of the southwest of the West Siberian Plain has been warming since the 1970s. The indicator is the winter season which is shorter and less severe. It is necessary to notice that works on studying the seasonal climate rhythmicity and their structural units in real, not calendar, borders are conducted rather rarely, which may be connected with the labour-intensive character of required calculations. However, they give a chance to make a more objective idea about the major tendencies of development of natural processes and prospects for changes of natural conditions. It is very important not only from the theoretical point of view, but also for various spheres of human life.

Key words: rhythm; season; structure; model; tendency.

BIOLOGY

P. 203. *Hajiyev Sakhib A.* Nakhchivan Section of Institute of Bioresources of NAS of Azerbaijan (Nakhchivan, Azerbaijan Republic). **ECO-GEOGRAPHICAL ESTIMATION OF SOILS CONDITION OF GRAPE LANDS IN NAKHCHIVAN AUTONOMOUS REPUBLIC.** The Nakhchivan Autonomous Republic in Azerbaijan is one of the agro-industrial regions. For the development of

viticulture in the Nakhchivan Autonomous Republic the main objective is determination of suitable fertile soils for increase of grapes production on certain soils. For the successful solution of this task ecological inspections of soils of the Nakhchivan Autonomous Republic for the purpose of specification of the soil areas for grape lands, working out of a complex of measures to increase the fertility of soils have great importance. Working out of modern and perspective ecological estimations and soil models for grape lands is necessary for this purpose. Such direction of research has very big theoretical value. On the basis of our researches the soils of the Nakhchivan AR suitable for cultivation of grape cultures have been comparatively estimated. The purpose of soil estimation consists in developing a uniform system of quantitative characteristics of soil productivity and principles for the substantiation and keeping of the soil cadastre. The task of soil estimation consists in the determination and theoretical justification of natural ties between their properties, on the one hand, and the soil productivity, on the other. Therefore, properties of soils and average perennial efficiency of grape lands have been accepted as a criterion of estimation. To measure the fertility level of various soils estimation scales on the following indicators were made: 1) properties of soils; 2) efficiency of grape lands. The major criteria of soils and fertility models estimation are their properties closely correlated with productivity of agrarian cultures, efficiency of grape lands. Special attention was given to working out correlative relations between productivity of grape cultures and ecological estimation of soil properties. The research was carried out on 56060 hectares of grape-suitable soils of the autonomous republic. The soil estimation of grape lands is the comparative qualitative characteristic of soils correlating with their efficiency. For estimation of grape lands we use "Methodical instructions of soil estimation of grape and tea lands of the Azerbaijan SSR" (Baku, 1979). Field work on soil estimation was carried out on the basis of reliable soil-cartographic materials. In each separate contour open test pits are made to determine soil composition, thickness of horizons, granulometric composition, reaction (pH), depth of carbonates and groundwater occurrence, erosion degree, salinization and alkalinity degree, hydromorphic degree, soil cultivation degree, expressiveness of relief, stoniness, gritty consistence, etc. In places of the basic cuts soil samples for chemical and granulometric analyses are taken. Analyses of soil samples are carried out at the Institute of Soil Science and Agrochemistry of NAS of Azerbaijan and Nakhchivan Design and Exploratory Chemicalization Station. For an ecological scale the basic soil types of grape lands are chosen on the basis of the soil map taking into account the relief of the Nakhchivan Autonomous Republic of Azerbaijan, the scale 1:600000, mapped by Mammadov, Hajiyev in 2011. As a result of the ecological estimation of soil fertility it is possible to avoid additional expenses by grape farms and administrative areas; it is of great importance to economy.

Key words: soil; ecology; saline; erosion; ecological value of soils; soils estimation and anthropogenic influence.

P. 207. *Godin Vladimir N.* Moscow State Pedagogical University (Moscow, Russia). **SEXUAL POLYMORPHISM OF ASTERIDAE IN SIBERIA. PUBLICATIONS REVIEW.** The ecological correlates and the potential driving forces for the evolution of sex differentiation in plants have been debated intensively over the past decades. The traditional view suggests that sexual polymorphism has evolved mainly because it guarantees outbreeding to avoid the drawback of inbreeding depression. The evolution and maintenance of sex differentiation has been associated with several ecological and biological attributes. Among these are: tree and lianoid plants, small, plain, greenish flowers, unspecialized pollinators, wind pollination, fleshy fruits, tropical floras, and island habitats. Correlations between sexual systems and various ecological and morphological traits (growth forms, geographic distribution, vegetative mobility, ecological groups, size of the area of species, and different vegetation types) were examined for 627 native angiosperms (subclass *Asteridae*) in Siberia and compared with different vegetation types. The majority of angiosperms in *Asteridae* are hermaphrodites (57.7%, $N = 362$), followed by gynomonoeious taxa (32.1%, $N = 201$), and then monoecious taxa (4.0%, $N = 25$), gynodioecious taxa (3.7%, $N = 23$) and dioecious taxa (2.4%, $N = 15$). At the family level, 2 out of 3 (66.7%) families in Siberian flora have mixed sex expression types within the family. At the genus level, 59 of the 98 genera (60.2%) in Siberian flora have mixed sex expression systems within the genus. In addition, the majority of genera within the family *Asteraceae* contain only two or more mixed sex expression systems: *Achillea*, *Ajania*, *Ambrosia*, *Antennaria*, *Anthemis*, *Arnica*, *Aster*, *Asterothamnus*, *Boltonia*, *Brachanthemum*, *Brachyactis*, *Carpesium*, *Chrysanthemum*, *Doronicum*, *Erigeron*, etc. Sexual systems in *Asteridae* in Siberia are strongly associated with dwarf subshrub and annual herbaceous taxa. The chi-square test of the correlations between sexual systems and life forms showed that sex differentiation is associated with vegetative mobility. A strong correlation was not found between sex differentiation and ecological groups, between sex differentiation and distribution in different vegetation types. A strong correlation has been demonstrated between the level of sexual polymorphism and the size of the area of species: species with a wide area (circumpolar, Eurasian) usually have sex differentiation.

Key words: sex differentiation; *Asteridae*; Siberia.

P. 212. *Matveev Sergey M., Akulov Victor V.* Voronezh State Academy of Forestry Engineering (Voronezh, Russia), Belgorod State University (Belgorod, Russia). **CONDITION DYNAMICS OF SCOTS PINE (*Pinus Sylvestris* L.) ALONG SUBURBAN HIGHWAYS OF VORONEZH CITY IN 1991–2007.** The method of dendrochronological analysis studied the effect of vehicle emissions on the stands of Scots pine (*Pinus Sylvestris* L.). The objects are the even-aged pure culture in the most common conditions type for the Central forest-steppe (B2). M4 highway (Voronezh – Rostov part) is a major traffic artery of Voronezh region, so the bulk of research was conducted in the pine forests immediately adjacent to it. The study was conducted in three phases: in 1991, 1995 and 2007. The 2007 study also included pine forests along Voronezh – Repnoye road section with a low intensity of traffic. In 1991, the dendrochronological analysis showed that when approaching the highway the amplitude of growth fluctuations increases for the width of annual rings and the width of the recent timber. The average absolute increase in annual ring decreases when approaching the highway for 20 years (from 1972 to 1991). At the same time, in 1982-1991 it occurs with greater intensity. A statistically significant difference between the radial growth along the highway and the control (13 km from the road) is proved with 97% of probability value. The probability value of the differences between the radial growth of trees in 50 m from the highway and the control is 68%. The research of 1991 showed that the effect of air pollution on tree population is distributed locally, at a relatively small distance from the source (<100 m) and is differentiated by the distance from the road. In 1995 a second survey of the object was conducted by a modified method offered by I.Ya. Liepa, et al. (1983) to assess the impact of vehicles on the plantation for five linear areas laid out in narrow strips (5 × 100 m) along the highway at various distances (0, 5, 10, 50, 100 m). Dendrochronological data analysis showed an increase in the amplitude of the radial growth when approaching the highway, deeper and more prolonged depressions of growth in the 5-meter strip along the highway and intensive decrease of growth in the last decade (1986-1995). The analysis of the radial growth of pine conducted in 2007 and its results are compared with the previous studies and show that stands located 100 meters away from the road with a heavy traffic flow (1300 vehicles per hour) are in the zone of influence of emissions. There is a greater area of negative impact.

The comparison of the growth of the stands closest to the highway with the control shows its significant reduction with the probability of error-free forecasts $\beta > 0.999$ (in 1991 – $\beta > 0.68$), indicating a significant growth decrease by 2007. Year 2007 shows long-term (more than 30 years) depressed growth. It was concluded the effect of vehicles with relatively low traffic (180 vehicles per hour) also leads to long-term depression and significant decrease in the radial growth of pine.

Key words: radial growth; vehicle pollution; Scots pine; annual ring width and recent timber.

P. 219. *Rusanov Alexandr M., Missetov Iosif A., Shorina Tatyana S.* Orenburg State University (Orenburg, Russia). **ON DIAGNOSTICS AND ESTIMATION OF CHERNOZEMS POLLUTED BY OIL.** Pollution of the soil cover by oil and oil products is one of the most urgent problems of ecology. It is relevant not only for areas where objects of oil-extracting, petrochemical branches of economy are located. Hydrocarbon raw materials are transported across vast territories far from the places of their production. The consumption of oil products and emissions of their waste in the environment is practically everywhere. At present much attention is paid to the study of processes of natural bioremediation and working out of methods of polluted soils re-cultivation for further agricultural use. The successful solution of the given problem in many respects depends on how well the estimation methods of the degree of soil pollution are developed. For rationing oil pollution it is important to establish the level of oil concentration in soils, above which it cannot cope with pollution itself, i.e. to define the potential of its ability to self-clean. During the field experiment with soils artificially polluted with various concentrations of oil an attempt to estimate the ability of ordinary chernozem to natural bioremediation was undertaken. The samples of soils were selected from the layer of 0-30 cm. They were investigated on the 5, 30, 100, 310 and 365 day after pollution. The admissible level of pollution was the amount of oil exposed to natural mineralization in soil for the time interval of less than a year. It was revealed that of the set of diagnostic features defining the degree of influence of oil on a soil ecosystem, such as humus stock, cations exchange capacity, humus horizon capacity, number of nutritious elements, the most reliable indicator and index of stability of soils to anthropogenic influence is microbiological and fermentation activity of soils, which are labile signs reacting to insignificant concentrations of oil. Heterotrophic microorganisms react to oil by decrease in number. The increase in the number of hydrocarbon oxidising microorganisms is the result of the processes of detoxification in soil. Close correlation dependence between the change in microbiological and fermentation activity of soils is observed. Changes in microorganisms and fermentation activity of ordinary chernozem in combination with classical chemical analyses are expedient to use for detailed diagnostics, monitoring and rationing of the oil polluted chernozems.

Key words: oil polluted chernozems; diagnostics of soils; soil enzymes; detoxification; bioremediation.

P. 225. *Sokolov Denis A., Kulizhskiy Sergey P., Domozhakova Yevgeniya A., Gossen Igor N.* Institute for Soil Science and Agrochemistry, SB RAS (Novosibirsk, Russia), Tomsk State University (Tomsk, Russia), Tyva Institute for Complex Exploration of Natural Resources, SB RAS (Kyzyl, Russia), Institute for Soil Science and Agrochemistry, SB RAS (Novosibirsk, Russia). **SOIL FORMING FEATURES UNDER DIFFERENT ENVIRONMENTAL CONDITIONS IN ANTHROPOGENIC LANDSCAPES OF SOUTH SIBERIA.** The problem of environment pollution is most acute at this moment. It is particularly urgent for Southern Siberia regions, where major industrial and resource centres are concentrated (Kemerovo region, Krasnoyarsk territory, Khakassia and Tyva Republics). Main pollution sources in these regions are anthropogenic landscapes, the area of which is several hundred thousand hectares. Decrease of this influence may be achieved either by self-recovery or by reclamation. In both cases forming of the soil cover on the surface of anthropogenic landscapes takes place. Basic rock transformation in the soil-forming process is arranged and directed at matching the chemical and physical properties of the substratum and the zonal soils. In this connection, a specific feature of immature soils of anthropogenic landscapes is that geo-genic factors play a major role in soil-formation (properties of rock, first of all). At the same time for mature zonal soils environmental conditions are the main factor of soil-formation. Specific features of soil-formation under different climatic conditions is the aim of the research. The research showed that soil formation on coal-mine dumps in different climatic zones varies. Differentiation of immature soil profile into genetic horizons is more expressed in anthropogenic landscapes located in the forest-steppe zone. Soil evolution here is at the initial, organic-accumulative, turf stage and reaches the humus-accumulative stage reflecting the zonal soil-formation peculiarities. With the territorial aridity growth, soil evolution decelerates and reaches the turf stage in steppe conditions and organic-accumulative stage in dry-steppe conditions. In the humid climate of Kuznetskiy Alatau mountain taiga turf and humus-accumulative soils occur, which later can develop into organic-accumulative ones. Zonal soil-formation specifics consist in the formation of soils with thick eluvial horizon. When estimating the features organic matter systems transformation in these soils, it should be stressed that the intensity of initial lithogenic components reorganization increases with the growth of the climate aridity. At the same time the content of mobile organic compounds increases in soil profile. The processes of disintegration of initial rock fragments and, as consequence, fine-dispersed fraction formation are most significant where soil evolution reaches the turf stage. The intensity of redistribution of the formed units decreases with the decrease of precipitation.

Key words: anthropogenic landscapes; restored substances; evolution of soils; initial; organic-accumulative; turf; humus-accumulative soils.

CHEMISTRY

P. 230. *Galanov Sergey I.* Tomsk State University (Tomsk, Russia). **PARTIAL CATALYTIC OXIDATION OF NATURAL GAS IN SYNTHESIS GAS.** The possibility of rational utilization of associated petroleum gas in oil-producing regions is considered with respect to small and medium-sized oil fields. It was shown that advanced technologies could provide additional benefits in terms of significant expansion of the resource base of natural gas due to autonomous use of marginal oil fields as well as the fields with declining production. The advantages of block supports with different structure, namely, cell, plate, tubular, mesh, fabric or foam materials, were considered. Composite metal-oxide block catalysts were prepared using self-propagation high-temperature synthesis. Metal nickel distributed in oxide matrix was used as an active component. Catalytic blocks with diameter of 1.0 cm and height of 1.5 cm were tested in the process of partial oxidation of natural gas. The natural gas/air ratio in the reaction mixture was 1 : 2.5 – 02.8 vol. The contact time was 0.025 – 0.1 s during the process of partial oxidation of natural gas over Ni-containing catalysts. According to experimental results on catalytic activity, the methane conversion and the catalyst productivity towards synthesis-gas were in dependence on the chemical and phase composition of the catalysts prepared. The prepared catalysts were more productive in comparison with the systems having platinum group metals as an active component. The prepared catalytic blocks are characterized by low hydraulic resistance, stability towards formation of carbon deposits, thermal shocks and large temperature gradients in the axial direction of the catalytic bed.

According to the results obtained for catalyst samples before and after the catalytic experiment in conditions of natural gas conversion process it was shown that under the action of high-temperature reaction mixture the metal nickel in the block catalyst structure is dispersed for the second time, which leads to increase of the catalytic system activity during the process of natural gas conversion. It was established that each phase in the structure of the most effective multiphase catalyst (oxide or metal) provided realization of a special process. Combination of special processes led to the achievement of high productivity of catalyst. $MgAl_2O_4$ and MgO phases were able to dissolve nickel and transfer Ni particles along the surface of the catalytic block. These processes led to the formation of the highly dispersed Ni particles. ZrO_2 phase played the role of the structural promoter resisting to the aggregation of Ni nano-particles. The presence of tear-shaped Ni nano-particles increased the thermal conductivity and thermal stability of the catalytic blocks. It was shown that the use of effective catalysts for partial oxidation of natural gas can significantly increase the performance of reactors as well as result in lower capital and operating costs to produce synthesis gas in comparison with the processes currently used by the industry.

Key words: self-extending high-temperature synthesis; partial catalytic oxidation; block catalyst.

P. 234. *Kungurova Olga A., Dorofeeva Nataliya V., Sidorova Olga I., Vodyankina Olga V.* Tomsk State University (Tomsk, Russia).

INFLUENCE OF ZR AND P ADDITIVES ON ACTIVE SURFACE FORMATION OF CO/Al_2O_3 CATALYSTS FOR FISCHER-TROPSCH PROCESS.

In this article the influence of promotion of cobalt-based aluminum systems with zirconium and phosphorus compounds on catalytic properties in Fischer-Tropsch synthesis (FTS) has been studied. Aluminum oxide and zirconium phosphate, $Zr_3(PO_4)_3$ (ZrP), prepared using sol-gel method were chosen as supports for cobalt catalysts. Modification of $\gamma-Al_2O_3$ support consisted in a stepwise impregnation of phosphoric acid aqueous solutions (phosphorus content varied in the range of 1-3 wt.%) and zirconium oxinitrate (zirconium content for all samples was 6 wt.%). Then the deposition of active component (Co) was carried out over modified Al_2O_3 ($Co-P_{(x)}ZrAl$ ($x = 1, 2, 3$ wt.%), unmodified Al_2O_3 (Co-Al) and ZrP matrix (Co-ZrP) using precipitation method. The prepared samples were annealed in air at 400°C. The obtained catalysts were analyzed using a complex of physical and chemical methods, including elemental analysis, BET, XRD, FTIR, TPR techniques. The FTS experiments were conducted in a fixed-bed reactor. According to the BET method the surface area of calcined catalysts $Co-P_{(x)}ZrAl$ ($x = 1, 2$ wt.%) and Co-Al varied in the range between 120 and 145 m^2/g . The average pore diameter was 9-14 nm. The introduction of wt.3 % of phosphorus to the Al_2O_3 support resulted in a significant increase in the pore diameter of the catalyst and a simultaneous decrease of the surface area. According to the XRD data of the catalyst surface, Co_3O_4 phase is formed with the structure of the spinel; at the same time according to the XRD and IR spectroscopy data the formation of the cobalt aluminate, $CoAl_2O_4$, can be assumed. The temperature of reduction of the cobalt oxide to metallic cobalt for $Co-P_{(x)}ZrAl$ ($x = 1, 2$ wt.%) and Co-Al catalysts is smaller than the one for Co-ZrP. However, the share of the reduced metal is bigger. With the increase in the amount of the phosphoric modifier on the support surface the binding energy of the active component with the substrate increases, leading to the increase of the reduction temperature of the active component particles. Co-based catalysts with the same cobalt content display different catalytic activity depending on the supports used. The Co-ZrP and $Co-P_{(3)}ZrAl$ samples show low catalytic activity (CO conversion is 7 %) at 200°C, the main product is methane. Probably, this is caused by the binding of cobalt particles to the structure of cobalt phosphate, which reduces to metal state with difficulty. CO conversion up to 50 % is observed with irregular product distribution by the number of carbon atoms for $Co-P_{(x)}ZrAl$ ($x = 1, 2$ wt.%) samples as compared with the ones corresponding to classical distribution for catalysts based on the diatomite structure. The main liquid products are C_5-C_9 hydrocarbons.

Key words: cobalt-containing catalyst; interaction of metal-support; modification; Fischer-Tropsch synthesis.