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ADSORPTION – TRANSPORT FUNCTION OF ERYTHROCYTES: IMPORTANT FACTS ABOUT NEW DIAGNOSTIC CAPABILITY

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In etiology and pathogenesis of diabetes, atherosclerosis, metabolic syndrome and many other diseases the main role pertains to metabolic disorder. But apparent changes in plasmas concentration of protein, lipids, glucose and other substances are not detected in the first stage of these diseases. This fact may be explained by earlier unknown phenomenon, called adsorption- transport function of erythrocytes (ATFE).. This function take part in quick and selective transfer of substances from blood into tissues. ATFE participate in removal of metabolites, denaturated proteins, atherogenic lipids and some other substances with heightened chemical activity from blood plasma. ATFE take part in return of protein from interstitium, increasing antiedematous potential of blood. Transport of many substances on erythrocytes surface is a changeable and adjustable process. But it allows to determination of initial changes in a metabolism of some substances.

Keywords: erythrocytes, function, transcapillary exchange, metabolism, disease diagnosis

Substantiation of existence of adsorption-transport function of erythrocytes

Fact of substances adsorption on erythrocytes surface was known in the beginning of thirties of last century [1]. 30-40 years later this phenomenon again became an object for research. In was concluded that protein adsorption on erythrocytes surface affects on deformability of red blood cells and rheology of whole blood [2]. Substances adsorbed on erythrocytes surface were considered as a reserve for their emergency supply to plasma [3].

In the studies of transcapillary exchange of protein during many decades a very important point was the «main law of lymphology». The law stated, that plasmas proteins came from blood to interstitial area are coming back to blood flow only trough lymphatic vessel. Indeed lymphostasis edemas exist, induced by block of lymph flow.. The law was also based on fact that arterio-venous difference in content of plasmas protein always means its

outlet from blood to tissues. During more precise study of this exit we found out that arterio-venous difference that determines protein content in plasma do not give possibility to calculate transcapillary balance of protein exactly, because of significant or fluctuating difference in adsorption of protein on arterial and venous erythrocyte surface. It was found that considering all (adsorbed, endoglobular, plasmas) protein, its transcapillary balance approaches to index of protein lymphatic transport to lymph [4].

Next stage in studies of substances adsorption and transport on erythrocytes surface (from 1991 year) caused by the discovery, that quantity of adsorbed glucose on erythrocytes surface increases many times in cosmonauts' body at the landing day [5].

Our experiments on animals showed that substances transfer on erythrocytes is a changeable and adjustable process. It was found that quantity and value of glucose and lipids substantially exceed the protein (between substances adsorbed

on erythrocytes protein dominates by weight). It was found that more often the quantity of some substances (bilirubin, gamma-glutamyl transpeptidase) is higher on erythrocytes surface than in plasma. Adsorption of substances on erythrocytes depends from acid-base balance of blood. Adsorption strengthens because of activity of physicochemical connections of hemoglobin (qualitative and quantitative potentialities of hemoglobin) inside the red blood cells. It is considered that on erythrocytes surface there are areas with predominant adrenalin and immunoglobulin adsorption. That's why it should be taken in consideration existence of adsorption ability of these erythrocytes. Existing and received by us data were generalized in corresponding concept [6, 7].

SOME Important facts about adsorption-transport function of erythrocytes

Results of many-sided studies during 1989-2009 years allow to make a conclusion, that regulated adsorption-desorption of substances on erythrocytes surface is a major part in the below described processes (A, B, C, D, E).

A) Guaranteeing of quick and selective transfer of substances into tissues. Erythrocytes easily flow through tighter, than erythrocytes diameter, arterial part of capillaries. Erythrocytes deformation and rotation promote this process. A new hypothesis has been arisen that during passage of each erythrocyte via blood capillaries to exist exchange and mix substances of paraendotelial exchange layer on molecules adsorbed on erythrocytes.

After that these substances firstly participate in transcapillary exchange. Some of these substances enter into interstitial space and in lymph [4].

Proportion of adsorbed substances differs from corresponded indexes of plasma. This is many differences of interstitial fluid and lymph from plasma are formulated. Selectiveness of many endogen and exogenous substances (including pharmaceuticals) inflow into tissues also stipulated (depend on different abilities of these substances to be adsorbed on erythrocytes surface) by different abilities of these substances to be adsorbed on erythrocytes surface. Percentage of strongly-adsorbed substances as increases as coming closer to erythrocytes membrane. Hormones and other active substances are also relatively quickly enter into corresponded tissues and organs.

Albumin-globulin index of proteins adsorbed on erythrocytes surface is higher than in plasma.. It is known that albumin attaches to itself many other substances. Correspondingly attached to adsorbed albumin substances are included to a number of substances transported on erythrocytes surface.

B) Participation in removal of metabolites, denatured proteins, atherogenic lipids and other substances with heightened chemical activity from blood plasma. Erythrocytes are natural sorbents of substances with high chemical activity. They participates in metabolites deletion from blood plasma as well as denatured proteins, atherogenic lipids and other substances with high chemical activity. At the same time during denaturation process proteins' adsorbing ability increases. Absorbability of atherogenic lipids is higher in comparison with non-atherogenic lipids. Proteins and lipids with increased absorbability partially displace (replace) glucose from erythrocytes' surface. Owing to those peculiarities many «dedicated to deletion» substances firstly enter to liver and other structures of reticulo-endothelial

system. At interstice of other tissues such substances often compose aggregates that due to size come back to blood flow with lymph only [4].

Aggregated and glycated substances appreciably lose their activity and toxicity. During lymph motion many toxic substances transform, at the same time aggregates come to a standstill in lymph nodes.

Glucose has a relatively high absorbability on erythrocytes surface. In special conditions glucose partially displaces native proteins and most lipids from erythrocytes surface. That is why number of glucose transported on erythrocytes under hormones effect can increase or decrease in some times.

C) Mechanism of protein return from intersticium – additional anti-edematous factor. Red corpuscle participates in creation of new anti-edematous (contradictory) factor. Part of adsorbed glucose always goes to tissues. On the place of departed glucose mostly proteins are adsorbed on erythrocytes surface. Correspondingly protein concentration in parietal layer of venous part of capillaries decreases. The gradient of protein concentration is change. Correspondingly increase protein return from interstitium (tissue) to blood.

This mechanism was strengthened by known erythrocytes volume increase (as well as adsorption area) during their saturation by carbon dioxide [8]. This process is a part of morpho-functional anti-edematous potential of blood. Concept of protein return from interstice to blood through blood capillary walls doesn't contradict to known data about frequent formation of edemas during diabetes, hypoproteinemia, anemia, and other pathologies, when level of protein adsorption on erythrocytes surface decreases. At

the same time adsorption area decreases in lungs during erythrocytes saturation by oxygen. Abilities of lymphatic system in water and protein transportation from lungs are limited. That is why when energy metabolism and correspondingly glucose utilization in lungs decreased a possibility of acute edema of lungs increases.

D) Maintenance of substances content in plasma within «normal» range. Plasmas and adsorbed on erythrocytes pool of substances are closely connected to each other. Not only in control groups, but in people with diseases. In human and animal during experiments with different influences a positive correlation between substances in plasma and substances on erythrocytes surface usually reveals. At blood dilution and concretion proportion of substances content in these two pools changes slowly. For example, at blood dilution by physiological solution in vivo protein concentration in plasma change as well due to «ejection» of a part of a protein from erythrocytes surface to plasma. In vitro «ejection» is less expressed. Buffer-stabilizing effect of adsorption-desorption substances on erythrocytes surface is a primary and simple «part» of complicated system of keeping constant concentration of some substances in blood plasma.

E) Establishment of conditions for biochemical processes on erythrocyte surface. Concentration of some substances in adsorbed layer on erythrocytes surface may be ten times higher than in plasma. Among adsorbed substances enzymes are found, including proteases and lipases. In patients with chronic diseases of liver a multiple increase of number of enzymes and proteolytic activity of substances adsorbed on erythrocytes surface is often found. It allows supposing that in

some cases a condition for biochemical processes are created.

Determination of initial Changes in a metabolism of some substances

Characteristics of adsorption-transport function of erythrocytes allow to reveal initial infringements of a metabolism. There many more aspects, including peculiarities of «lavage» getting from erythrocytes surface. Known methodology of erythrocytes «washing» removes into washing away (eluate) only 35-55 % of substances adsorbed on erythrocytes surface. Our methodology allows removing into eluate 85-95 % substances adsorbed on erythrocytes surface. Correspondingly data received by us differ not only quantitatively but also they are often completely different from conclusions given by other authors [2]. Full «washing» often conducts to erythrolisis.

Interpretation of data about transport of substances on erythrocytes surface is not simple. At interpretation of data received during experimental and clinic studies, not only direct indexes were important but also secondary indexes of this function [9]. The parameter total (in plasma and on erythrocytes surface) transport of substance in blood is important. The parameter of a parity of transport of substances on erythrocytes surface and in plasma is important. It is important to reveal a degree of insufficiency of adsorption- transport function of erythrocytes. We have unexpectedly received low parameters of transport on erythrocytes surface aspartate aminotransferase and alanine aminotransferase at patients with coronary heart disease. Probably it has been connected with insufficiency of adsorption- transport function of erythrocytes.

Let's consider some diagnostic aspects of adsorption- transport function of erythrocytes in connection to diabetes and atherosclerosis.

Detection of first stage diabetes of type 2

In our experiments on narcotized animals under insulin effect a quantity of glucose decreased firstly among substances, adsorbed on erythrocytes, then in plasma, lastly its content decreased in lymph. Adrenalin simultaneously increases content of adsorbed and plasmas glucose [5]. Owing to this entrance of glucose to tissue sharply increases.

According to our data, normally, after food intake, glucose content increases owing to substances adsorbed on erythrocytes. Part of erythrocyte adsorbed glucose always enters to tissues, including regulatory structures. It starts insulin mechanism of carbohydrate metabolism regulation. Chronic stresses, frequent caloric food intake, disbolism are accompanied with continuous transport of glucose on erythrocytes surface. It leads to heightened glucose entrance inside erythrocytes. But increase (higher than norm) of glucose content inside of erythrocytes leads to its joining with hemoglobin. As far as percentage of glycat-ed hemoglobin increases, ability of erythrocytes to adsorb on its surface proteins, lipids, carbohydrate and other substances decreases. Relative decrease of glucose transport on erythrocytes, in my opinion, disturbs adequate regulation of carbohydrate metabolism. This, probably, is an additional reason for development of «tolerance» to insulin. Gradually the bigger part of glucose enters plasma – symptoms of diabetes of type 2 show up.

The above written can prove presence of early (latent) stage of diabetes,

which is characterized by continuous transfer of increased volume of glucose on erythrocytes surface [11].

To a question of diagnostics of an atherosclerosis

In norm on erythrocytes surface mostly atherogenic lipids transported. Lipids often take first place by number of molecules between organic substances adsorbed on erythrocytes. After food intake at moderate change in metabolism, change of lipids transport in blood happens because of molecules adsorbed on erythrocytes. These lipids enter into wall layer of blood capillaries, which are not subject to atherosclerotic changes. In interstitial space in liver when lymph is moving atherogenic lipids are collapsed, deleted or transformed to less pathogenic formations. At deficiency of the above written links including deficiency of adsorption-transport function of erythrocytes, a content of atherogenic lipids in plasma increases, which increases risk of atherosclerosis appearance. It is known that number of atherogenic lipids in plasma (and accordingly risk of atherosclerosis development) increases at diabetes, liver diseases, kidney diseases, podagra, obesity, arterial hypertension, chronic poisoning, and chronic exposure processes. These facts can be explained by adsorption-transport function of erythrocytes. During increase of adsorption of glucose and protein on erythrocytes with heightened chemical activity leads to partial «discharge» atherogenic lipids to plasma.

Adsorption-transport function of erythrocytes also decreases when hemoglobin joins with other substances, particularly at increased accumulation in erythrocytes of lipid peroxidation production.

Studies of adsorption-transport function of erythrocytes at clinic just be-

gan [11, 12 and other]. Predominance of adsorption of one substance can damage adsorption and metabolism of other substances, making preconditions for pathologies, that can't be defined by blood plasma analysis at their initial stage. These are so called latent (initial, beginner) pathology [11]. It is important to know, what metabolic imbalance occurs at this initial stage.

An initial stage inflammatory diseases (with temperature), increase of transport of glucose on erythrocytes surface is marked. The increase in activity sympathetic-adrenal systems also is accompanied increase in transport of glucose on erythrocytes. But at many other things diseases and conditions transport of substances on erythrocytes surface was not studied. Wide and repeated researches are necessary. Unification of a method is necessary.

As far as new data will be accumulated, theoretical and practical understanding of adsorption-transport function of erythrocytes will be increased and specified. Clinical and diagnostic relevance also will be increased.

Studies of pharmaceutical substances' influence on this function are just beginning. It is possible to accelerate our researches at cooperation. Financing is necessary. With offers on scientific and other cooperation to address by e-mail (tatrauf@mail.ru <mailto: tatrauf@mail.ru >a theme of the letter – a science).

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DETERMINATION OF HYPOPHYSIS VOLUME BY SAGITTAL SLICES DATA OBTAINED BY LOW FIELD MAGNETIC RESONANCE TOMOGRAPHY

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Introduction

One of the methods of detection hypophysis volume that is used in roentgen and magnetic resonance tomography is based on measurement of three param-

eters: length of hypophysis, or its anteroposterior size, its width (lateral size) and height – craniocaudal size. It's known in medical practice as Di Chiro-Nelson method [1–4], that can be expressed with the next formula:

$$V = \frac{1}{2} H \cdot W \cdot L,$$

where V – the volume of hypophysis (mm^3); H – the height of hypophysis or craniocaudal size (mm); W – width or lateral size (mm); L – the length of hypophysis or anteroposterior size (mm).

This method of detection hypophysis volume is used successfully by clinicians and specialists in radiodiagnostics up to present day in spite of its antiquity [1].

Rough estimate of hypophysis volume is the principal disadvantage of this method, since it is presumed initially that hypophysis shape is similar to this of haricot or looks like cylinder with roundish edges.

But as practice shows, the size, shape and location of sella Turcica and hypophysis may vary significantly. Anatomical and age-specific features of sella Turcica texture, physiological and pathological processes cause additional complications in estimation of hypophysis structure [5–7]. Due to this fact the volume of hypophysis may change and physiological error appears in calculations that can make up from 30 to 50 % according to formula Di Chiro-Nelson. Especially frequently

this estimation error emerges in cases of wide or narrow sella Turcica and modified shapes of hypophysis (see scheme 1). This error appears in the presence of slanting hypophysis position, when one or both of its edges are raised, or in cases of hypophysis adenoma with differently directed scalloped growth. The hypophysis volume calculated from this formula will be strongly determined by sites of measurement of height, width and length in such situations.

Reasoning from stated facts, the present work was undertaken to improve the precision of hypophysis volume calculation according to sagittal section parameters obtained by low field magnetic resonance tomography.

The posed problem could be decided by technical solution that is based on sagittal slices square, distantional factor and number of slices trough the hypophysis.

Methods

The research was performed on the lowfield magnetic resonance imaging to-

mograph «Magnetom–Open» (Siemens) with magnetic field intensity 0,2 Tl with the use of standard T1 weighted images.

The authors method is based on receiving hypophysis image in sagittal sections according to T1 with parameters TR (time repetition) = 340, TE (Time echo) = 26, number of slices (No. Slices) = 7, Slices Thickness = 3 mm; Field-of view – 230, matrix – 192×256, No. Acquisition = 6.

After getting image, estimation of square of each sagittal section through the hypophysis is performed according to standard protocol. Special program can be used for this purpose, for example – region of interest (ROI), which is integrated in the most of tomographs and serve for calculation of ischemic or focal damage square. Slices squares are outlined with the help of program region of interest.

Each slice passing through the hypophysis in sagittal section carry estab-

lished by operator information about itself, and there are two the most important physical parameters essential for hypophysis volume calculation in this case. The first is slices thickness and the second is distantional factor that reflect distance between slices. Both these parameters (slice thickness and distantional factor) can be established and changed by researcher. In this case slices a 3 mm thick are enough to receive detailed hypophysis characteristic when using standard protocol destined for hypophysis structure and size estimation. Distance between slices will show 0,3 mm in the presence of slice a 3 mm thick and distantional factor equal 0,1.

Hypophysis volume can be expressed by formula based on layer thickness, i.e. number of slices through hypophysis, their square and distantional factor that reflects the distance between slices. Thus our formula is based on the sum of slices volumes:

$$V_H = S_1(h_1 + d) + S_2(h_2 + d) + S_3(h_3 + d) + \dots + S_n(h_n + d), \quad (1)$$

where V_H – hypophysis volume; $S_1(h_1 + d)$ – the first sagittal layer volume (V_1); $S_2(h_2 + d)$ – the second sagittal layer volume (V_2); $S_3(h_3 + d)$ – the third sagittal layer volume (V_3), etc.

$h + d$ – sagittal layer thickness composed of slice thickness (in our case it is equal 3 mm) and distantional factor (it is

equal 0,3 mm for the present thickness). It is equal 3,3 mm in our research.

While multiplying together section thickness and its square we receive the volume of one section, and while summarizing volumes of individual sections through hypophysis we receive hypophysis volume, i.e.

$$V_H = V_1 + V_2 + V_3 + \dots + V_n \quad (2)$$

where V_H – hypophysis volume; $V_1 + V_2 + V_3 + \dots + V_n$ – volumes of individual sections taking into account correction of distantional factor.

Formula for hypophysis volume estimation could be received after the conversion: $V_H = (h + d) \cdot \sum_{i=1}^n S_i$.

In our case:

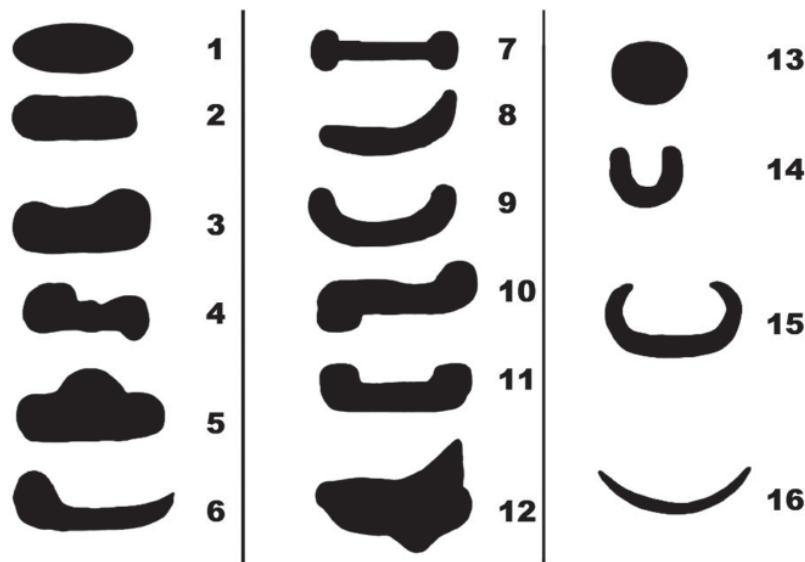
$$V_H = 3,3 \cdot \sum_{i=1}^n S_i, \quad (3)$$

where V_H – volume of any hypophysis;
 $3,3$ – coefficient of established section in
 slices $(h + d)$; $\sum_{i=1}^n S_i$ – the sum of all section
 squares through hypophysis.

Sagittal section is received here due
 to the use of the program region of interest
 and outline of interesting material manu-
 ally. Programs of outline of regions of
 interest are attached usually to each com-
 puter tomograph and are used for other
 purposes.

Thus it is necessary to set param-
 eters of slice thickness (3 mm), distan-
 tional factor (0,1) for determining precise
 hypophysis volume, to lay plane of slices
 (package of slices) on the present scout
 trough the frontal plane. After receiving
 each slice square we can calculate the vol-
 ume of hypophysis taking into account
 distantional factor and slice thickness.

Frequently occurring hypophysis
 shapes in frontal plane are present on the
 scheme 1.



Scheme 1. The most frequently occurring hypophysis shapes. The notations:
 1, 2 – frequently occurring hypophysis normal shapes; 3, 4, 5 – pubertal hypophysis
 shapes; 6, 7, 8, 9, 10, 11 – the hypophysis in wide sella Turcica; 12 – the hypophysis
 with scalloped edges; 13, 14 – rounded hypophysis and hypophysis in narrow sella Tur-
 cica; 15, 16 – hypophysis shapes in empty sella Turcica

Calculations according to Di Chi-
 ro-Nelson formula can give a mistake,
 which can average from 30 to 50 % in
 these cases. The diversity of hypophy-
 sis shapes are usually determined by
 sella Turcica shape, which depends on
 forming and development of cranial
 bones.

Different hypophysis shapes are
 present further

The order of operations, which are
 necessary to receive hypophysis volume, is:

1. Sagittal slices with previously
 characterized parameters of T1 weighted
 image protocol are laid on the present
 scout in the frontal plane. The stacking
 order of slices for receiving images in the
 sagittal plane is shown on fig. 1. Accord-
 ing to protocol seven slices are laid on the
 frontal plane.

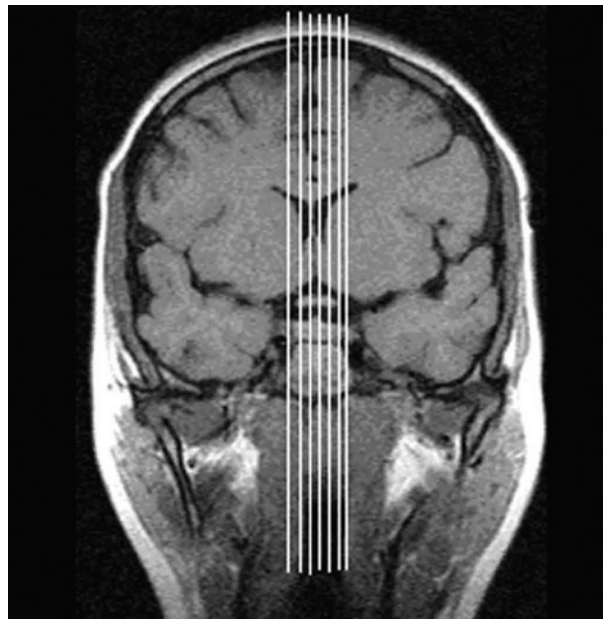


Fig. 1. Superposition of the slice plane on the scout through the frontal plane

2. Visible hypophysis region is outline on the received sagittal sections, using region of interest program.

3. Hypophysis volume can be received after inserting squares values in the formula (3).

Results and Discussions

Using this method pituitary gland volume was estimated in two groups of patients – with roundish shaped hypophysis ($n = 15$, women 20-30 years old), and empty sella Turcica and flat shaped hypophysis ($n = 18$, women 40-60 years old). In both groups the volume has been calculated according to Di Chiro-Nelson formula and formula suggested by authors'. The volume of pituitary gland that was estimated according to Di Chiro-Nelson formula in the group of patients with roundish shaped hypophysis was $305,8 \pm 86 \text{ mm}^3$, the volume in the group of patients with flat hypophysis shape was $233 \pm 81 \text{ mm}^3$, and were respectively equal $562 \pm 107 \text{ mm}^3$ and $433 \pm 106 \text{ mm}^3$ according to authors' formula (Table 1).

Received results can be visually presented by bar graphs and range diagram (Diagram 1).

Data analysis was carried out with the help of program package Statistica 6.0. Comparison of these samples was performed with the help of nonparametric Wilcoxon test. The usage of parametric tests is uncertain in this case because amount of sampling doesn't permit to suggest normal distribution of received variates with the high significance.

Accurate estimate for comparison of two groups of variables is given by Wilcoxon matched pair test. After its application to each group the hypothesis of significant difference of variates was confirmed, significance level has being very high and equal $\alpha > 99,9 \%$ or $p < 0,001$ in both groups. Consequently these two methods of measurement hypophysis volume differ significantly.

Box & Whisker Plot or range diagram was constructed for visualization (Diagram 1, Diagram 2). The volume (mm^3) is marked on axis of ordinates.

Table 1

The results of hypophysis volume calculations in two groups

No. Patient	Hypophysis Volume in the First Group, (Roundish Shape), mm ³		Hypophysis Volume in the Second Group, (Wide and Flat Shape), mm ³	
	Di-Chiro-Nelson Formula	Authors' Formula	Di-Chiro-Nelson Formula	Authors' Formula
1.	280,0	577,5	204,1	280,0
2.	351,0	561,0	223,7	442,4
3.	528,0	749,1	132,4	277,2
4.	325,0	465,3	94,2	303,6
5.	200,0	399,3	259,1	470,4
6.	396,0	666,6	146,8	376,2
7.	240,0	584,1	201,0	564,3
8.	280,0	739,2	266,9	396,0
9.	247,5	590,7	373,7	543,2
10.	300,0	498,3	334,9	297,0
11.	390,0	557,7	310,9	470,4
12.	216,0	597,3	376,8	514,8
13.	280,0	455,4	326,6	666,4
14.	330,0	627,0	238,6	459,2
15.	224,0	369,6	133,5	436,8
16.			217,7	515,2
17.			149,2	409,2
18.			219,8	375,2
Mean ± standard deviate	306±86	562±107	233±81	433±106

Standard deviate (SD), mean and standard error (SE) are presented on diagrams in both groups.

Hypophysis volume received by authors' formula 45 % higher then received by Di Chiro – Nelson formula.

Conclusion

Due to the described information hypophysis volume estimation according to sagittal sections allows to receive more veritable parameters of hypophysis size, detection of volumes of hypophysis with

complicated shape and in cases of complicated sella Turcica that usually cause error are described as the most accurate. At the same time Di Chiro – Nelson formula allows to detect volume correctly only in case of cylindrical hypophysis shape. Its usage in the presence of atypical sella Turcica configuration and other peculiarities described above is difficult and may lead to approximate volume detection. Our research had permitted to determine new hypophysis volume values, in the group of roundish hypophysis shape the volume

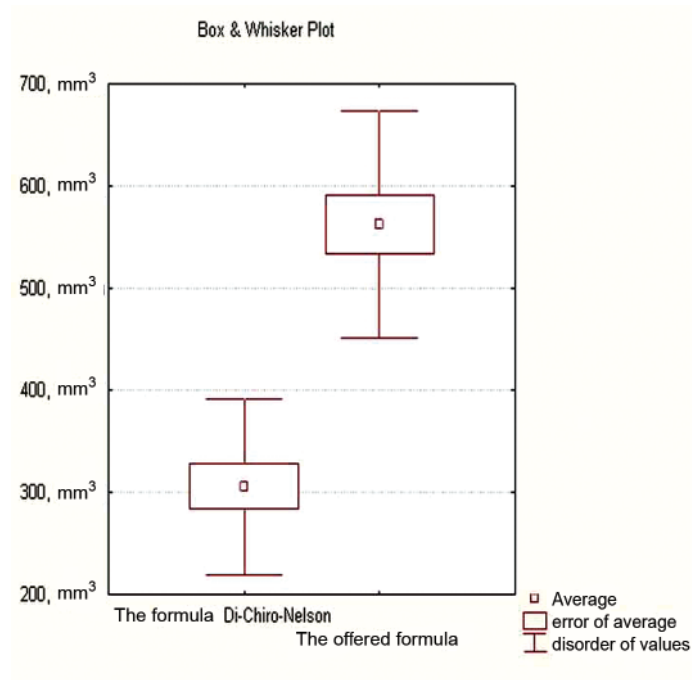


Diagram 1. Correlation of ranges of values, means and standard errors in the group of patients with roundish hypophysis shape according to Di Chiro – Nelson formula (on the left) and according to the authors formula (on the right)

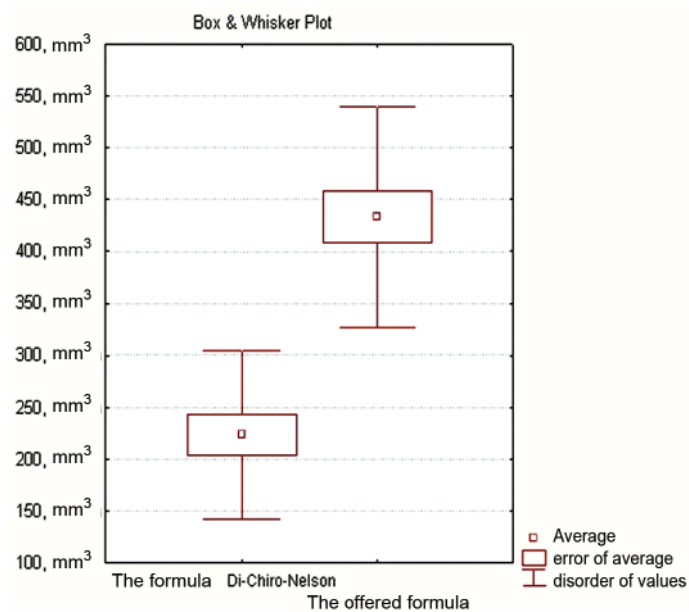


Diagram 2. Correlation of ranges of values, means and standard errors in the group of patients with flat hypophysis shape and empty sella Turcica syndrome according to Di Chiro – Nelson formula (on the left) and according to the authors formula (on the right)

of pituitary gland was $562 \pm 107 \text{ mm}^3$, in the group of flat shape (empty sella Turcica syndrome) it was $433 \pm 106 \text{ mm}^3$ in particular.

The authors' method doesn't minimize the importance of hypophysis volume estimation according to Di Chiro – Nelson formula yet, which is the most simple in calculations. But in our opinion it is appropriate to introduce correction factor in this formula, while calculation of volume of hypophysis with complicated shape, correction factor is equal 1,33 according to our data. Then it is necessary to add extra 1/3 of obtained volume to the hypophysis volume estimated by Di Chiro – Nelson formula. Received values will reflect desired hypophysis volume to a greater extent in the view of complicated sella Turcica configuration.

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EVALUATION OF GENERAL PRACTITIONERS' ACTIVITY IN RURAL HEALTHCARE CENTRES OF UZBEKISTAN

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Development of primary health care is one of the priorities of Reform Program in the Republic of Uzbekistan. Over the past 10 years created rural medical centres in all regions of the Republic and introduced new key specialty – General Practitioner (GP). Our study consideration is being given to the improvement of (i) medical centres activity, (ii) quality of the diagnosis, treatment and prevention of hypertension patients. Information was collected by special questionnaire, testing the physicians' knowledge and skills by direct observation and checking the medical records of hypertensive patients.

We found that not all of physicians carried out a full examination of patients with hypertension, 42 % of them considered detection of proteinuria, 41 % – of blood sugar and not all GPs to examine the fundus.

The analysis of patient medical records showed, that in 92 % of them checked ABP during last months, 61 % – a diagnosis was recorded correctly with of the degree and risk. Follow up observation of patients took place every 3-6 months in 61 % of them. Thus, in the questionnaires physicians correctly answered most of the questions related to management of hypertension. However, in consultations they insufficiently informed patients about their disease, treatment or the side effects of medicines. The analysis of patient medical records shows that even being aware of clinical guidelines recommendations, physicians do not record their consultations adequately or fully.

Keywords: general practitioners, hypertension, medical records, arterial blood pressure

Development of primary health care and improvement of primary health care facilities structure is one of the priorities of the State Healthcare Reform Program in the Republic of Uzbekistan. Over the past 10 years rural medical centres (known by the acronym SVP) were established throughout all regions of the Republic.

The new key specialty, General Practitioner (GP), was introduced to render general health care at the primary care level. Further intensification of health reforms, radical improvements to healthcare structures and the quality of medical care are currently in progress. Special consideration is being given to the improvement of (i) SVP activity, (ii) quality of the diagnosis and treatment of disease, and disease prevention policy.

Hypertension is the most commonly encountered condition that requires constant medical supervision by the GP in the

course of the disease. Hypertension currently can be regarded as a pandemic causing social and economical losses to society [1]. The worldwide prevalence of hypertension is sufficiently high and comes to 18-20 %; this figure increases with age and reaches 62 % in those aged 60 years and older. [2]. A number of researches relevant to the diagnoses and treatment of this state were conducted. However, doctors still find it difficult to prevent the development of various complications resulting in treatment failures [3]. Primary health care physicians in Uzbekistan often pay more attention to patients who present to polyclinics, while the main risk group for complications includes patients who have high levels of blood pressure but are not aware of it or not undergoing regular treatment for hypertension [4, 5, 6]. Early diagnosis of hypertension, the reduction of the effect of risk factors and supervised treatment of

high blood pressure are the main tasks of outpatient health care providers.

This survey was aimed at evaluating general practitioners activity regarding their approach to the management of hypertensive patients, including their knowledge, skills, scope and quality of rendered services.

Materials and methods

With a view to study general practitioners activity 90 physicians of regional SVPs were selected. Information was collected by the teachers of the postgraduate training centers for GP professional development. SVP physicians were interviewed according to a special questionnaire that covered such data as: work experience, type of retraining within the program of training for general medical practice, participation in short-term cycles of continuous professional education. Aspects of physician activity such as work load, problems in supervising hypertensive patients; prescription of medical examination, non-drug treatment and drug therapy were evaluated. In addition to the questionnaire, the physicians knowledge and skills was assessed by testing and their skills were evaluated by direct observation of their consultation of patients with "hypertension" diagnosis in a mock clinical situation; medical records on hypertensive patients made by each particular physician were studied as well.

Outcomes and discussion

1. Analysis of questionnaire findings

Based on the questionnaire findings the total medical experience of GPs was more than 4 years, out of these 48 % of physicians worked in SVP over 4 years, 40 % of physicians for 2-3 years. Because young doctors and graduates of medical universities are unwilling to work in rural SVPs, there were only 12 % of them. 58 % of SVP physicians, having only basic medical education as therapists or

pediatricians, were retrained under a national 10 months program for general practitioners. 34 % of physicians underwent a 3-month retraining as GPs, 18 % of physicians were not GP trained. 75 % of the SVP physicians had participated in the specialized short-term cycles within the framework of the continuous medical education system

71 % of GP were certified for a category (level of physicians' knowledge and skills like GP) in 2004–2007: 17 % of GPs were of higher category, 50 % of first and 33 % of second category. The analysis of SVP physicians' workload showed that on average one GP receives 20-25 patients daily. Most of the GPs asserted that the number of patient visits had been considerably increasing over recent years which entailed considerable increased load on SVP and its staff. 36% of physicians noted that the number of visits to SVP had doubled. The study suggested that this growth in patients' visits to SVP was caused by (i) concomitant reduction of visits to the central district hospital or to the polyclinic (according to 96 % physicians); (ii) people had started to pay more attention to their health (according to 69 % physicians) and therefore sought advice whereas previously they may not have done so.

To assess the SVP general practitioners' knowledge and skills in their approach to managing hypertensive patients, the GPs were asked if they found it difficult to diagnose and treat hypertensive patients. 8 % of physicians stated that they had difficulties managing 18-49 years old hypertensive patients; and 26 % of physicians said the medical supervision of 50-60 years old patients was complicated for them.

Following the answers 72 % of physicians by themselves made ECG of hypertensive patients during last month, 69 % of physicians conducted regular medical check up and full examination

of hypertensive patients according to the standard (National Clinical Guideline on diagnostics, treatment and prevention of hypertension in adults at primary health care). 46 % of physicians recommended promotion of healthy life style in order to reduce risk factors.

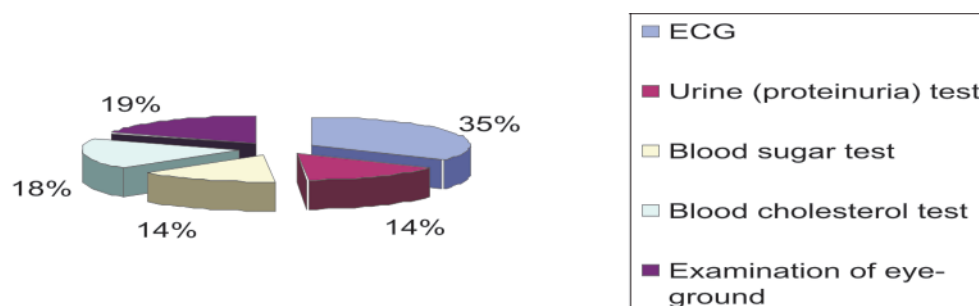
2. Evaluation of physicians' skills by observation of medical examination of hypertensive patients

In order to further assess how physicians work, their skills were directly observed when the physicians were examining hypertensive patients in SVP. 83 % of physicians measured ABP (arterial blood pressure) correctly under the standard. Their consultation skills were assessed on the following: whether information was given to patients regarding his/her status, whether the results of the clinical examination was given and medication. Following the observation results: 75 % of physicians informed patients about their health state and examination

results, 94 % of physicians recommended next visit and made appointments, 84 % of physicians referred patients to have various laboratory tests, 57 % of physicians explained the results, 23 % of physicians identified body-weight index. Thus not all physicians consult hypertensive patients in line with the established procedure. Experts noted that GPs insufficiently inform patients about hypertension risk factors, effects on target organs, side effects of drugs and consequences of not following the prescribed therapeutic regimen.

3. Evaluation of general practitioners knowledge about diagnostic methods and treatment of hypertensive patients

Knowledge was assessed according to tests developed by GPs Trainers. The test contained several optional answers for each question, but three of them were considered as the most appropriate ones due to their specific applicability to SVP settings (see picture 1).



Picture 1. Investigations in patients with Hypertension

All physicians marked necessity of ECG analysis, but only 42 % of them considered detection of proteinuria as a reasonable procedure, and 41 % of physicians considered detection of blood sugar as an impractical test though the above three tests are regarded as able to be performed in SVP settings. Blood cholesterol test is mainly done in the central rayon

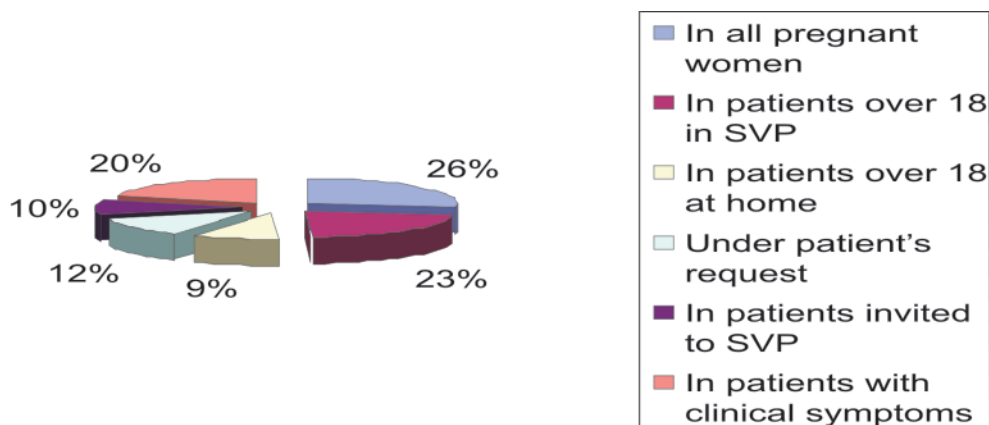
hospital and not all SVP physicians possess an ophthalmoscope or are able to use one to examine the fundus.

In the following test the physicians were asked to select out of the following six situations which three patients merited measuring the ABP by the GP, see picture 2.

In Uzbekistan, the General practitioner measures ABP in all pregnant wom-

en and in patients with clinical symptoms as well as in patients who were invited to SVP for prevented medical examination. In other cases ABP is measured by the districts (patronage) nurse. The test findings showed that 86 % of physicians measure ABP of pregnant women, 64 % – of patients with clinical symptoms of hypertension and only 31 % of them invited of patients to SVP for examination. To ensure efficient teamwork, prior to the patient seeing the GP the SVP nurse measures the ABP of all patients present-

ing to the SVP regardless of the purpose of their visit. The nurse fills in an out-patient medical record and writes down main findings including the ABP. Where the ABP is 140/90 mm Hg or higher, she marks it with red color and notifies the physician about the patient's high level of ABP. The physician must then recheck the ABP measurement twice on one arm, and if the ABP level is high, measure it on the other arm. Unfortunately, the tests results show that this rule is not followed by all SVP physicians.



Picture 2. ABP measuring by GP

In SVPs physicians must examine hypertensive patients following national clinical guidelines, i.e. they should carry out and read ECG, test the urine for protein, and carry out a blood sugar test and examination of the optic fundus. However, we found that only 26 % of physicians carried out a full examination of clinic patients, incorporating these four examination components. Hence not all physicians follow recommendations of the clinical guidelines and carry out a comprehensive medical examination in SVP settings.

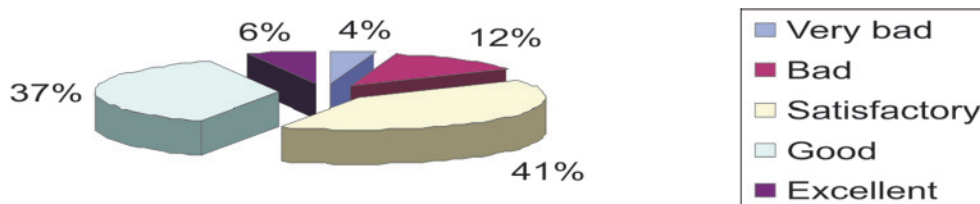
4. Evaluation of hypertensive patients' medical records

GP Trainers evaluated the thoroughness of completion of medical re-

cords of hypertensive patients by the following criteria:

- Records of screening for early signs of hypertension and ABP measurements;
- Presence of ECG, urine and blood sugar tests, description of examination of the fundi;
- Carrying out a risk profile for the diagnosis of cardiovascular disease and adding into the diagnosis information regarding the ABP level and level of risk;
- Records of recommendations for non-drug treatment and specific medications.

Summary of the evaluation of patient medical records is shown in Picture 3.



Picture 3. Evaluation of hypertensive patient medical records

Based on the analysis of patient medical records: 92 % of these had recorded the ABP, 53 % showed that diagnosis was correctly made after two measurements within 2 months; in 61% a diagnosis of «arterial hypertension» was recorded correctly with indication of the degree and risk. Blood sugar tests had been recorded in 30 % of hypertensive patients medical records as part of regular medical checkups, as were urine (proteinuria) test (in 59 %) and examination of fundi (16 %). Entry of an ECG were found in 71 % of patient medical records, and body-weight index in 13 % ones. Risk profiling in the diagnosis of cardiovascular disease was not shown in all hypertensive patients' medical records. Thus, smoking status was indicated only in 20 % of patient medical records, a history of cardiovascular disease in 32 %, and degree of risk assessed in 24 %. Recommendations on reduction of risk factors, and non-drug treatment were entered in 31 % of patient medical records. Prescription of diuretics, as a first-line medication, with consideration of indications and contraindications, was shown in 28 % of patient medical records. Follow up observation of patients took place every 3-6 months with corresponding notes in 61 % of patient medical records. In 49 % of patient medical records there were notes regarding treatment effectiveness resulting in a decrease in blood pressure after 3-6 months on prescribed treatment.

Probably, of patient medical records management could be ascribed to work overload or carelessness in completing the patient medical records. In the approach to the management of hypertensive patients it will be necessary to draw physicians' attention particularly to the issues of follow up observation, ABP control and efficiency of prescribed treatment.

So, application of various techniques in the study enabled us to identify discrepancies in the results. Thus, in the questionnaires physicians correctly answered most of the questions related to diagnostics and treatment of hypertensive patients. However, in consultations they insufficiently informed patients about their disease, the suitability of treatment undertaken, or the side effects of medicines. Finally, the analysis of patient medical records shows that even being aware of clinical guidelines recommendations, physicians do not record their consultations adequately or fully. They give little attention to true confirmation of diagnosis and to recommendations of drug-free treatment.

Therefore it is reasonable to train physicians in hypertension management within the framework of continuous medical education, to provide them with national clinical guidelines on hypertension, and regularly conduct monitoring of physicians work by the instrumentality of the GP training centers teachers.

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BIOCHEMICAL MARKERS OF BRAIN DAMAGE IN ACUTE ISCHEMIC STROKE

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This article showed the investigation of the L-arginine and nitric oxide products levels in blood serum and liquor in acute ischemic stroke. As against the control in ischemic stroke on the 1st and 3rd days was observed significant decrease of L-arginine and nitric oxide products levels in liquor dependently on severity of the disease, whereas in blood serum were observed opposite changes.

Keywords: ischemic stroke, liquor, blood serum, L-arginine, nitric oxide

Stroke is a major healthcare problem afflicting more than 40 000 individuals and the second or first leading cause of death in Uzbekistan (Gafurov B.G, 2009; Asadullaev M.M., 2004). In the last decades substantial research and efforts have been made to understand the biochemical mechanisms involved in brain damage and to develop new treatments.

The progress of understanding the pathogenesis of neurovascular pathology now is connected with the study of role of neuroactive amino acids and a universal regulator of cellular and tissue metabolism – nitric oxide (NO). Interest in NO chemistry soared after recognition in 1987 of the biological role of NO, and NO has recently emerged as a possible key mediator of oxidative stress and disease. In medicine NO is applied as a drug for ischemic heart attacks and hypertonic crises, rendering vasodilatory action. NO is proved adjusts vascular tonus, inhibits thrombocytes aggregation and their adhesion to a cellular membrane, functions in central and vegetative nervous system, has cytotoxic action, participating in antimicrobial, antiviral and antitumor immunity [1-8].

Because L-arginine (L-arg) is the only known substrate for nitric oxide (NO) generation, the purpose of our investiga-

tion was to study L-arg and NO levels in blood serum and liquor after cerebral ischemia and connection between their levels and stroke gravity.

Material and methods. 58 patients with acute ischemic stroke (AIS) at the age of 35-80 years (average age – $61,36 \pm 0,19$ years) were investigated (basic group). Male were 30 (51,7 %), female – 28 (48,3 %). Control group included 24 persons without stroke with similar age and gender. All patients with AIS were admitted to the clinic within the first day, the basic part of them (57,02 %) was admitted at the first 6 hours from the beginning of disease, and at the period from 7 to 12 hours – 29 % of the patients. For evaluation of severity degree of patients' condition and expressed neurological defect, on admission period and in dynamics of AIS the clinical symptoms, dynamics of restoration of neurological functions were estimated on basis of Scandinavian stroke scale (SSS). For biochemical studies were taken blood from ulnar vein and liquor by lumbar puncture in both groups (after agreement with patients and for diagnostic purpose). NO level was determined with using Grees reactant (1 % of sulfanilamide, 0,1 % naphthylindiamid, 2,5 % phosphoric acid) on spectrophotometer by allocation NO derivatives (NO_2 , NO_3)

[3, 4, 6] and L-arg level by high performance liquid chromatography method [9] on chromatograph Du-Pont 8800, column 250/8/4 Nucliosil 100-5 C18. All reagents made by «Sigma», USA.

Results and discussion. On the basis of estimation of clinical signs, dynamics of restoration of neurological functions and SSS, all AIS patients were divided into four groups. The first group included 5 patients (8,6 %) with mild AIS (total clinical score in SSS was $-44,4 \pm 1,3$). Second group included 25 patients (43,1 %) with average degree of severity (total clinical score $-24,2 \pm 0,9$). The third group consisted of 22 patients (37,9 %) with severe AIS (total clinical score $-10,3 \pm 0,93$). In

the fourth group were 6 patients (10,3 %) with extremely severe course of AIS (total clinical score $-6,2 \pm 0,8$).

We investigated the L-arg and NO levels in liquor and blood serum in all patients. Per the first day of AIS onset, liquor L-arg and NO levels authentically decreased 3,87 ($142,5 \pm 71,4$ vs. $551,5 \pm 72,6$ nmol/ml) and 1,06 times ($0,848 \pm 0,021$ vs. $0,903 \pm 0,041$ mmol/l, $P < 0,05$) relatively after the ischemic event. Serum L-arg and NO levels increased 2,01 ($1068,9 \pm 36,9$ vs. $531,8 \pm 45,2$ nmol/ml) and 1,02 ($0,922 \pm 0,057$ mmol/ml vs. $0,909 \pm 0,037$ mmol/l) times relatively to comparison with control, peaked between 6 and 24 hours (table).

Table

The L-arg and NO levels in liquor and blood serum
in different groups of the patients ($M \pm m$)

Group of patients	L-arg (nmol/ml)		NO (mmol/ml)	
	Liquor	Blood serum	Liquor	Blood serum
Basic group (AIS):	$142,5 \pm 71,4^*$	$1068,9 \pm 36,9$	$0,848 \pm 0,021^*$	$0,922 \pm 0,057$
1st group	$235,5 \pm 68,4$	$905,7 \pm 42,5^*$	$0,979 \pm 0,027$	$0,855 \pm 0,027$
2nd group	$141,2 \pm 72,6^{**}$	$1005,1 \pm 42,1^{**}$	$0,816 \pm 0,037^{**}$	$0,875 \pm 0,04^{**}$
3rd group	$136,8 \pm 66,5^{**}$	$1023,5 \pm 38,6^{**}$	$0,491 \pm 0,23^{**}$	$0,903 \pm 0,021^{**}$
4th group	$102,6 \pm 56,2$	$1058,2 \pm 29,3^{**}$	$0,430 \pm 0,211$	$0,979 \pm 0,037^{**}$
Control group	$551,5 \pm 72,6$	$531,8 \pm 45,2$	$0,903 \pm 0,041$	$0,909 \pm 0,037$

Note: * – reliability of distinctions with control group ($P < 0,05$).

** – reliability of distinctions between groups of the patients with different severity degree of AIS ($P < 0,05$).

The comparison of the study has shown that the L-arg and NO levels essentially does not depend on localization of the ischemic locus on basis of the clinical data, CT/MRI. However, depending on severity of AIS, liquor L-arg and NO levels were significantly lower in patients with severe and extremely severe state, in those with poor outcome. There was a negative

correlation in blood serum (table). In dynamics of disease L-arg and NO metabolites levels at AIS decreased by the 3rd day 1,89 and 1,3 times, by the 10th day 3,87 and 1,99 times relatively.

Thus, the study showed that L-arg-NO system exposed considerable changed in stroke and depended on its severity. The distinctions of metabolic shifts in liquor

and blood serum are explained to that on the L-arg and NO levels in blood serum render influence a condition of metabolic processes not only in a brain, but also in other organs and tissues. The L-arg-NO system in liquor was lower, the more severe AIS, resulting to irreversible consequences and mortal outcome. However, as the NO synthesis depends on quantity of excitatory amino acid glutamate, and it remained in liquor authentically increased [5, 7], infringement of NO synthesis at AIS, probably, has other mechanism. Probably, failure of NO synthesis at AIS is caused by decrease of quantity of its substrate – L-arg for NOS, acceleration of its metabolism or their combination. The activation of L-arg-NO system in liquor has, probably, compensator character. The evidence suggests that NO can exert both protective and deleterious effects depending on factors such as the NOS isoform and the cell type by which NO is produced or the temporal stage after the onset of cerebral ischemia. Immediately after brain ischemia, NO releases from eNOS and renders protective action mainly by promoting vasodilatation; however, at the subsequent stages NO produced by overactivation of nNOS and, later, by de novo expression of iNOS, participating in the brain damage [8].

Taken together we can do some conclusions:

1. The reduction of the Arg and NO levels in liquor can play a role in the forecast of AIS. It is possible, that some clinical symptoms are connected with «excitotoxicity» phenomenon. NO, probably, can play a double role at AIS, showing at the beginning of disease neuroprotective, and in later stages neurotoxic action.
2. The study of the L-arg-NO – system role represents perspective scientifically proved direction capable to supply progress in clinical neurology. Determination of L-arg levels in blood and liquor might be helpful to evaluate NO compensator or neurotoxic action.
3. The exact role of these and other neurotransmitters in the pathogenesis of neuronal injury observed in acute stroke needs to be defined.

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HEALTH INDICATORS IN AN ESTIMATION OF QUALITY OF A LIFE OF ELDERLY PERSONS

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The population life quality integral indices are quite possible the life expectancy, the mortality, the morbidity, and also the disability. The modern gerontology achievements are being permitted the aging processes control challenges to be solved, having increased the human active, the full – developed and the full – blown, the employable life, having shortened the decrepitude years' period. So, the process control is quite possible done only after the fact, how the living standard state change dynamics has already been retraced and observed in the specific region. The life expectancy indices dynamics (e.g. the decrease in 1,09 time), the mortality (e.g. the increase in 1,09 time), the disability (e.g. the increase in 2,02 times), having revealed in the Sakhalin region, has been indicated the fact, that the elderly age population life quality is being proceeded to be decreased, especially at the males. For all this, the urban population life quality, the living standard of which, increasingly, is being depended on the economic – socially conditions in the society, has already been worsen more, that at the rural population.

Keywords: indicators, indices, life expectancy, mortality, disability, life quality, the elderly people

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So, the population health state level is being the most life quality adequate reflection. At the same time, the life conditions every evident changes are quickly being reflected at the health quality [1, 2, 3, 6]. The Russia has already passed on to the new economic model in the given proper management – the market economy (ME), in the end of the XX-th century. In this connection, the change has been taken its place in the society, as the landmarks, well as the perspectives in the life economic prosperity and the social welfare, as the country's whole population, well as its individuals. It goes without saying, the population prosperity and the welfare further change was not quite able to have an impact on its health state level, as the last aspect, in many researches' opinion, to the considerable extend, is being depended on the social and economic factors. Thus, many factors are being caused the health

worsening, and after this, the 10 main risks factors for the population health have been emphasized [9], by the Worldwide Bank report data «It is early to be died...» (2005). Thus, it is quite impossible the health state level to be measured, but it is quite possible to be judged on it by the mortality, morbidity, disability indices and etc. [5]. So, the life expectancy is quite able to be by the health integral index, which is being defined, how the years number, which, in average, would the man has to be lived from the borne generation, under the condition, that the age – specific mortality is being left at that year level, for which the index has been calculated throughout this generation whole life. It was noted, that in the Sakhalin region, the life expectancy was being decreased, the mortality and the morbidity among the population were being increased, especially in the elderly age for the last fifteen years. So, the raised challenge is being needed its solution: the health formation efficient tech-

nologies creation and the implementation at the population. At present, the modern gerontology achievements are being permitted the aging processes control challenges to be solved, having increased the human active, the full – developed and the full – blown, the employable life, having shortened the decrepitude years' period [8]. But, the process control is quite possible done only after the fact, how the living standard state change dynamics has already been retraced and observed in the specific region. Thus, the present report **aim** is the life expectancy, the mortality, and the disability indices dynamics analysis. This aim realization is quite necessary for the further elderly and the old people aging processes control qualitative and the quantitative methods development, as the region stable development paradigm.

The Material and the Methods

The indices dynamics on the further elderly and the old people, having lived in the Sakhalin region, for the period from 2000–2005-es, the life expectancy (LE), the mortality, and the disability has been analyzed in the work. So, the obtained statistical data on the Sakhalin region have been served, as the basis for the necessary analysis. The indices calculation has been done by the B.B. Prokhorov and the co –

authors' formula [7]. For all this, the indicator's fixed minimum and the maximum values have been accepted for the index's building. Then, the qualitative variables have already been described by the absolute and the relative frequencies (in the per cents).

The Results and the Discussion

The LE index has been decreased from 0,649 down 0,593 for the period from the 2000 up to the 2005 years. For all this, the females' and the males' expectancy life (EL) indices have been made up 0,763 and 0,558 in the 2000 year, but 0,718 and 0,491 in the 2005 year, correspondingly (see, the Table 1). The males should be related to the unsatisfactory group, having judged by the life expectancy (MLE) indices values, as their LE is quite less in 1,4 time, in comparison with the females' life expectancy (FLE) indices. By the scientists' and the scholars' prognoses [7, 9], the LE index decrease, and its further passing into the unsatisfactory group will be able to be resulted in the 20 years to the phenomenon, that the males' life expectancy (MLE) may be decreased down the 50 years in the Far East regions, if the region's socio – economic development further realization is on be by the pessimistic scenario.

Table 1

The Life Expectancy (LE), the Mortality, and the Disability Indices of the Sakhalin Region Peoples in the 2000–2005-es

Years	LE	FLE	MLE	TMI	MMI	FMI	ИИП	Disability, in %*
2000	0,649	0,763	0,558	4,667	1,946	2,617	0,153	47,1
2001	0,628	0,740	0,535	4,973	2,038	2,617	0,210	52,8
2002	0,630	0,741	0,538	4,940	2,715	2,823	0,247	58,1
2003	0,606	0,728	0,503	5,106	2,162	2,833	0,189	52,6
2004	0,608	0,733	0,505	4,877	2,031	2,735	0,257	59,2
2005	0,593	0,718	0,491	5,097	2,122	2,864	0,309	61,6

* The peoples total number part, having acknowledged by the disabled ones, in %

The life expectancy low indices in the Sakhalin region are quite able to be connected with the fact, that the population is living in the region with the unfavorable social and the economic conditions under the environmental discomfort conditions [3]. However, such evident low LE indices of the region, within one country limits, are being caused the alarm, and they are being aroused the anxiety. It is well – known, that the LE indices are being depended on many factors, but, especially, on the social and the economic ones. Such scientists and the scholars, and the doctors and the physicians, as A.P. Dobroslavin, E.A. Osipov, V.O. Portugalov, F.F. Arisman [10] have indicated this in the end of the XIX-th – in the beginning of the XX-th centuries. Therefore, the LE sharp decrease in the Sakhalin region – this is the life's socio – economic conditions worsening consequence in the region. The following transition to the new economic conditions in the region (e.g. to ME – the market economy) has been resulted in the fact, that the peoples overwhelming majority received the great shock from this, that the state already was not working, as before, having controlled the human life cycle from his birth up to his death. Such social diseases, as the misery and the poverty have intensively been become to be flourished in the society, the consequence of which the mortality is being increased, especially, at the persons with the low – leveled social activity. The elderly people, having been, in their overwhelming majority, the socially inactive ones, with the whole diseases complex, are not quite able, completely, to satisfy their needs, that and it is being resulted in the fact, that many of them do not want to live for a long time. So, we shall note, that they are being increased for the analyzable period of time, having considered the total, the male, and the female mortality indices (e.g. TMI, MMI, FMI). So, the total mortality index

(e.g. TMI) has already been changed from 4,667 up to 5,097, that is, it has been increased for the unit during the period from the 2000 year up to the 2005 year. For all this it has been noted, that the males mortality indices (e.g. MMI) are being exceeded the females mortality indices (e.g. FMI) at the ages from the 65–69 years from 2,3 times up to 2,7 ones, but at the age of the 70 years and the more ones from 1,4 up to 1,5 time for the examined period of time (e.g. see, the Table 1). The mortality indices rise is being connected by them, as with the human organism inner adaptation possibilities, well as with the external factors. As the unfavorable climate and the environmental pollution influences in the towns and its contamination impacts in the cities, well as, in the first place, the elderly people's low – leveled social possibilities are being promoted this, as they are all the pensioners and, on the whole, they are the disabled people, without any possibility sufficiently qualitative medical treatment and the departure beyond the limits of the Sakhalin region, having taken into the consideration the region's isolated and the island position. So, the blood circulation system diseases, the neoplasms and the tumors, the accidents and the casualties, in the less degree, – the respiratory, the digestive organs diseases and the others are the main death and the disability reasons at the more age of the employable population. So, it was revealed, that the 67,7 % males and the 73,9 % females of the elderly age had been died from the blood circulation system diseases in the 2005 year. The 15,8 % males and the 11,8 % females have been died from the neoplasms and the tumors, and the 6,5 % males, and the 4,3 % females have been perished from the accidents and the casualties in the 2005 year. Correspondingly, the 2,8 % males and the 1,9 % females have been died from the respiratory organs diseases, but the 4,2 % males and the 4,3 % females have been

died from the digestive organs diseases. So, the males' mortality has been up from the 70,9 % at the age of the 65–69 years in the 2000 year, and then it has been increased up to 86,2 % in the 2005 year, and it has been exceeded the females' mortality in 2,2 and 2,7 times. So, the males' mortality exceeding is being made up 1,4–1,5 times at the age of 70 and the more years. By the sociologists' optimistic prognoses, it is quite possible mortality change, but at the new prophylactic directions introduction: the non – drinking policy, the cardiovascular diseases prophylaxis and the medical treatment, the struggle against the smoking, the hypertensive disease prophylaxis and the medical treatment, however, all these directions introduction, exactly, in the third age, considerably, would not be increased the mortality change, because it is necessary all these arrangements to be carried out at the more early age. Thus, the disability index (DII) has been increased among the elderly employable age population, as for the period from 2000 up to 2005-es, and it has been risen in 2 times, having judged by the data, which have been presented in the Table 1. At present, the persons are being found at the age of the 65 years older, having been born in the pre – war and the postwar periods, who, first of all, have survived the most severe tests during the war years. All this is having the impact on their health. So, the blood circulation system diseases are the most widespread disability reason among the population, as in the urban, well as in the rural areas. For all this, the disabled people with the cardiovascular diseases, such as the myocardial infarction, the hypertensive disease, the insult, the ischemic disease, annually, are being registered noticeably more in the urban area, than in the rural one. The blood circulation system diseases have been become the main disability reason at the 69 % elderly people in the 2005 year, having acknowledged the

disabled people, for the first time, against the 53,2 % ones – in the rural area. The rather frequent disability reasons have been become the neoplasms and the tumors (e.g. the 8 % townspeople and 7 % at the villagers). The musculoskeletal apparatus system diseases – 11,6 % (e.g. in the city – 5,5 %); the eyes and the annexal apparatus diseases – 6,7 and 4,9 %; the endocrine system – 4,9 and 2,0 %; the respiratory organs – 4,6 and 2,9 %; the all localization traumas and the injuries – 3,7 and 2,6 %, correspondingly, are more frequently disability reasons in the countryside and in the rural area. The disability rise is the population aging direct consequence, its heavy economic conditions and the heavy financial situation, the well – timed and the qualitative medical assistance inaccessibility, the high rates for the medical treatment and for the drugs and the medication. The population's incomes and the earnings have been much less, than the living wage and the subsistence minimum at the 102,2 thousand people (e.g. 19,3 %), in the 2005 year. So, it was revealed, that the elderly people, having had the possibility to be addressed to the medical institutions, and not having addressed, because of their medical services paying impossibility, had been made up – 61,3 %, from them the males – 12,4 % and the females – 48,9 %, in the 2005 year. The elderly age population disability is the result of the multiple worsening and having proceeded to be worsened the whole population's social and economic situation.

The Conclusion

Thus, in the Sakhalin region elderly age population life quality is being proceeded to be decreased and to be declined in the examined period of the 2000–2005-es, having judged by the life expectancy indices dynamics (e.g. the decrease in 1,09 time), the mortality (e.g. the increase in 1,09 time), and the disability (e.g. the

increase in 2,02 times). The males' life quality, especially noticeably, has been declined. For all this, the urban population life quality, the life level of which, to an even much greater degree, is being depended on the social and economic conditions in the society, has been worsened much more, than the rural area. The elderly and the old people needs satisfaction disorder is, usually being resulted in the unwillingness to be lived for a long time and qualitatively, that is constantly needed all the factors detailed processing, having influenced on the health indices, as the social – medical, well as on the climatical – naturally character.

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Materials of Conferences

**DYNAMIC PARAMETERS
OF CARDIO-RESPIRATORY
SYNCHRONISM STUDENTS
AT DIFFERENT LEVELS STRESS**

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The objective of this work is to increase the efficiency of methods of the student's stress-resistance valuation according to parameters of heart-breathing synchronism in order to optimize the educational process and improve the professional selection of specialists for the catastrophe medicine service.

The observation was carried out upon 28 students that were divided into 3 groups according to the parameters of heart-breathing synchronism before and after the impact of stress factor.

Parameters of heart-breathing synchronism did not alter reliably within the first group (5 persons, 17,9 %). The width of the synchronizing range was the biggest among them and the duration of the development on the minimum boarder was the smallest. The alterations of the parameters in response for the impact of the stress factor showed us good functional-adaptive abilities of the organism and lack of those implies the high level of stress-resistance.

Among the persons of the second group (11 persons, 39,3 %) the width of the synchronization range decreased of 22,4 % and the duration of the development of heart-breathing synchronism on the minimum range border had an increase of 13,6 % in comparison with the internal values. The synchronizing range width among those being tested was smaller and the duration of the development on the minimum border was bigger than the corresponding parameters of the first group. The second group was referred to persons with moderate stress-resistance level.

The greater alterations of the heart-breathing synchronism parameters were observed within the third group (12 persons, 42,8 %). The synchronizing range width decreased of 29,9 % and the duration of the development of heart-breathing synchronization of the minimum synchronizing range border increased of 28,9 %. They had the smallest

synchronizing range width and the biggest development duration. The decrease in the synchronization range and the decrease in the duration of its development testifies for the decrease in functional-adaptive abilities of the organism (V.M. Pokrovskiy, 2007). Their stress-resistance level was estimated as low.

As we compare the data of the stress-resistance level identification according to the parameters of heart-breathing synchronism and with help of psychological testing according to the frequency of occurrence among the tested the persons with moderate stress-resistance level were on the first place, on the second – those with low level, and on the third level – those with high level. There was no complete coincidence.

The group with high level of stress-resistance consisted of phlegmatic persons, sanguine persons, phlegmatic/sanguine persons, and phlegmatic/melancholic persons. Wide range of the synchronization and the smallest duration of the development on the minimum range border were typical among those persons. The moderate and low stress-resistance group consisted of melancholic persons, choleric persons, sanguine/choleric persons, and melancholic/choleric persons with narrow synchronization range and the biggest duration of the development on the minimum synchronization range border.

As we know, the widest range of the heart-breathing synchronism is present with phlegmatic temperament type, it is less displayed with sanguine and even less – with melancholic type (I.I. Borisova and co-authors, 200 E.G. Potyagaylo, V.M. Pokrovskiy 2003). The narrowest range width was observed with choleric temperament type. In our research the levels of stress-resistance according to the parameters of heart-breathing synchronism were correspondent to the personality types. The high level of stress-resistance that was defined by the method of psychological testing did not always coincide with the personality types, for which they are determined genetically. Thus, 2 phlegmatic persons and 1 sanguine person were referred to moderate level of stress-resistance.

The comparison of the stress-resistance level of the students according to the parameters of heart-breathing synchronism and the data of definition of emotional stability gave us absolute correspondence. Among the students with emotional stability that is also genetically determined for the high level of stress-resistance there were 3 persons less (they were defined as persons with moderate

level of stress-resistance according to psychological testing), that is data of the definition of stress-resistance level according to psychological testing were contradiction to common knowledge.

According to J. Streliayau (1982) the personality types are divided into the most adaptive (phlegmatic and sanguine types) and the least adaptive (melancholic and choleric types), the students with high stress-resistance level turn out to be the most adaptive and the persons with moderate and low stress-resistance level – less adaptive. When comparing the levels of stress-resistance among students, that was defined according to heart-breathing synchronism parameters with the adaptive abilities of the tested a complete correspondence was observed. But when comparing the stress-resistance level that was defined by psychological tests with the adaptive abilities of the tested there was no complete correspondence. Three students of the most adaptive group were defined as persons with moderate stress-resistance level.

Among the students with high level of stress-resistance according to heart-breathing synchronism parameters low level of anxiety was observed, among those with moderate and low level – moderate and high level correspondingly. While defining stress-resistance level among students by psychological testing, no complete coincidence between stress-resistance and anxiety levels was found.

Thus, for students, the comparison of heart-breathing synchronism parameters with the personality types, neurotism, adaptive abilities, the anxiety level, and stress-resistance parameters showed us, that the results of heart-breathing synchronism probes turn out to be more precise than psychological testing data.

On the other hand, analysis of the heart-breathing synchronism parameters showed us that the students with high stress-resistance level had the widest synchronization range and the smallest duration of its development on the minimum range border. With the moderate level the range width was smaller, and the development duration – bigger, and with the low level of stress-resistance the synchronization range width was the smallest and the duration of its development was the biggest.

Thus, the probe of heart-breathing synchronism can be used for objective integral estimation of stress-resistance level among the students. It is more informative than psychological methods.

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CORRELATION BETWEEN THE PROSTATIC STRUCTURE AND SOME INDICATORS OF THE NONSPECIFIC BODY RESISTANCE AND SYMPATHOADRENAL ACTIVITY

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Gland inflammation plays an important role in the pathogenesis of fibrocystic prostatopathy and local adenomatosis against the background of the age-specific discoordination of the central and peripheral endocrine organs. The adenomatosis and inflammation provoke a number of clinical symptoms, which considerably inconvenience patients causing a constant psychological and emotional stress. Chronic growth of active catecholamine concentration (CA) and adrenal cortex hormones aggravate the age-dependent hormonal misbalance and reduce the functional activity of immunocompetent tissue, monocyte-phagocyte system and neutrophilocytes, which in its turn reduces the nonspecific body resistance. One of the indicators of the functional condition of a sympathoadrenal system is the CA content in erythrocytes; and one of the elements of the nonspecific body resistance are the nonenzymatic cationic proteins (NCP) of neutrophilocytes, which determine to a large extent their bactericide function. They can be also classified as signal-regulatory peptides.

This research consisted of two parts: morphological and clinical. The first part of the research included the histological and morphological evaluation of the structural changes in 20 prostate glands obtained from dead persons aged between 50 and 70 years, who suffered from different pathologies and according to anamnesis (medical report data), such associated diseases as nonmalignant hyperplasia of prostate gland (NHPG) and NHPG complicated by chronic prostatitis (CP). The clinical part was aimed at determining the NCP content in blood neutrophilocytes and CA concentration in erythrocytes, followed by calculating an average cytochemical coefficient (ACC) in 28 patients with NHPG, including the 8 patients with CP. The cytochemical research methods used for the evaluation, were adjusted to the age group of the dead material donors.

In the majority of cases, histological changes in prostate gland with NHPG involved stromal hyperplasia with the overgrowth of fibrous tissue and new growth in blood vessels, or complete hyperplasia with both proliferative glandular and

stromal components. Moreover, the average area of the glandular tissue was $29,9 \pm 4,7$ % in the central part and $32,3 \pm 4,9$ % in the peripheral part, connective tissue – $43,7 \pm 5,5$ % and $48,6 \pm 5,7$ %, muscles – $26,4 \pm 4,0$ % and $19,4 \pm 3,8$ % correspondingly. Comparing the obtained data with the specific tissue volume in a healthy prostate gland, we can see that under the conditions of NHPG, grows mainly the connective tissue in peripheral part; moreover, its area increases by $23,6 \pm 1,3$ %. The biggest changes in the structure of prostate gland were observed in persons who experienced much stress, viral infections, chronic inflammatory processes and excessive allergen challenges during their life. A similar trend was revealed during the histochemical analysis. For example, the maximal reduction of the ACC in NCP level till $0,95 \pm 0,06$ (normal value $1,58 \pm 0,03$) and its growth till $2,17 \pm 0,012$ in CA content (normal value $1,76 \pm 0,02$) were observed in patients with long-standing NHPG complicated by CP.

To sum up, the results of the conducted research prove that degree of the structural changes in prostate gland with NHPG, is considerably influenced by the level of nonspecific body resistance, and activity of sympathoadrenal system, which should be taken into account during the treatment and prevention of this pathology.

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THE HEMODYAFILTRATION IN THE ACUTE RENAL FAILURE AT THE PATIENTS' HAEMORRHAGIC FEVER WITH THE NEPHRITIC SYNDROME

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The Udmurt Republic is the natural focus and the hot spot of the haemorrhagic fever with the nephritic syndrome (HFNS). The acute renal failure (ARF), by our data, is being developed from 24 up to 49 % of the HFNS diseased persons, at the severe forms of which, side by side with the medicament therapy, the hemodialysis is being used. In the last years, the efferent therapy new methods – such, as the hemofiltration, the hemodyafiltration (HDF) are being used for the ARF medical treatment.

The Research's Aim

It is necessary to be given the HDF efficiency general clinical assessment with kidneys' functional state dynamics study at the patients' HFNS severe form, having complicated by the ARF.

The Research's Material and Methods

The 65 HFNS diseased persons with the ARF at the age of from 19 up to 60 years, whom, the HDF was used by the indications in the «on-line plus» regime, had been made up the researched group.

So, the HDF procedures have been carried out at the 4008S devices of the «Fresenius» firm with the «Fresenius F 605» hemodyafilters application.

The ARF clinical and the traditional biochemical parameters have already been included into the efficiency assessment. The kidneys' function ultrasonic research with the blood circulation, the blood flow and its velocity parameters definition in the renal vessels has been carried out. The β_2 – microalbumin has already been defined in the dynamics in the blood and in the urine; the microcirculation state has been estimated.

The Received Results. The HDF medical treatment adequacy, according to the AFR usual clinical and the biochemical parameters, has already been achieved at all the patients (e.g. the urea, the creatinine, the electrolytic balance, the β_2 – microalbumin, the acid – based homeostasis, the lipids peroxidation, the microcirculation indices and the others). By the renal ultrasonic research, the quite positive dynamics has been revealed. So, the before increased kidneys volume (e.g. $303,7 \pm 13,2$ cm³– $262,3 \pm 8,2$ cm³; $p < 0,05$) the pyramids cross – section (e.g. $1,45 \pm 0,04$ cm²– $0,83 \pm 0,04$ cm²; $p < 0,01$), the bast layer echogenicity (e.g. $27,2 \pm 0,08$ – $22,1 \pm 0,6$ standard units; $p < 0,01$) have been statistically and significantly decreased.

The blood circulation and the blood flow, its velocity all the parameters in the kidneys have already considerably been improved (e.g. the blood flow systolic rate: $50,8 \pm 2,5$ – $58,8 \pm 2,2$ cm/s; $p < 0,05$; the blood flow diastolic rate: $22,1 \pm 0,4$ – $24,2 \pm 0,2$ cm/s; $p < 0,05$; the blood flow average rate $15,0 \pm 0,5$ – $29,4 \pm 1,2$ cm/s; $p < 0,01$; the blood flow volume rate $161,7 \pm 8,6$ – $216 \pm 8,8$; $p < 0,01$).

The Conclusions

The substitutive renal therapy carrying out at the HFNS patients with the ARF hemodyafiltration in the «on-line plus» regime is being exerted the expressed clinical effect with the quick biochemical parameters stabilization and with the kidneys' functional state restoration.

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THE CRYOAPHERESIS IN THE PATENTS' COMPLEX THERAPY WITH THE INITIAL CHRONIC PYELONEPHRITIS

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The chronic pyelonephritis is being played the leading role in the renal diseases structure. The traditional conservative therapy is not infrequently, which is insufficiently efficient, especially at the patients with the chronic pyelonephritis recurrent forms, and also, as with the intolerance, well as with the medicamental therapy low level efficiency.

The Research's Aim

It is necessary to be given the cryoapheresis efficiency general clinical assessment at the patients with the initial chronic pyelonephritis.

The Research's Material and Methods

It has been carried out the 84 patients' research with the initial chronic pyelonephritis at the age of from 18 up to 72 years. The 44 patients have been made up the researching group, having received the course medical treatment by the cryoapheresis, in combination with the traditional medicamental therapy. The rest of 40 ones have been made up the control group, where the only medicamental therapy has been used. Thus, the cryoapheresis has been carried out in the specially equipped room of the extracorporeal therapy department.

The chronic pyelonephritis clinical and the traditional biochemical parameters have already been included into the medical treatment efficiency assessment. The kidneys function ultrasonic and the radionuclide researches have been carried out. So, the microcirculation, the immunity indices and the blood laboratory indices, and also the urine states have been estimated.

The Received Results

The course cryoapheresis inclusion into the patients' complex therapy by the chronic pyelonephritis has been had the expressed anti – inflammatory effect with the quicker clinical symptoms dynamics. The β_2 – microglobulin lowering had been taken its place just after the first procedure for 14–17 % under the cryoapheresis influence, and after that, this kind of tendency was being kept on, and this index normalization has been happened to the medical treatment end. The radiopharmaceutical effective half – life (HL) shortening has been revealed, by the renal dynamic scintigraphy results. Thus, it has been shortened from $c 26,8 \pm 6,7$ down to $12,5 \pm 1,1$ minutes (e.g. $p < 0,05$) in the researched group. At this time, the lowering has

been taken its place only from $26,3 \pm 7,4$ down to $21,0 \pm 5,3$ minutes in the control group. The cryoapheresis has been had and the detoxification effect by the intoxication leukocytic index indicators, the average molecules level concentration in the blood. So, the average molecules level has, reliably, been decreased under the cryoapheresis influence in $2,4 \pm 0,2$ times, whereas at the patients, having received only the medicamental therapy, it has been fallen – for $30,3 \pm 3,4$ %; then, the leukocytic index has been decreased down, as for $40,0 \pm 5,3$ %, well as for $23,8 \pm 2,2$ %.

The Conclusions. The cryoapheresis carrying out at the patients with the initial chronic pyelonephritis against the standard therapy against the background has been had the more expressed clinical effect with the biochemical parameters quick stabilization and also the kidneys functional state restoration.

The work was submitted to international scientific conference «The Experimental and Clinical Medicine Contemporary Challenges», (Thailand, Pattaya), 21–28, February, 2010, came to the editorial office on 09.02.2010.

STRESS AND ANXIETY IN PATIENTS WITH DIABETES MELLITUS

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Nowadays more and more attention goes to research the role of psychological and social factors of progress and diabetes mellitus flow. As the rule appearing psychological problems develops because of chronic stress, caused by burden of bad endocrine disease.

In our research 44 people sick with diabetes mellitus were researched about indicators of levels reactive and personality alarm, calculated with scale of Spilberger (STAI). 28 patients (63 %) were given a diagnosis of presence anxious disorder (ICD-10). It was found, that 30 patients (68 %) have had a psycho-social stress before the beginning of diabetes mellitus. All patients having anxious disorder have been taking 20 mg dosed paroxetin.

Defined dependence was explored between the level of alarm and the duration of disease. Patients having anxious disorder have had the duration of diabetes mellitus more than 10 years and their level of reactive alarm was $54,21 \pm 2,06$. Patient having no signs of clinically expressed

anxious disorder have had average duration about 7,36 years, while the level reactive alarm in this group was $38,86 \pm 2,12$ and conformed the average degree of evidence ($p < 0,05$). Meanwhile the indicators of personality alarm were risen in both groups ($50,43 \pm 1,07$ и $46,75 \pm 1,75$). Patient having clinically expressed anxious disorder have had more complications of diabetes mellitus and worse degree of its burden. We fixed gender features of anxious disorders and prevalence of women in this group, what conform to population indicators. Clinical effect of application anxious therapy during 3 weeks was characterized by decrease of level of reactive alarm up to $38,75 \pm 1,32$ and became apparent with distinct reduction of level of anxious disorder: decrease of signs of alarm, anxiety, fear,

irritability, decrease of weakness, normalization of slumber. Explored facts testify to considerable role of a psycho-social stress in beginning of diabetes mellitus and these facts allows to recommend therapy with paroxetin in complex cure for diabetes mellitus, it promotes the reduction of anxious disorder and the rise of quality of patients' lives, and also it promotes improvement of prognosis of endocrine disease.

The work was submitted to international scientific conference «Modern problems of experimental and clinical medicine», (Thailand), 20–28 February, 2010, came to the editorial office on 30.12.2009.

FEMOPHILIC ELEMENTS IN WALLROCK METASOMATITES AND IN ORES OF MESOTHERMAL GOLD DEPOSITS – NEWSLETTER OF MANTLE DEEP

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There were found contrast anomalies of femophilic element association: P, Ti, Mg, Mn, Fe, Ca-in back zones of zonal wallrock metasomatite haloes of mesothermal gold deposits in Eastern Siberia (Russia), formed in crystal sole (Irokindinsk, Kedrovsk) and in Proterozoic strata of black silstones (Kedrovsk, Chertovo Koryto), in the nearest (up to 1,5 km) margin of geosutures. Metasomatites in back zones are folded with crystalline silica, sericite, carbonate rock impured with pyrite and represent products of potassic- sulphuric- carbon-dioxide metasomatism with input of recomposed sulphur, carbon dioxide into rocks by disproportionation of alkali with almost complete eduction of Na and partially of silicon. Femophilic elements grade in metasomatites grows in hundreds ...some in hundreds % comparatively to original rocks, but decrease to Clark when removing from solution leading geosutures. The joint with solution femophilic elements are fixed in leucosene, rutile (Ti), carbonate rock (Ca, Mg, Fe, Mn), apatite (P). Taking into consideration other factors – alternate input of mild alkaline mafic melt and metal-bearing solutions, closeness of isotopic ratio of carbonate oxidated carbon to meteorite standard it was concluded about generation of metal-bearing solutions in deep focus of mafic melt.

Keywords: femophilic elements, crystal sole, black silstones, mesothermal gold deposits, wallrock metasomatite haloes, contrast anomalies, mantle

A qualification of middle-low temperature process of wallrock transformations in mesothermal gold deposits is known as potassic- sulphuric- carbon-dioxide metasomatism [1], conditional to input of the listed components with metal-bearing solutions. Together with rock carbonatization and sulphidation almost complete replacement and eduction of comparatively weak base of Na by a stronger kalium is taking place, unlike silicon which is taken away only partially, up to 50 % from the original rock, from high silicon rocks of forming back zones of metasomatite haloes, but it is moving inside them if they are folded by original rocks with low (less than 40–45 %) silica content [2].

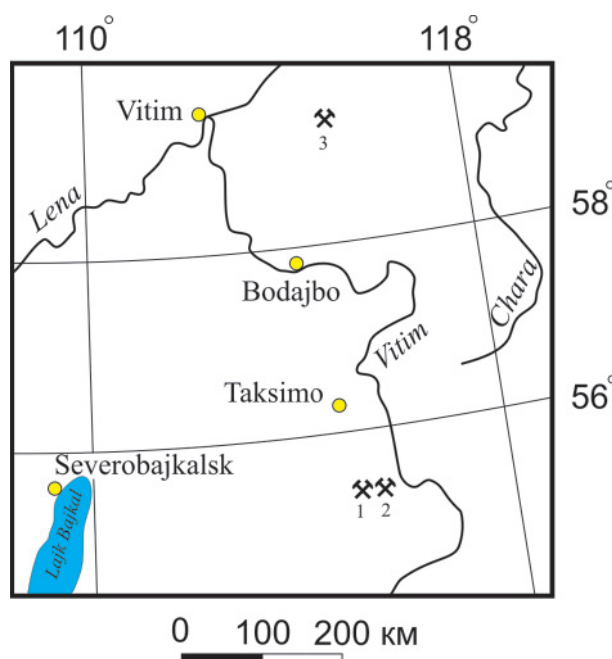
The represented data depicts typical petrochemical characteristics of metasomatite process, but its petrochemical essence does not confine to it. In some mesothermal gold deposits of Southern

Siberia, – Irokindinsk, Kedrovsk, Chertovo Koryto (picture) there were found wallrock metasomatites and ores, which in near (up to 1,0...1,5 km) margins of solution leading and ore control geosutures are enriched with association of femophilic elements, adding typical triad (K, S, C). All deposits are simple according to geology-genetic characteristics and are formed in Late Paleozoic Age [3, 4]. The accumulated facts are generalized and discussed in the article, the following conclusions are made.

The ore veins of Irokindinsk deposit lay in migmatite- gneissic sole of Muysk brow of Archean basement of the Siberian craton in the eastern footwall of Kelyansk zone of geosutures, of Kedrov deposit- in the Late Proterozoic rock mass of carbon-bearing shale rock of kedrovsk suite and among ultra- metamorphic and magmatic rock of Late Paleozoic mature dome structure in eastern sidewall of Tuldun zone of geosutures. A thick, up to 150 m, flat

of vein-disseminated ores of Chertovo Koryto deposit is formed in the zone of decompaction among Early Proterozoic carbon-bearing terrigenous shale rocks of Mikhalovsk suite in sidewall of the geosutures, branching Amandrak geosutures. There are known inter-mineral dikes of

mild alkaline dolerites in the deposits, which served as thermal fluid-conductor while mineralization, in consequence of which they were transformed into metasomatites, containing typical for inter-mineral dikes high temperature amphibole-biotite association. [5].



Plan of gold ore deposits: 1 – Irokindinsk, 2 – Kedrovsk, 3 – Chertovo Koryto

In all listed rocks zonal wallrock metasomatite haloes include external, chloritic, albite, internal mineral-petrochemical zones. Thickness of external zone consisting of subzones of weak, mil and intense change (up to 10, 10...20, 20...30 % of newly formed minerals) reaches many hundreds, chloritic- many tens, albite – first, internal – 1,0...1,5 m. In lode deposits the core zone is occupied by aurum-sulphide-carbonate-quartz vein, in Chertovo Koryto deposit the listed zones, except external, are repeatedly alternated in the structure section of the ore shoot.

Mineral associations of metasomatite and mineralization stage are repeated in all discussed deposits and rocks with slight variations of sets of mineral species, more

complete in external zone. In generalized structure of rocks of external zone such elements take part silica + sericite + leucoxene + rutile + sulfide + calcite ± apatite ± Mg-Fe-carbonates (dolomite, brown spar, siderite) + Mg-Fe-chlorites (ripidolite, delafossite) ± zoisite-epidote ± petrologene (plumbago, graphitoid) in Chertovo Koryto deposit close to anthracite coal, coak) ± actinote-calomite. In more back chloritic zone actinote and/or calomite disappear. If the latter are missing in external zone, then the sign of transit to chloritic zone is complete substitution of biotite and other colored minerals of the original rocks in it. In the depth of silstones of Chertovo Koryto deposit petrologene is taken away from the part of chloritic zone, neighbor

to albite as from more back zones, that's why chloritic zone is divided here into carbon-bearing (with petrogen) and chloritic (without petrogen). In albite zone zoisite-epidotes and chlorites are missing? In internal – albite. Total mass of newly formed minerals is growing in direction to internal margin of each zone and from external zone to internal when number of mineral phases is decreasing from zone to zone. However, the internal zone keeps polymineral and is formed with congeries of silica, sericite, Mg-Fe-Mn-carbonates, leucoxene, rutile, apatite, sulfides. In chloritic and more back zones the content of gold, silver, arsenic, azoic and other metals is growing, reaching max in internal zone [4].

Nonuniformity in of the original rocks is taken into consideration when estimating mass of the entered into metasomatites and taken away petrogenic elements. Changes of element content in sample increment of one rock does not exceed as a rule 10...15 % against average numbers, which much higher than the exactness of chemical silicate test ($\pm 0,01...0,02$ %). When calculating average the nonuniformity of element content in a selection is decreasing, however it is impossible to estimate accurate inter zonal balance data as it is impossible to determine element content in original rocks, already undergone metasomatism. Taking this into consideration it is assumed that the range of «gain-loss» of elements up to 15 % can be disregarded as insignificant. In those cases when every banded or bedded rock (selection) is presented by one sample, probability of faulty judgment about «gain-loss» is growing for elements with low (less than 0,1...0,2 %) commensurable with the mistakes of content analysis, if the difference of content between the original and changed rocks does not exceed 40...50 %. These restrictions do not apply to inter zonal balance estima-

tions at levels of many tens...hundreds of per cent.

Simultaneously with growing mass of newly formed minerals, quantity index of intensity of rock chemical structure transformation is increasing – unit weight of the moved (sums of gained and lost) material, – from the first % in external zone to tens % in internal (table). Nonuniformity of element content in rocks gives the most contribution in formation of this index in external zone. It is seen when comparing its values in subzone of a mild change, formed by means of granitic rock of Irokindinsk deposit with relatively equal distribution of chemical elements an banded plagiogneiss Kedrovsk deposit with quite unequal distribution, – 1,2 % in the first case and 7,0 % in the second. It can be judged also when comparing indexes of gain-loss in this subzone of separate chemical elements, – they are lower in granitic rock, but higher in plagiogneiss.

All the discussed metasomatite haloes have the marked above typical petrochemical characteristics: inflow in them with metal-bearing solutions K, S, C, take away from them parts Si, disproportionation of alkali. In some haloes among rocks with high content of potassium additional mass of this element did not stay in metasomatite in accordance to detected principle [2, 6], according to which the more quantity of gained element moves in the forming metasomatite into solid phase the less its content in the original rock, and vice versa. In apo-slate and apo-gneissic haloes aluminium is redistributed – from rocks with relatively high content into rocks with low.

In addition to the mentioned six chemical elements (Ca, Mg, Fe, Ti, P, Mn) in all haloes strong significant gain is discovered, growing from external zone to internal. The latter exclude their redistribution between halo zones, but proves inflow with metal-bearing solutions from outside.

Table

Balance (gain-loss in per cent) of petrogenic elements in zonal wallrock metasomatite haloes of mesothermal gold deposits in Southern Siberia

Mineral zone, subzone	Chemical elements													Δ
	Si	Al	K	Na	S*	Co	Ca	Mg	Fe ²⁺	Fe ³⁺	Ti	P	Mn	
1. Irokindinsk deposit														
1.1. Migmatite granite, AR (3)														
Em(5)	0	0	-10	-10	+	20	20	0	0	10	10	50	-60	1,2
Ei(6)	0	0	-10	0	+	220	70	30	30	70	20	110	0	3,1
Ch (9)	-10	10	-40	40	0	500	70	60	0	60	-10	210	-50	6,9
A (8)	0	0	-20	-10	+	870	10	60	20	50	70	250	10	4,5
In(7)	-10	10	20	-90	+	2400	200	220	100	230	250	650	30	18,8
1.2. Felsitic microgranite-porphyry, PZ3 (2)														
Ch (4)	-10	10	10	0	-60	140	120	180	170	60	280	190	210	12,6
A (6)	-30	10	70	-50	20	300	240	330	330	80	500	310	330	27,0
In(6)	-30	20	160	-90	1900	390	350	390	210	450	520	230	360	36,8
2. Kedrovsk deposit														
2.1. Almandine-2mica plagiogneiss, PZ3 (1)														
Em(1)	-2	2,8	66	-55	-49	-48	-14	10	44	37	-12	143	-27	7,0
Ch (1)	-4	8,4	14	-21	160	-27	36	-48	22	35	10	68	-35	6,0
In(1)	-48	-46	27	-96	2140	1330	716	439	65	61	98	653	42	45,0
2.2. Quartz diorite, granodiorite, PZ3 (6)														
Ch(16)	0	0	0	0	1010	940	0	0	0	-10	0	0	10	4,0
A (6)	-10	-10	20	-10	3170	2070	30	50	60	-30	90	50	40	12,0
In(1)	-50	-20	40	-80	4270	4700	220	240	170	320	170	160	240	41,0
Carbonated feldspathic-quartz slate of kedrovsk suite, PR2														
2.3. Meta silty sandstone (1)														
A (1)	-17	4,9	248	-34	+	1905	33	1053	282	340	82	300	374	18,0
In(1)	-39	8,8	445	-93	+	6913	880	1781	447	125	73	672	347	43,0
3. Chertovo Koryto deposit														
Carbonated feldspathic-quartz slate of kedrovsk suite, PR1														
3.1. Coarse meta silstone(5)														
C (2)	0	0	0	-10	-30	-10	50	20	0	30	10	0	0	2,9
Ch (8)	-20	-30	-30	-70	120	1400	1180	100	70	10	540	840	560	29,7
In(1)	-40	-30	-10	-90	0	2800	1920	170	30	-90	570	900	2110	43,4
3.2. Fine-grained sandstone (5)														
C (1)	0	0	-30	80	180	40	30	10	0	-20	30	-30	100	3,5
C (3)	0	10	-20	10	130	100	80	120	30	70	20	0	150	6,5
Ch (6)	-40	0	-20	-70	430	1910	1400	330	160	30	820	890	1750	34,9
In(1)	-30	-10	-10	-90	10	1980	1260	260	110	180	790	870	3620	32,5
3.3. Consertal sandstone (1)														
C (1)	0	0	70	-70	1130	10	-40	110	60	90	30	-50	0	7,94
Ch (4)	-30	-10	0	-85	1640	1370	510	420	240	80	840	450	600	31,4
In(1)	-50	-30	-10	-90	6570	3180	1300	690	250	490	490	640	4600	55,6

Notice. 1) Mineral zones and subzones of wallrock metasomatite haloes: Em, Ei – subzones of mild and intensive changes of external zones, C, Ch, A, In – respectively carbonated, chloritic, albite, internal zones. 2) S* – sulphide sulphur, C_o – carbon oxidized, + – gain of S when content of it in original rock is lower than test sensitivity. 3) Within brackets – number of samples, taking part in average calculation. 4) Δ – unit weight of moved (gained and lost) material in per cent to the material of the original rocks in standard geometric volume 10000 Å³. 5) Balance of petrogenic elements in metasomatite haloes is calculated basing on petrochemical recalculations according to volumetric-atomic estimation of complete chemical silicate analysis of samples attributing difference of number of atoms of elements in standard volume of metasomatites of mineral zones and corresponding original rocks to the number of atoms of elements in the standard volume of the latter. 6) Complete chemical silicate analysis of rocks is made in the Central laboratory of production geological association «Zapsibgeology» and in the Western Siberian test centre (Novokuznetsk) under the supervision of I.A. Dubrovskaya and G.N. Yuminova.

In absolute terms content in metasomatites of back zones reaches in per cent (in brackets – ordinary content in the original rocks) CaO – 14 (1...3), MgO – 6...9 (3) FeO – 10 (3–5), Fe_2O_3 – 2,5 (0,5...1), TiO_2 – 4,5 (0,5...0,7), P_2O_5 – 1,7 (0,15...0,35), MnO – 1,3 (0,02...0,07). The gained elements are fixed in the following minerals of metasomatites: K – in sericite, Ca, Mg, Fe, Mn – in carbonates, chlorites, epidote, Ti – in leucoxene, rutile, P – in apatite.

The represented data gives additional possibilities in specification of geologic-genetic essence of hydrothermal gold producing process.

The repetitiveness in full volume in different deposits and rocks of structure and mineral-petrochemical characteristics of wallrock metasomatite haloes, in black-shale depth composing vein-disseminated ore deposits, appears regular, reflecting (additionally to other facts [4, 5]) genetic homogeneity of gold deposits of «non slate» and «slate» typed, that is formation of these and those as a consequence of metal-bearing solutions functioning, which have authentic physical-chemical and thermodynamic characteristics.

The majority of petrogenic elements, except Si, Al, Na, came from outside with metal-bearing solutions. Taken away from high-silicon rocks silicon earth (from 1 cubic meter of the rock with mass up to 0,8 t) migrated in haloes, so to say, in the content of soluble salts of silicic acid, filling its deficit in low-silicon rocks which underwent transformations and composing the basis of quartz veins and veinlets. Necessary for quartz resorption, for example, in quartz sandstone and silstones of black shale depths, freeing space for deposits of comparable mass of carbonates, deposits of petrogen in veinlets, the conditions were provided by alkali recovery form of early portions of solutions, from which earth silicon, oxidized forms Ti (rutile, leucoxene) deposited into

solid phase after inversion of early form into acid, oxidative. Obviously, taking into consideration the extent of rocky earth silicon resorption, its inflow with solutions from outside is excluded. Alum earth, as it was marked, was redistributed from high to low- alum earth [2]. Na was taken away from the haloes.

In reconstruction of geological dependence of mineralization we should take into account the inflow of association of femophilic elements into haloes. An inseparable couple in endogenetic processes titanium – phosphorus presents special interest, their concentration and mass in connection with ferrum in magmatic deposits reaches industrial value. For example, in magmatic and in initiated by them hydrothermal processes apatite-titanium-magnetite ores are formed in basites (Volkovskoe deposit in the Urals) and in carbonatites of ultrabasic-alkali complexes (Kovdorskoe at Kola Peninsula, Polabora in RSA), nephelite-apatite ores with high concentration of sphe – as a consequence of differentiation of ultrabasic alkali meltings (Khibinskoe deposit at Kola Peninsula). Genetic connection of production-scale agglomeration and increased against Clarke contents of the total of the discussed elements with basite, ultrabasite and alkali rocks, absence of the formed increased concentrations of these elements in combination (Ti, P, Mg) in the substance of Earth crust in connection with crust magmatite, aqueous, metamorphic processes points at their mantle sources. Suppositions for phosphorus, titanium and other elements loss from the mantle are proved by the results of mantle xenolith study and the real loss onto Earth surface – by the participation of their combination in the contents of gas volcano with mantle supply and solid products of volcanic activity [7].

Increased values of Ti, V, P in wall-rock metasomatites and ores are noticed in

several other hydrothermal gold deposits of Southern Syberia and the world. In the Soviet deposit of Yenisei range, formed in black siltstone of Proterozoic Uderei suite, rutile, titanite Iron ore, apatite are mentioned by N.V. Petrovskaya [8], which she thought were idiogenous to slate minerals, redistributed while mineralization. Later there was an opinion about titanium gain from outside [9]. In Late Paleozoic deposit Sukhoi Log of Leninsky region in back zones of AA deposits, laying among black siltstones of Late Proterozoic Dogaldynskaya and Khomolkho suites, contents of MgO is 2...5 times, P_2O_5 two times higher than their contents outside ore bodies [10], and blue and pink apatite is in quartz veining [11]. Ores of the Kalgurili deposit in Australia [12] are rich in vanadium-bearing muscovite, Hematite in Canada [13] – in association with rutile, El Dorado in California [14] – roscoelite, Cripple Creek in Colorado [15] – roscoelite and rutile. Anomalies of titanium are discovered in gold ores and metasomatites of deposits Mangaluru [16], Colar [17], in India, Connemarra and Katheleen in Western Australia [18], Obuasi in Ghana [19].

The foregoing together with mantle marks of carbon isotopic ratio of metasomatite carbonate and sulfide sulphur is complied with a number of other [5]. The participation in mesothermal gold deposits, including «slate» type, pre-ore, inter-mineral and late-ore dikes of mild alkali dolerites underlines simultaneous functioning of the connected by transportation routes- deep splits of mantle, low-crust chambers- mild alkali mafic melt and metal-bearing solutions on the top of Earth crust at stages of their mixing with deep immersed by groundwater aquifers. Chambers of mild alkali mafic melt, splits, forming deposits compose mesothermal gold producing systems, – total of all factors is in the complex of evidences of basalt-genic concept of mineralization,

supposing generalization of metal-bearing solutions in chambers of mild alkali mafic melts.

In future study of femophilic specialization of gold-bearing metasomatites and inclusion into analysis hydrothermal deposits Au, U, Sb and other metals we should take into consideration comparably fast decrease till Clarke concentrations of femophilic elements in metasomatites while removing from deep splits, thus, local but not the total deposit position of their anomalies, possible absence of the latter in different deposits because of inversion of favorable for transportation of phosphorus, titanium of alkali mode solutions to acid sub-ore stages or element deficit in generation chambers, and other factors, complicating the research.

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SEISMIC ACTIVITY CYCLES AND GEOPHYSICAL EARTHQUAKE PRECURSOR FIELDS' VARIATIONS

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Bases of this paper are statistical modeling materials of geophysical fields and processes linked with seismicity in convergent areas of Northeast Asian lithospheric plates. Were characterized seismic conditions for different parts of seismic belts and pointed out 22-year cycles of seismic activity. Were identified activity areas' displacement vectors for current cycles for 70-80th period of the XX century. Were marked out aperiodicities of day-night and annual cycling. For annual cycles it is characteristically the increasing of activity in April-June and October-November periods. In day-night distributions of earthquake's amount marks out two or three maximums of activity for characteristic areas of crossing active fractures. Was ascertained the successive activation of multidirectional fault systems in statistical meaning during twenty-four hours. Within the bounds of energy exchange model in global geological medium and Earth crust block structure, shown the uncertainty in forecast of earthquake places on the base of geophysical precursor fields in spatial scales of lithosphere heterogeneity.

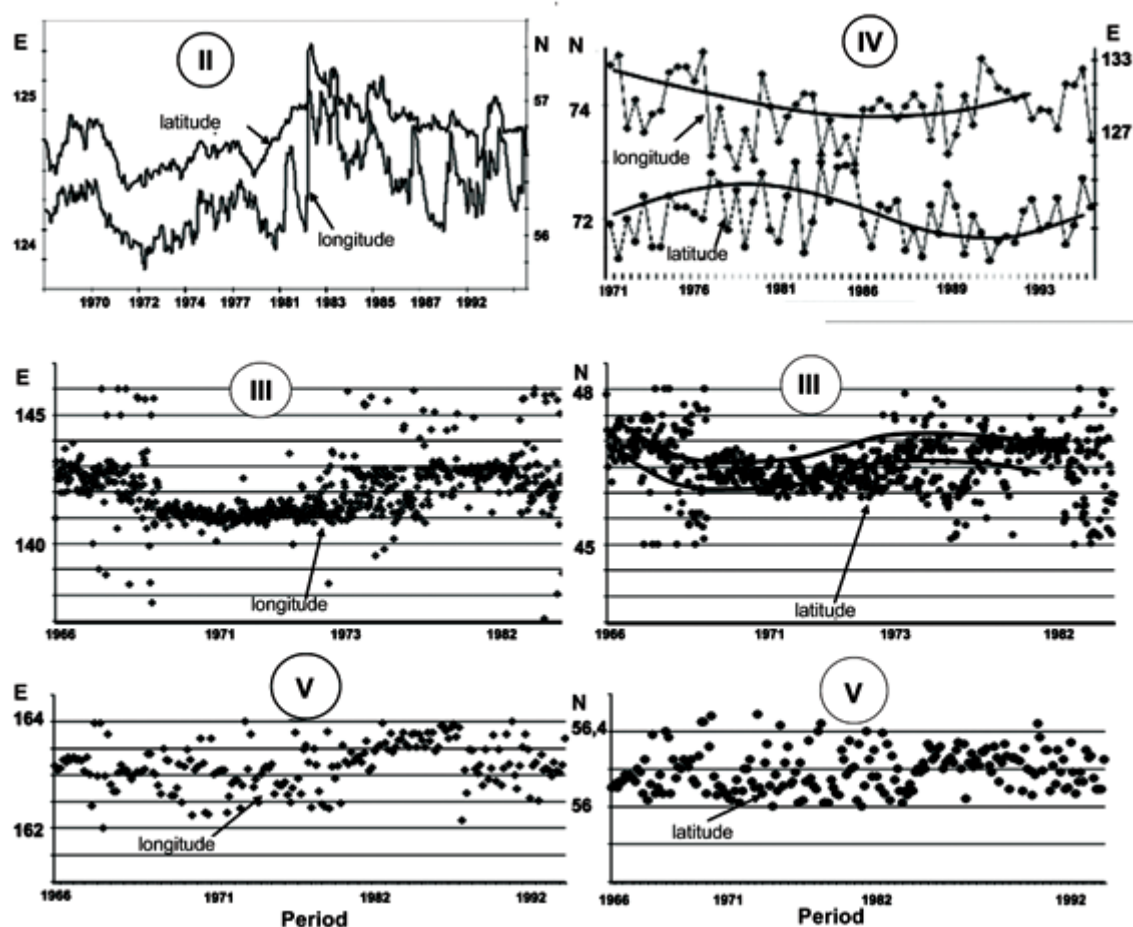
Results of seismic processes' statistical modeling

In problem of earthquake forecast by geophysical methods, in particular, by variations of physical fields of gravitational, magnetic, electromagnetic nature, produced by geological medium, in consequence of seismotectonic processes, emerges indefinite situations under the interpretation of experimental investigations. By results of multiple studies, ran in prognostic testing areas in seismoactive regions, we may conclude, that registered precursor aperiodicities of seismic events more, than events itself, with which we could link ascertained aperiodicities. Factually it mean, that geological environment of recording station reacts to dynamic processes of interacting environments "lithosphere-hydrosphere-atmosphere" in global scale. In the second place, aperiodicities of geophysical environment may be caused by wave (or cycle) processes in lithosphere and its interaction in global energy exchange system. Without a solution of two objectives: detection of geological environment reactive response radius on changing of geodynamic conditions and detecting of natural changing of seismoactive areas

seismicity itself, advancement in forecasting of earthquakes with geophysical monitoring will be difficult enough.

In this paper there are considered the questions of seismic conditions cycle changing, one of its components is hidden periodicity of seismic activity, which may influence on forming of geophysical earthquake precursor fields.

For detection of seismic process hidden periodicities was used the comprehensive approach on the base of different mathematical approach application, which includes traditional statistical methods and working out cluster analysis. Danger zone statistical forecast may be realized with averaged graphic of energy releasing centers migration. In this case every point (latitude- φ , longitude- λ) is some area with taking into account of averaging inaccuracy, in which at the moment (middle of averaging interval) is the most intensive seismic energy release (energy center). Cluster approach permits sorting out of seismic events from the common events' stream, those what doesn't participate in specified regularity processes, what promotes more differentiated (consequently more accurate) discharging of hidden periodicities (Pic. 1, areas 3, 5).

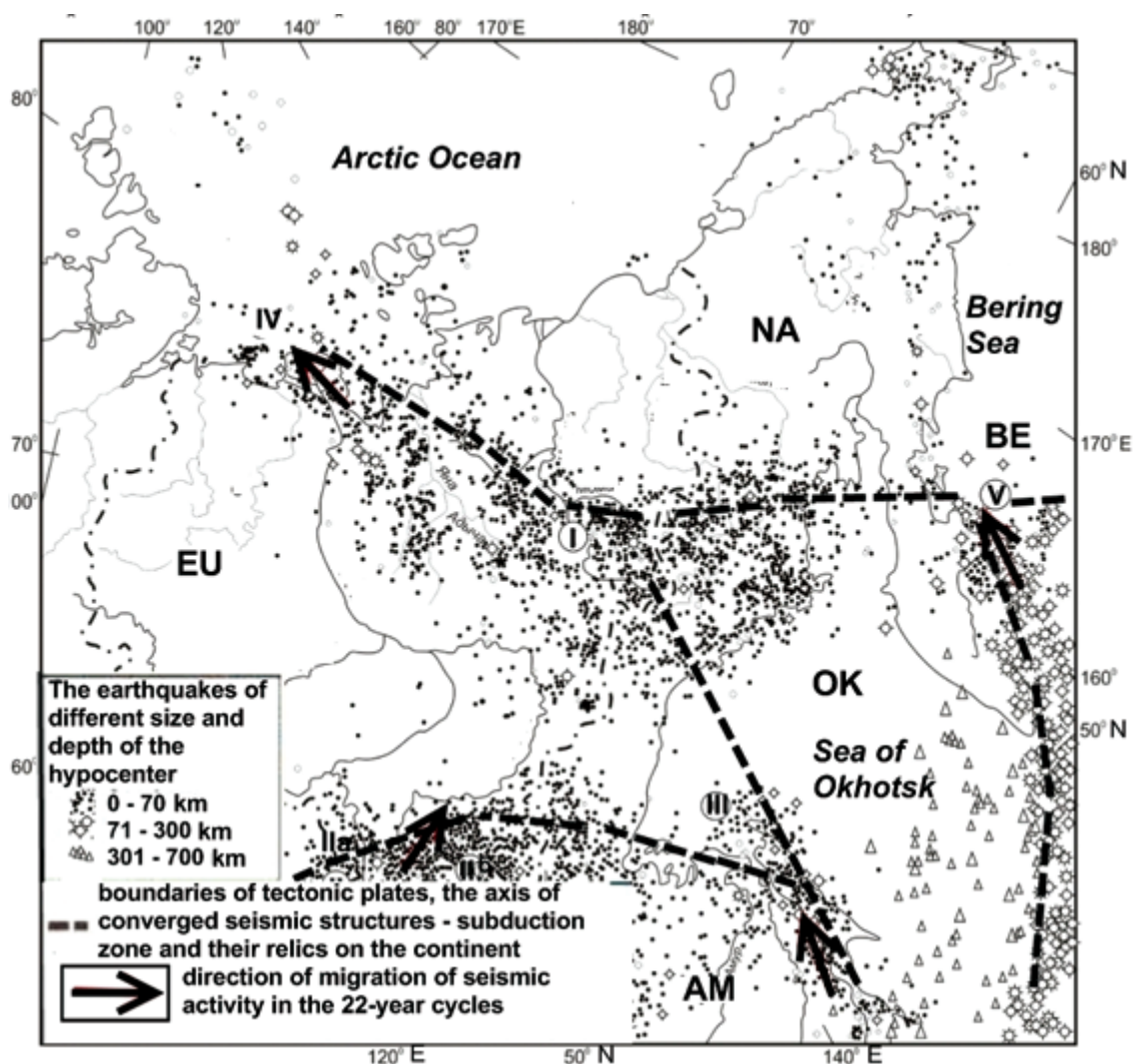


Pic. 1. Seismic activity variations in shape of earthquake epicenters longitude and latitude changing for seismic areas I – V in accordance with Pic. 2 of Northeast Asia seismic belts

II – Baikal-Stanovoi seismic belt; III – Sakhalin-Japan zone;
IV – Arctic rift zone; V – Kuril-Kamchatka zone

On the Pic. 2 there are presented fields of Northeast Asia earthquake epicenters distribution in limits of lithospheric plates, where are shown seismic activity migration directions. Earlier such regularity was pointed out for the whole Olekma-Stanovoi area (OSA) and formed seismic field of Tas-Yuryakh earthquake in 1967 with magnitude M7 (areas IIa, IIb, Pic. 2) [Trofimenko, 2007].

The beginning of seismic cycle for OSA refers to 1972 with maximum displacement to the North in 1983. In the area IIb (Pic. 2) the migration of epicenters occurs transversely of main labilized fractures, which have sublatitudinal spreading. In the area IIa the displacement vector is controlled by the crossing fracture system of meridional and sulatitudinal spreading.



Pic. 2. Boards of lithospheric plates and seismic belts of Northeast Asia (assisted with materials of V.S. Imaev, V.I Ulomov)

Lithospheric plates (EUA – Eurasian, CHI – Chinese, OKH – Okhotsk-sea zone, NAM – North American, PAC – Pacific); shown the distribution of seismic foci in limits of seismoactive zones: I – Verkhoyan-Kolyma, II-Baikal-Stanovoi (IIa – east closure of BRZ, IIb Olekma-Stanovoi zone), III – Sakhalin-Japan, IV – Arctic rift zone, V – Kuril-Kamchatka zone

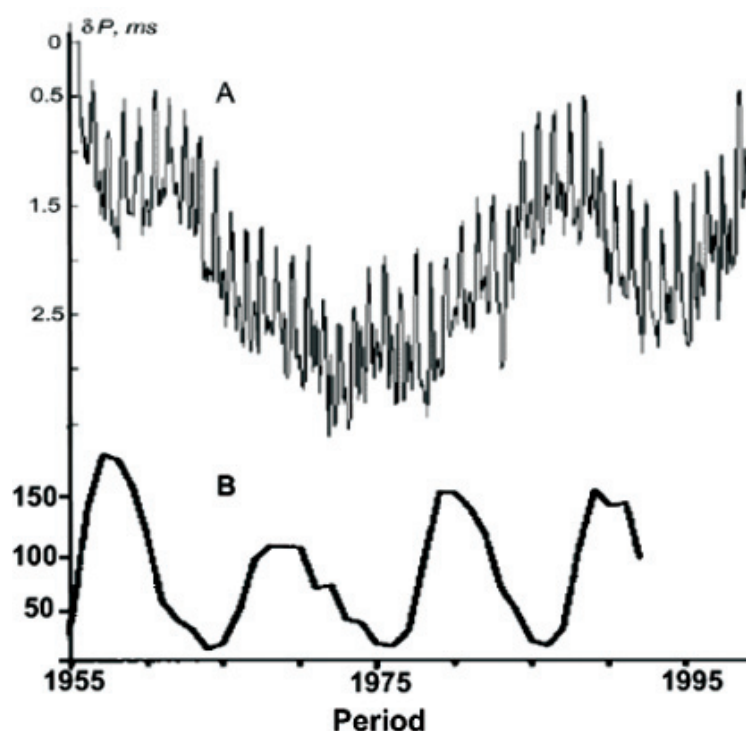
For separate parts of Sakhalin-Japan, Arctic rift and Kuril-Kamchatka seismoactive zones were determined displacement vectors of seismic activity along convergent seismoactive structure's axes to the North starting from the period of 70th, XX century. Duration of the full cycle

of seismic activity for all pointed areas is 22 years (Pic. 2).

Independence of seismic activity displacement vectors direction from geodynamic conditions and latitude may testify to the global common perturbation source. Comparison of this regularity with

irregularity of Earth rotation suggests, that these events have common regularity, which applies to the period of 70th, XX century. Process of average monthly value deviations of day δP {ms} as a result of Earth's rotating velocity irregularity over a period 1955-2000 is shown on

the Pic. 3A. Modern measurement precision permitted to ascertain, that, starting from 1956 until 1961 Earth rotation was increasing, from 1962 till 1972 was slowing down, and from 1973 till our days the Earth increases its rotation [Sidorenkov, 2004].



Pic. 3. Average monthly deviations of earthday duration δP from standard over the period from 1955 till 2000 (A) and solar cycles (B)

On all the presented graphics of seismic activity migration (Pic. 1) age of 70th, XX century traces back as inflection of average curve, or of the minimum of increased epicenter density.

On the graphic (Pic. 3A) is pointed the increasing of rotation 1958-1961 and slowing down 1989-1994. Against the background of perennial changes well seen seasonal variations of earthday duration δP . Earth rotating velocity is the least

in April and November, and the most in January and July. January maximum is less than July one. The difference between minimal earthday duration and standard in July and maximal in April or November is 0,0001 s [Sidorenkov, 2004].

Pic. 3B illustrates solar cycles, which influence is usually considered as the initial cause of seismic activity increasing. Increasing of event flux density in 1971-1972 and 1982-1983 is for the

zone 3. Similar regularity is typical for zones 2 and 5 over the period 1982-1983 (look at Pic. 1)

Consideration of two possible causes of modified seismic activity indicates that the processes being studied for the interaction \rightarrow influence shifted over time relative to each other. Moreover, the global solar activity increases at first, and then, after some time - the seismic activity of Earth. According to the authors [Hain, Halilov, 2008], intermediate process between the time of increased solar activity and an increase in seismic activity, leading to delay of seismic activity in relation to the sun, is to increase the stress state of the crust. Establishing a causal relationship between the northern drift of seismicity and the cosmic process at the moment is problematic.

Thus, the cycles of seismic activity occur in the scalar form of the dynamics of activation foci in the energy level and in vector form with migration of earthquake foci within individual parts of the seismic belts of the Northeast Asia. This result is consistent with studies of other regions, in submitted author's review [Khain, Khalilov, 2008]. Changes in seismic activity may not be a source of periodic changes in the physical fields that are produced in three interactive environments "lithosphere-hydrosphere-atmosphere". Investigation of spatio-temporal properties of earthquake seismic zones in Northeast Asia for a variety of geodynamic conditions of deformation processes development established a number of general regularities on which were highlighted areas that are sensitive to rapidly changing geodynamic conditions. For selected areas in the dynamics of seismicity established the identity of the distributions of the earthquakes number during the day and year. For the areas of crossing tectonic structures in day distributions there

are point out 2-3 activity maximums and 1-2 maximums in annual (Pic. 4).

By the results of maximum day activity determination for northern board of Amur plate in assumption of flat wave, made an attempt to ascertain the phase speed of a day seismic activity maximum displacement. The true longitudinal time for pointed zones is: BRZ – 7,4 h, OSA – 8 h, Sakhalin – 9.47 h. Day activity maximums correspondingly – 18, 19 and 20 h UT. Hence the true maximums' time 25,4, 27 and 29,5 hours LT. The difference between maximums in Sakhalin and BRZ is 2 hours, i.e. relative to the prime meridian they are forming simultaneously.

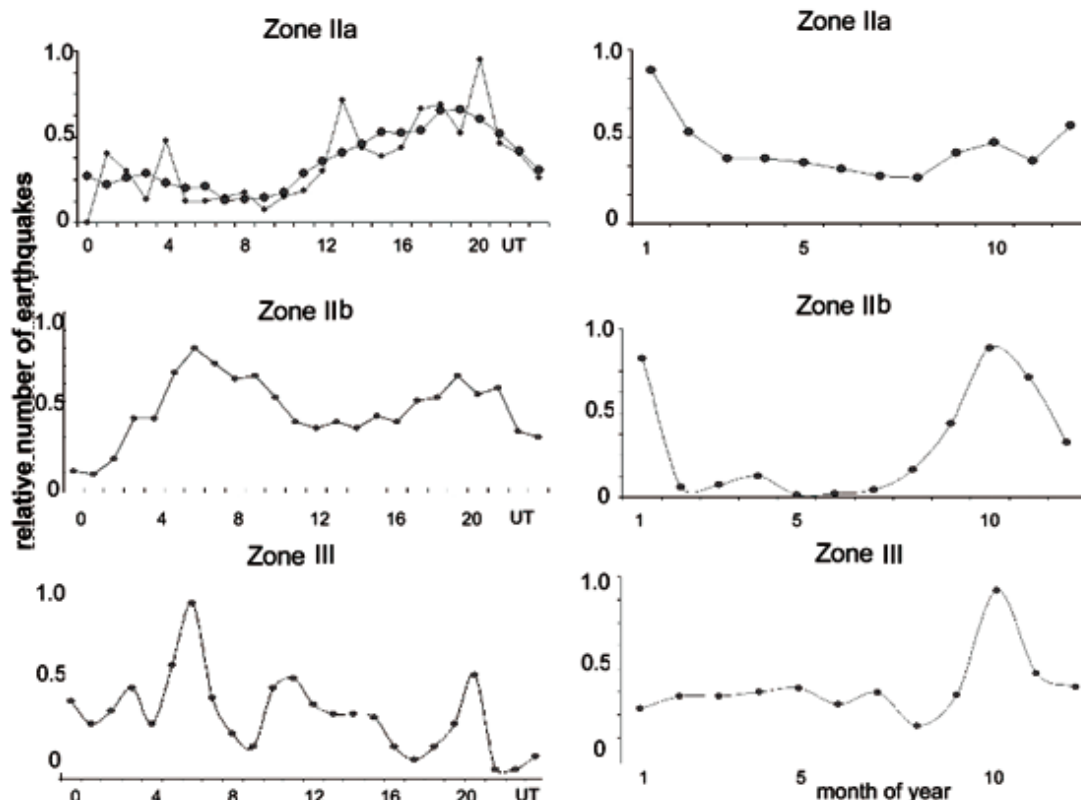
In annual aperiodicities notes the maximum in October-November independent of observable zone's length. The maximum of events in April-June marks out less confidently, what ties with insufficient statistic of taken into account general earthquakes.

Discussion and conclusions on the results of simulation

By geophysical monitoring of geological environment was ascertained the spatial parameter of seismoactive processes influence on physical field aperiodicities' forming in limits of active tectonic structures of Amur plate.

Simulation of geophysical fields and processes by statistical analysis methods, geophysical researches and passive geophysical monitoring of geological environment let us formulate a number of methodic and technology items of geophysical researches of transition zones of lithospheric plates for controlling of geodynamical condition of lithosphere and seismic activity periods forecast.

Made models of geophysical fields and seismic process go into geophysical environment block structure conception



Pic. 4. Earthquakes number distribution pending a day and a year.

IIa – northwest of Baikal rift zone, IIb – central part of Olekma-Stanovoi seismic zone, III – southern part of Sakhalin (according to Pic. 2)

[Sadovsky, 2004]. For such criterion the forecasting of forthcoming seismic event place cannot be distinguished more exact, than the size of domain's spatial parameter [Trofimenko, 2008].

Dynamical gap size after heavy earthquakes independence from earthquake focus inside the area means that at presence of geophysical signs of imminent earthquake, uncertainty of earthquake focus location is equivalent the area, in which limits takes down visible portion of tectonic tension.

Independence of geodynamical system size after energy earthquakes, starting from some threshold energy value,

enables forecasting of the threshold (minimum) energy value of coming earthquake (part 2, 4).

Similarity of seismic processes of various seismogenic zones in spatio-temporal scales indicates the global type of seismic regularity appearance. Electromagnetic pulse aperiodicities, registered before the earthquakes in limits of northern board of western, central and eastern flank of Amur plate leads to ambiguity of spatial location of focus in more indefinite scale.

Generalization of received results of geophysical fields' and processes' simulation testifies that, ultimately, with using of

geophysical methods are control geodynamic processes in common, and forecasting of separate earthquake places inside the dynamic system determines with the accuracy up to spatial scales of lithosphere inhomogeneities.

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*Materials of Conferences***APPLYING THE KNOWLEDGE-BASED SYSTEMS TO THE GEOLOGICAL SECTION'S TOP SLICE FORECASTING**

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The geological section's top slice forecasting (GSTS forecasting) is a process of obtaining the knowledge about the detailed GSTS structure from the geophysical data [1]. It occurs in different civil and industrial engineering tasks. For this purpose various associations between geophysical parameters and other physical properties of rocks are established. That means, that geological environment is not breached as geophysical methods are applied on its surface.

But the process of forecasting GSTS is quite difficult because the associations include various parameters which can be defined only by special tables on the basis of some other properties of rocks. Besides, all those associations and tables are developed on the basis of a huge amount of statistic data and are constantly specified.

In general, to forecast GSTS we must apply a complex of methods including 1 or 2 geophysical methods and laboratory analysis. Thus, it takes

a lot of time and money to conduct engineering-geologic researches.

On the other side, there are high-qualified specialists who have great experience and are able to obtain maximum of knowledge from minimum of data. They are called professionals. They possess unique knowledge and experience in their speciality. But it is obvious that the experience of one man can be perceived by another man in another way or even rejected.

AI-systems are the solution of both problems: GSTS forecasting with less time and finances, and saving the unique knowledge of the professionals in the field of engineering geology. To demonstrate the abilities of intellectual systems in GSTS forecasting the program for rocks identifying was developed.

1. Rocks Identification

The program's structure is shown on the Fig. 1. The knowledge-base editor is divided into 3 subprograms:

- Geophysical Methods subprogram allows entering and editing the knowledge about geophysical methods in engineering geology;
- Rocks Classifier subprogram allows entering and editing the knowledge about the rocks;
- Rules subprogram allows entering and editing the rules that are used to identify the rocks.

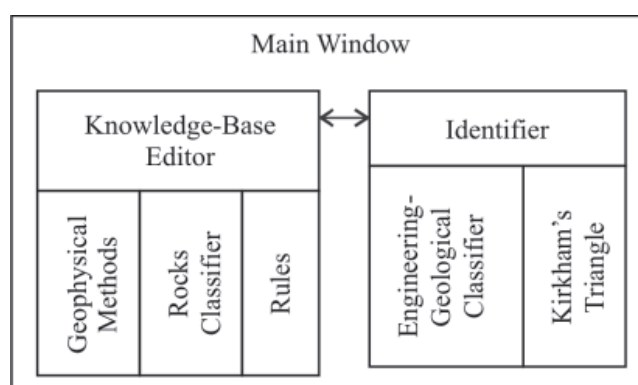


Fig. 1. Program structure

To identify the rocks the user may choose one of two subprograms: Engineering-Geological Classifier or Kirkham's Triangle. The existence of these two subprograms is a consequence of the key problem of identifying rocks: there is no unified classifier. Of course, there is GOST 25100-95

«Rocks. Classifier», but it should be formalized first and the tables in it are not related to each other.

1.1. Engineering-Geological Classifier

The structure of engineering-geological classifier (EGC) of rocks is shown on the

Fig. 2. It includes five groups of rocks. For each of the groups there are a properties description and a list of rocks types. The group

«V – Rocks of specific properties» requires special research methods and is not presented in this paper.

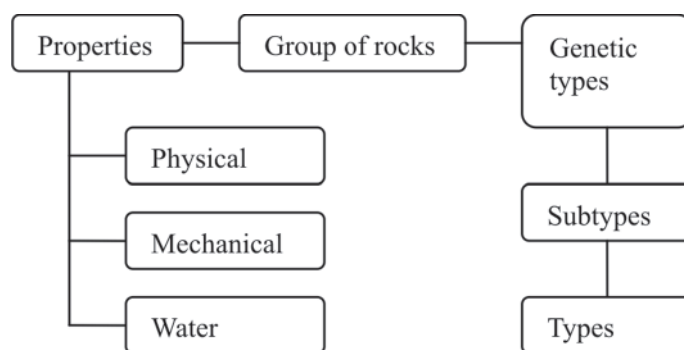


Fig. 2. The structure of EGC

It was noticed that each rocks group can be identified almost uniquely by two properties: elastic waves' speeds and density of rocks (Table 1). Thus, with these two properties and

the knowledge of how they are interrelated with rocks types there is no need to apply a lot of engineering-geological methods to forecast GSTS.

Table 1

The interrelation between rocks groups (EGC) and their elastic waves' speeds and densities

Group of rocks	Elastic waves' speed V_p , m/s	Density ρ , g/sm ³
I – Hard rocks	4000–8000	2,65–3,10
II – Rather hard rocks	1100–4500	2,20–2,65
III – Loose soils	200–1800	1,40–1,90
IV – Soft soils	300–2200	1,10–2,10

Back to the subprogram, the user must enter the values of elastic waves' speeds and densities of rocks, and the subprogram identifies the rocks group for each pair of input data according to Table 1 formalized in rules. But it should be mentioned that using EGC the program can identify only 4 rocks groups.

1.2. Kirkham's Triangle

US Department of Agriculture textural classification triangle (after D. Kirkham) is shown on the Fig. 3 [2]. As it is well-seen, to identify the rocks type we must know three rocks parameters: silt, clay and sand percentage (granulometric com-

position). But the input data are elastic waves' speeds and densities of rocks. To establish associations between the input data and granulometric composition, the statistic data were used. The result is presented in Table 2 (columns 1–2 – association between density and silt percentage; columns 3–4 – association between elastic waves' speed and sand percentage).

Thus, the user enters the values of elastic waves' speeds and densities of rocks. The subprogram associates the input data with granulometric composition according to Table 2 formalized in rules and identifies the rocks types for each pair of the input data according to Kirkham's triangle for-

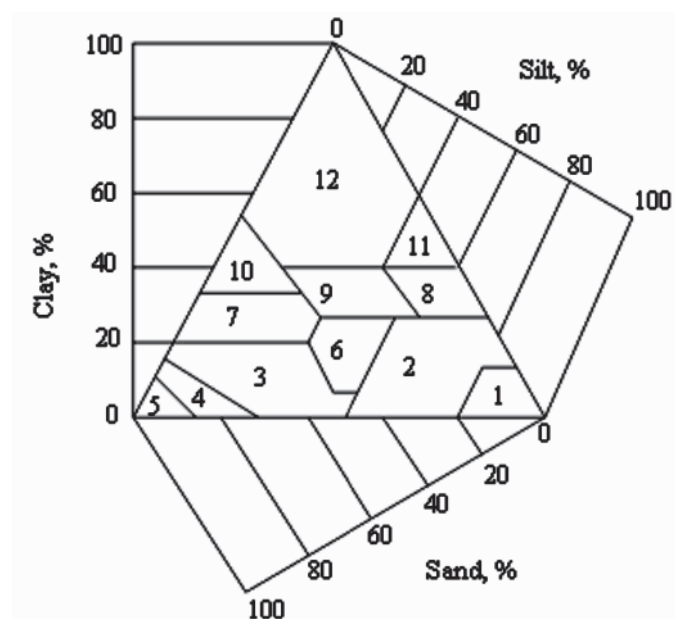


Fig. 3. Kirkham's triangle: 1 – silt; 2 – silt-loam; 3 – sandy loam; 4 – loamy sand; 5 – sand; 6 – loam; 7 – sandy clay loam; 8 – silty clay loam; 9 – clay-loam; 10 – sandy-clay; 11 – silty clay; 12 – clay

Table 2

Associations between input data and granulometric composition

Density, g/sm ³	Silt, %	Elastic waves' speed, m/s	Sand, %
1	2	3	4
1,4–1,5	30–50	200–350	80–90
1,51–1,55	20–30	351–450	50–70
1,56–1,65	10–20	451–500	40–50
1,66–2,0	0–10	501–670	20–40

malized in rules. It should be mentioned that meanwhile there is no appropriate association for clay percentage. It can be established in two possible ways: 1) the third input parameter interrelated with clay percentage should be found; 2) clay percentage associates with both input parameters.

2. Experiment

To test the program the data of engineering-geological researches in Irkutsk city were used. The input data and the program's results are presented in Table 3 (columns 1–4). In the column 5

the results obtained by standard engineering-geological methods are presented. As it is well-seen, the program identified rocks types correctly in 86 % of cases.

Conclusions

The rocks identification accuracy of 86 % is a very good efficiency and perspectivity factor for applying the knowledge-based systems in GSTS forecasting.

Using rules to formalize the unique knowledge of professionals in any human activity field

Table 3

Testing data and results

№	Density, g/sm ³	Elastic waves' speed, m/s	Program's result	Fact
1	2	3	4	5
1	1,882	350	Loamy sand	Loamy sands, loams
2	1,766	410	Sandy clay loam	
3	1,7776	320	Loamy sand	
4	1,7428	400	Sandy clay loam	
5	2,0	430	Sandy clay loam	
6	1,8008	480	Sandy clay loam	
7	2,0	510	Clay	
8	1,9748	470	Sandy clay loam	
9	1,534	370	Sandy loam	Loams, silty sands, sands
10	1,534	360	Sandy loam	
11	1,6848	390	Sandy clay loam	
12	1,7312	430	Sandy clay loam	Loams
13	1,476	430	Sandy loam	
14	1,6732	430	Sandy clay loam	
15	1,6036	430	Sandy loam	
16	1,6616	430	Sandy clay loam	
17	1,5688	430	Sandy loam	
18	1,6616	430	Sandy clay loam	
19	1,6964	430	Sandy clay loam	
20	1,5804	430	Sandy loam	
21	1,5224	380	Sandy loam	
22	1,6152	380	Sandy loam	
23	1,6732	380	Sandy clay loam	
24	1,6268	380	Sandy loam	
25	1,4296	380	Sandy loam	
26	1,6964	380	Sandy clay loam	
27	1,708	380	Sandy clay loam	
28	1,5224	380	Sandy loam	
29	1,7196	380	Sandy clay loam	

(as it is shown on the example of solving engineering-geological tasks) we can collect, keep, transfer and use them. And with this unique knowledge the AI-systems can acquire a certain intuition in solving different problems.

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ANTINOMIC-SYMBOLIC EPISTEMOLOGICAL CONCEPT IN RUSSIAN PHILOSOPHY

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There were dualistic concepts of relationship between Faith and Knowledge in Russian philosophy. Faith and Knowledge are opposed antinomically. P.A. Florensky, L. Shestov, G. Florovsky and others came to the problem of the relationship between Faith and Reason from the antinomial standpoint. They insisted on inevitable antinomial status of human reason in case of the faith. They combined conflicting idea of Faith and Knowledge having equally convincing logical base. P.A. Florensky rejects strongly any agreement on Faith and Reason. According to him, the «reasonable faith», the faith «with proof based on reason», is a revolt against the God and the worst kind of the godlessness.

The main contradiction in the European culture – the contradiction between individual and general – has emerged throughout the human history in the system of relationships between an individual's free will and the divine will. In the Russian religious philosophy, this contradiction had a theologo-metaphysical tinge and demanded a reinterpretation of freedom and transformation of the intellect. In other words, the idea was to reform rationality. Two approaches to resolving this conflict took shape. Philosophy of total unity (V. Solovyov) called for transformation of the intellect, its integration with morality, which is only possible if the intellect and morality are spiritualized by faith. Representatives of the reformist school of Russian religious thought (N. Berdiaev, L. Shestov, D. Merezhkovsky and others) demanded that the intellect and morality submit to existentially tinted faith and it take its place in the spiritual life of man. Thus, the medieval issue of the relationship between faith and reason came once again to the foreground in the Russian philosophical thought at the turn of XIX and XX centuries.

P.A. Florensky was critical about V. Solovyov's attempts to establish, using rational theories, «harmony» between philosophy and religion, and hence between faith and reason, which demonstrates an-

other feature of the thinker's philosophizing – anti-intellectualism. In his work «Pillar and Ground of the Truth» the philosopher emphasized that his work was to oppose the «reconciliatory philosophy of Vladimir Solovyov». However P.A. Florensky realized that the traditional «vilification of reason» does little to convince of the truth of religious dogmas, because in order to believe man must «test God with his intellect». This «test» was understood by him as a «failure» of human reason «to perceive the ultramundane». But it was through philosophy, natural sciences and humanities that he sought to justify this conclusion, refuting the truths of the mind with the arguments of this same mind [1, 2].

Scholastic theology, according to P.A. Florensky, sought, using the theory of dual truth, to separate scientific and religious dogmas, but this program appeared to him a kind of a «Christianity's wake». Rejecting pluralism in determining the truth, he enunciated the philosophical, scientific, and art explorations not only as not contradicting religion but also as confirming the correctness of religious doctrines. Moreover, it was quite evident for P.A. Florensky that «art, philosophy, politics, economics, etc. cannot be considered as self-sufficient entities», since it is only «Christ-centric aspiration» that specifies them» [3].

In other words, all manifestations of human culture have value only as long as they can be «transfigured in a Christian manner», i.e. made useful for religion. Consequently, a holistic evaluation of P.A. Florensky's worldview should not be focused only on his scientific, art, or cultural explorations, for the thinker emphasized that the lack of religious orientation leads to the fact that «the gray fruits of the brain» in many respects obstruct «spiritual eyes». This attitude determined P.A. Florensky's understanding of philosophy as «the evidence of the spiritual world». The forms of this evidence in the philosopher's speculations are extremely varied, but most of them are different from Western rationalism, and often are non-conceptual and non-verbal. Therefore, the verbal expression of philosophical ideas was implemented by P.A. Florensky in antinomistic, contradictory manner, sometimes leading to formal-logical problems.

The thinker consciously aimed to reveal antinomies both in the field of scientific thinking and in the field of religion. The «antinomies of Christian life», the «antinomies of the biography of God» were mentioned by B.P. Vyscheslavtsev, S.N. Bulgakov, L.I. Shestov, V.F. Ern and others, who, however, used this notion occasionally, while in his works P.A. Florensky made antinomies-contradictions the subject of systematic consideration that eventually grew into a certain methodological program: «Knowledge of contradiction and love of contradiction, along with ancient skepticism, appear to be the highest achievement of antiquity. We must not, we dare not, cover contradiction over with the paste of our philosophemes! Let contradiction remain as profound as it is...» [1] This methodological and at the same time thematic idea put forward by P.A. Florensky was the subject of critical-reflexive analysis by such philosophers as N.A. Berdyaev, V.N. Ilyin, N.O. Lossky, Fr.G. Florovsky, and others.

P.A. Florensky referred the origins of antinomism to the philosophy of Plato, interpreting the majority of his dialogues as «gigantic antinomy artistically dramatized» [1]. P.A. Florensky gave high regard to I. Kant's antinomies: «The idea of the possibility of antinomicalness of rationality is the most profound and most fruitful of Kant's ideas», he wrote [1]. However, he did not accept the classification of the antinomies given by the German philosopher and believed the main cause of his fallacy was in absolutization of the significance of the human mind. Accentuation on the subjective reason makes, according to A.P. Florensky, his «dialectics of the antinomies» indeterminate, meaning that he had not completely met the proposed objective – making room for faith. It is this theme, often referred to as «the overcoming of Kant and Kantianism», that developed in the works of P.A. Florensky into a problem of antinomism. Two factors, according to the contemporary researcher of Russian religious philosophy S. Khoruzhiy, determine its solution by the thinker: on the one hand, a fundamental philosophical dependence on Kant, on the other – an emphasized subordination of philosophical study to the «religious-existential problem, the problem of religious conversion» [4].

By focusing his attention on the problem of the reason, Florensky expanded on the idea of its antinomical status. By his own admission, he began his reasoning with what Kant finished his, and posed the question – «how is reason possible?» [2]. In an attempt to answer it, the philosopher defined antinomies as destroying the reason, rendering it a rational judgment that cannot reject the closedness of its rational constructions, depravity. Reason, in his opinion, is woven from two opposed basic principles – «the finitude and the infinitude», i.e. discourse and intuition (contemplation). From this perspective, the antinomies formulated by Kant, «only open the door behind the scenes of Reason: Kant did

not notice that the theses of cosmological antinomies «say that the opposite is impossible and, consequently, «various functions of consciousness» come into collision and not just self-contradictoriness of the same one becomes revealed» [2].

Summing up the study of P.A. Florensky's antithetics, S. Khoruzhy, reconstructs the essence of the thinker's reasoning, and notes that the Truth is the antinomy, which is ruinous to reason. Journey to the Truth demands a renunciation of rationality and sacrificing it. Acceptance of the antinomy and, as a consequence, a split and lost self, is the only and inevitable fate, awaiting rationality on this journey [4]. Thus, in his criticism of rationalism Florensky steps on the shaky ground of irrationalism.

According to S. Khoruzhy, Florensky adopts Kant's understanding of the reason rather than Hegel's, (i.e. pseudo-scientific, positivist instead of philosophical-dialectical), which results in the interpretation of contradictions as inevitable and disastrous for it [4]. For dialectical mind, antinomies, as we know, are not destructive but motivating. It is dialectical mind, according to S. Khoruzhy, that is one of the intermediate cognitive forms between formal logic and pure mysticism. And since Florensky ignores all «intermediate» horizons of the workings of consciousness, «the only way to overcome the destructiveness of antinomy ... is appealing to the mystical consciousness. This is what is Florensky's position ...». S. Khoruzhy rightly says that even if faith is above reason, as Florensky argues, it does not mean that it is antagonistic to it: it is but «free in relation to it, it is not bound by its limitedness» [4]. Equating the suprarational cognition with antirational one, characteristic of extreme irrationalism, relates P. Florensky's teaching to the tradition of «absurd» faith by S. Kierkegaard and L. Shestov.

We believe that the «mystery» of overcoming Kant and Kantianism in the

works of P. Florensky consists in the fact that the overcoming never occurred. The signs of Kantian statement of problems, the signs of rational philosophizing are present in the «Pillar» in the most obvious way. If the stage of theodicy is marked by unsuccessful attempts against Kant, the stage of «concrete metaphysics» shows that Florensky diverges from Kantianism to the philosophy of symbolic speculation. However it is interesting to note that Kantianism produced E. Kasirera's philosophy of symbolic forms closely related to P. Florensky's symbolism; so Kant is an «eternal companion» of P. Florensky (S. Khoruzhy) [4].

K.A. Svasian also believes that if Kant's phenomenality of cognition is understood as symbolism, it is «fraught with ... tricks of dialectics and antinomies of reason» [5]. The fundamental link between symbolism and the antinomism of the philosophy of Kant – that «eternal companion» of P. Florensky – suggests that antinomism and symbolism in their interrelationship were major theoretical and methodological principles of P.A. Florensky's philosophy.

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DETERMINANTS OF ANXIETY AND ITS FORMING AS THE STABLE PERSONALITY FORMATION

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The concept of anxiety was and is rather interesting for many schools at foreign psychology. S. Freud suggested two points of view to anxiety. First one consists in that anxiety appears at the result of ousting of sexual attractions; the discharge of sexual attractions meets the obstacle and causes at the body exercise stress, which transforms into an anxiety. According to second point of view anxiety appears at the result of fear behind those attractions, revealing of which or compliance with which creates outside danger.

Most often the term «anxiety» is used for describing of untidy psychical condition, which is characterized by subjective sensations of tension, nervousness, dark presentiments, and from the physiological side it is accompanied by autonomous nervous system.

Anxiety as condition is normally gone through by every healthy man in cases, which suggest the anticipation of negative results. This condition appears when individual perceive defined irritants or situation as the carrying in them potentially elements of threat, danger, harm. Being natural condition anxiety plays positive role not only as indicator of abnormality but also as a mobilization of reserves of psychic. The condition of anxiety is unique form of emotional anticipation of failure, signalizes to the subject the necessity of careful foresight of all base conditions of forthcoming work, promoting optimal preparation for the activity, which is most adequate to the aims of subject. But most often the anxiety is considered as negative condition and is connected with the feelings of the stress. U.L. Hanin notes that anxiety as the condition is the reaction to different stressors, which are characterized by different intensity, changeability in time, the presence of realized untidy feelings of tension, concern, alarm and is accompanied by expressed activation of vegetative nervous system. The condition of anxiety can vary by its intensity and change in time as the function of level of stress, to which undergo the individual.

At the psychophysiological level the reasons of anxiety are connected with the peculiarities of structure and functioning of central nerve system, peculiarities of constitution, weakness or imbalance of nerve processes, the presence of the

nidus of pathology at the brain cortex, different diseases. Psychophysiological base of anxiety consists in the disorder of homeostatic mechanisms of textiform formation, which is revealed in abnormality of coordination and activity of its brake influences. Structural changes of personality form not at once, but gradually, by the measure of consolidation of negative personal aims, tendency to perceive rather wide range of situations as the threaten ones and to react on them with the condition of anxiety. Constant feelings of anxiety are fixed and become the behavior or personality – anxiety. Appearance of condition of anxiety while its constant repeating becomes dominant and conditions the forming of new formation, that means it leads to the consolidation of appropriate behavior – anxiety. The process of forming of anxiety goes by several phases. At the first phase there occurs its origin. This moment is connected with the forming of dynamical supporting center, which consists in psychical processes, in which anxiety is revealed. Second phase is characterized by the expression of anxiety and its consolidation at the concrete activity and behavior. At the third phase formed new formation, assuming a character of behavior of personality – personal anxiety, reproduces psychical conditions that have caused it. This is exclusive psychological circle, in which there occurs the consolidation and strengthening of anxiety that leads to accumulating and deepening of negative emotional experience, which, causing negative prognostic valuations, promotes increase and saving of anxiety.

At the genesis of personal anxiety lays insufficient formation or abnormality of mechanisms of psychological self-government. Discrepancy of subjective model of real reality is accompanied by manifestation of inadequate overstated anxiety, can lead to the abnormality of regulatory processes. Then anxiety consolidates as the behavior of personality and develops into a dominant trait of character. Personal anxiety unsurely reveals in behavior, it has expression of subjective problems of personality, which create specific background of its vital functions that oppress the psychic.

The level of personal anxiety is defined on the assumption of how often and how intensively individual has a condition of anxiety. Functional aspect of research of personal anxiety suggests its considering as system behavior, which reveals at every levels of man's activity. A.I. Zakharov pays his attention to the separation of concepts of fear and anxiety. These phenomena have general component at the view of feeling o alarm, perception of

threat and absence of feeling of safety, but anxiety is the signal of danger, and fear is the response on it; anxiety is presentiment, and fear is the feeling of danger; stimuli of anxiety have general, undefined and abstract character, fear is more concrete and defined; anxiety like waiting of danger is projected to the future, fear is like memory of danger and has as a source mostly traumatizing experience.

Very important, in our opinion, is the thought of A.I. Zakharov about the presence in the anxious, inclined to neurosis personality the traits of «contrast», discrepancy of personal characteristics, for example, pride, confidence is combined with tenderness, aggressiveness with shyness, aspiration for the leadership with disbelief in own powers etc.

V.I. Garbusov examines near to the anxiety the conception of childish nervousness, which is its consequence at the physiological level. By the childish nervousness he considers excessive excitability, irritability, tearfulness, impressionability, sleep disturbance, and also neuropathy and neurosis. One of the main reasons of childish neurosis V.I. Garbusov considers pressure in the human nature temperament at the process of wrong upbringing. V.I. Garbusov singles out its four types: unacceptance, hypersocial, anxiously-mistrustful and egocentric upbringing.

At the examination of this problem it's necessary to touch upon another one issue, maybe a little bit untraditional. U.M. Antonyan connects anxiety with the problem of criminal behavior. Anxiety is considered as one of the fundamental traits, which consists in raised inclination to feel anxiously at different situations, to sense undefined danger, including in connection with uncertainty of its source. Anxiety as the behavior of personality corresponds defined position, which predisposes to perception of objectively safe conditions as threaten ones. Anxiety is the condition of psychic, which covers any feeling of person and incites him to the search of source of feelings in the outside world.

Anxiety can be, in the opinion of U.M. Antonyan, at different level. If it reaches the degree of fear of death, person begins to protect his biological status, his biological existing. One of the ways is forcible crime as the form of protection from the world, which is subjectively perceived as dangerous. Other way of protection should become suicide, leaving of this world. But anxiety can be formed and saved at the level of alarm and uncertainty as behaviors, which are inwardly inherent to this personality.

By the growing up of human there changes the character of objects that cause the fear. Potential possibility of physical injury for the majority

of us is not a threat, even because it's rare. More often we are afraid of those things, which can sting our pride and lower self-appraisal. We are afraid of failures and psychological losses, which can cause a real revolution at the soul of everyone.

Reverse connection between fear and excitement we see when the emotion of interest (excitement) develops into fear. Indirect confirmation of narrow interconnection between fear and excitement we can find in the research of A. Bull (Bull, 1951), which is devoted to hypnotically inspired fear. She writes about that people being tested, enduring inspired fear, simultaneously strived for explore the object of fear and avoid it. Bull considers this conflict as the proof of dual nature of fear. The theory of differential emotions interprets such behavioral conflict as the result of hesitation between the emotion of fear (motivating the reaction of avoiding) and emotion of interest (motivating research activity).

From the recounted follows, that fears as the conditionally-reflective affective response to the imagined or real danger have emotional base, cognitive direction and interpersonal conditionality, being simultaneously the dynamic stereotype of personal reacting. We are sure of that the knowledge of peculiarities of age dynamic of fears in conditions of norm and pathology will allow to create in case of necessity the effective complex of early psychoprophylactic and psychotherapeutic activities, which have as their aim the prevention of development of anxiously-mistrustful traits of personality.

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PHENOMENON «THE DOUBLE SPLIT UNEASINESS»

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The standard method of definition of jet uneasiness is variant of a visual-analog scale. Is described in 1923 by Fraide. The psychological method also reflects a momentary condition, is dynamical enough and is indicative. The man passes testing. The drawn line of length 10 centimeters is offered to him and the instruction is given. It is necessary to him to put a mark on a line, which shows, how it feels himself. The mark in the extreme left end will designate, that absolutely there is no alarm. The mark on the right end will show, that the alarm is so strong, as far as it is possible. The mark closer to the center will mean, that an alarm not large. The parameter of an alarm is counted up in centimeters of distance from a mark made examinee up to the left end of a scale (Ilin, 2005).

During correction of the disturbing people and patients with psychosomatic infringements was revealed, that there is splitting a parameter of uneasiness. They are at a loss to put one mark, and two would put. It has enabled to put forward a hypothesis, in a consequence confirmed by an empirical way, that the splitting of uneasiness during correction, first, really exists, and, secondly, is a dynamic characteristic and reflects efficiency of the offered method of correction.

Thus, the opening «of a phenomenon of double skipping uneasiness» enables to show a momentary duality of uneasiness. This characteristic is a positive parameter of change of a condition at correction. In the theoretical attitude it is necessary to note new understanding in stages of development of emotional psychological processes, that is dynamic reflection of the validity in the various forms of the mental phenomena. Whether at the further researches it is necessary to reveal there is splitting uneasiness at opposite, negatively developing psychological process. At practical application of the method reflecting presence of double split uneasiness, it is possible to see change of a condition and to reveal efficiency of application of the chosen correctional technique.

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THEORETIC EXPLANATION OF TYPOLOGY OF CONFLICT BEHAVIOR AT MARITAL RELATIONS

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In psychology by the conflict there is considered mutual negative psychic behavior of two or more people, which is characterized by hostility, negativism at relations, which is aroused by incompatibility of their views, interests or needs.

Conflicts can be open and hidden. Open conflicts shape as quarrel, scandal, fight etc. Hidden conflicts have no impressive outward manifestation, this is inside dissatisfaction, but their influence on marital relations isn't perceptible less than open ones. The peculiarities of conflicts at the family are expressed by that psychical condition of spouses can come to stress, distorting the human's psychic; there intensifies negative feelings at the spiritual world of human, there can occur the condition of emptiness, while which everything seem to be indifferent. The conflicted is caused by some complicated for spouses problem. Conflicts are specific for different stages of family development. The deeper scientists learn marital relations the more firmly they are convinced of impossibility of existing of harmonious families. Spouses, especially young, usually dramatize every questionable situation and consider that the only one way of solving this problem is divorce.

In consideration of problem of interpersonal relations, it's necessary to notice that this psychological phenomenon was most widely examined at the works of N.N. Obosov. Author affirms that interpersonal mutual relations are motivational readiness of partners to the defined type of feelings, actions, operations. In the researcher's opinion mutual relations are formed not only at the process of joint activity, but also through the prism of personality attitude to labour, other individuals and to oneself.

T. Lyri mentions that personality reveals at the behavior through the defined styles of interpersonal relations. In connection with this the researcher singles out such styles of mutual relations as «dominance – subordination», and «friendliness – hostility».

There are a lot of reasons of family conflicts: different views to the family life; unrealized expectations and dissatisfied needs, which are connected with family life; hard drinking of one of spouses; adultery; rudeness, disrespect attitude to one another; unwillingness of husband

to help wife at house work; daily life; disrespect attitude of husband to wife's relatives or on the contrary; differences at spiritual interests and needs etc.

As it is known very often any conflict situation is accompanied by quarrel between the spouses. Appearance of quarrels, which never come tracklessly, is one of the most ruinous consequences of adaptation of young spouses and their feelings. People usually say: the falling out of lovers is the renewing of love. But this is not true. Every quarrel is irreversible, that means it leaves traces on further relations. Quarrel is always exaggerated with sharp words, foolish reproaches, unfair accusations. Most often the unrealized reason of quarrel is negative psychological aim. At the condition of emotional fatigue human always became captious and unfulfilled. It's better to understand at once the reason of derangement and ad locum demonstrate this understanding.

Conflicts often have steady character there, where one's consider that at marital life we can not to control oneself: I can tell all what I want, I can act any way I want to act. Attentively analyzing all the arguments, young pair will easy reveal that the majority of them could be avoided and reasonably solved without collision. Therefore it's necessary to take into attention the use of developed by specialists strategy of leading the family argument.

The first condition of leading the culture argument of two loving spouses is not to strive for victory. It's necessary to remember: your victory is defeat of another spouse, the defeat of beloved person. And then, defeated person is the member of the same family, so, any victory of one is the defeat of the whole family in common.

To the second place there should be raise the respect of spouse, doesn't matter what fault lies with him. Even at the minutes when one of the spouts is gripped by offence, jealousy, fury, it's necessary to remember: as this is person who recently was the dearest person for him.

At old Russian intelligent families there existed a custom: while the quarrels and conflicts spouses pass from «you» to formal terms. Who can say how many troubles and divorces were saved because of this formal «You». Because it preserved oneself dignity and didn't humble dignity of other person. And if it was found out that the reason of quarrel is not worth a bean (and such kind of quarrels, especially at young families, is the most popular), that it was easy to return to normal relations.

At least, the third most important condition of peaceful end of family quarrel is not to remember about it. Specialists, who study the psychology of family relations, affirm: the faster there is forgotten the bad, the nicer, and happy is family. In their opinion, there is categorically prohibited to mention those reasons that made the quarrel, which have been already analyzed. It should be made a rule: how bad is the offence, which was inflicted by one spouse to another, but if conflict took place, relations were clear and there ensued an armistice, we should forget about it forever.

The definition of character of conflict depends on that, promotes it or not saving and development of marital relations. By this foundation all existed conflicts are considered to be constructive (they are desirable and even necessary for development of relations at the family) and destructive (which block adaptive processes). The consequence of destructive conflict is saving for the long time the tension between the spouses after the quarrel. Both of partners in family with the presence of destructive conflicts consider as real the threat of divorce. Constructive conflict supposes removal of stress at the relations of partners. Though after the quarrel remain aftertaste, but spouses begin to take good care of each other, tend to understand each other.

Family psychotherapist Virginia Satir affirms that the atmosphere of conflict marital alliance can be sensed, as soon as you are caught to such family. Faces and bodies of people indicate their sufferings, their bodies are fettered and strained, or they awkwardly stoop. Their faces seem to be gloomy, sullen or sad, can't express something, like masks. Eyes staring to the floor, they don't see another people. It seems that they not only don't see but also don't hear. Their voices sound rare and rasping or almost are not heard.

American scientist Dale Carnegie affirms that is hard to establish a border between where ends romantic love and begins the theater of military operations. In the family, where relations resemble military operations, the condition of spouses is analogous to the condition of people at war.

Besides, famous psychologist M. Argail notes that married people at the less degree suffer from psychic disorders, then those who have never been married, and then spouses who live separately, then divorced people or widowers. So at the period of initial marriage adaptation there is formed general idea of spouses about marriage and family. As the rule it happens at the result of col-

lision of views of husband and wife to the family life. At the first stages of family life, at the period of adaptation, more exactly at the period of teaching of life together, spouses are more often than not caught by little, unimportant mistakes, which usually leads to so little conflicts. As considers famous Soviet psychologist V. Levi, quarrel should be anatomized and relations should be cleared up. But in such clearings we should follow one rule: each person should talk only about his own mistakes. It's impossible to turn life into a solid showdown, differently from quite haven family will turn into a theater of military operations. If there is a deal of dissatisfaction and there are a lot of claims to each other, V. Levi recommends carrying out "cleansing games" or role training. There is only one way to solve family problems, conflict situations, deliverance from offence – this is communication of spouses, ability to talk with each other and hear each other. Behind protracted, unsolved conflict, as the rule, is inability to communicate.

American psychologist J. Gottman, who specially studied the process of family communication, revealed interesting regularities of spouse's communication at conflict families. First of all for these families there is character excessive constraint of communication. Members of such families almost afraid to say themselves words, express they experience, feelings. Conflict families are more «silent» than harmonious, in conflict families spouses more rarely share information, avoid «excess» talks, obviously they afraid of accidentally arisen quarrel. At conflict families spouse practically don't say «we», they prefer to say «me». And this testifies to isolation of spouses, to emotional disconnection, about that this feeling «we» at this family didn't form.

Thereby hardships of young family are the complex of psychological, sociological, economical, juridical problems. The choice of life way, getting of a profession, professional development, search for favorite job etc, all this is the general direction of modern youth. Stable successful family can function only while certain preparation of young people for marriage. Agreement of spouses' needs is difficult task, but also necessary, because on the success of its solving depends the stability of marriage and marital relations.

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ACTIVATION OF PSYCHOLOGICAL COUNSELING, PSYCHO-CORRECTION AND PSYCHOTHERAPY METHODS FOR ADOLESCENTS WITHIN THE RANGE OF NORMAL PSYCHOLOGICAL ACCENTUATION AND SIGNS OF DEVIANT BEHAVIOR

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Dramatically growing number of adolescents with chemical and non-chemical dependency (alcoholism, drug addiction, game addiction) and patterns of delinquent behavior, which can easily transform into criminal behavior among some adolescent groups, urge for using psychological counseling, psycho-correction and psychotherapy. In our opinion, we must use the available psychological methods today, to help the teenagers and parents in Russia.

That is why the methods addressing the ego of adolescents and their parents, such as psycho-correction, psychotherapy and psychological counseling, including the symbol drama and transactional analysis, could be used as a measure of primary psychological prevention in the current social environment.

Representatives of different psychological types within the range of normal accentuation do not show the signs of negative personal drift towards the limits of accentuation or abnormal personal changeability. Therefore the analysis of empiric and psychological observations, as well as talks with the teenagers, their parents and teachers, let reveal the weakest elements in the psycho-typological structure of personality in order to strengthen the constitutional psychological defense mechanisms of personality and prevent the negative personal changeability.

We used the following methods and techniques for psychological correction of personal experiences and relations, psychotherapy of the deviant non-pathologic adolescent behavior: personality-oriented psychotherapy, family systems psychotherapy, transactional analysis, symbol drama, imago therapy.

During the psychological counseling and correction of personal experience and behavior, adolescents with normal accentuation had stronger altruistic motivations, values and attitudes, which corresponded with their core ego structure and did not contradict with their moral principles. This was especially important for adolescents of all psychotypes within the range of normal accentuation. Moreover, the altruistic attitudes also dominated in

their family and friend relations, so that they were not forced to struggle with their own principles. These adolescents could easily adapt to social environment by finding peers with similar attitudes and values.

During the psychological counseling and correction, the adolescents with egoistic attitudes, which however did not dominated in their relations with peers, grew more convinced they build normal interpersonal relationships in work, play and school. We managed to bring their self-control and self-regulation of statements and behavior to an optimal level, which allows to avoid intrapersonal conflicts. Usually, such adolescents were highly intelligent and adequately self-conscious, which let strengthen their personal defense mechanisms during the psycho-correction. An external criterion for a successful optimization of the psychological defense mechanisms, was an ability not to mention the negative psychological traits in peers. This preserved their own attitudes, motivation and values and helped avoid conflicts with the peers or teachers. Consequently, the psycho-correction let increase the level of self-control and self-regulation of own experiences and behavior, without changing personal moral and ethic values and motivations, or forcing them on the others.

The psycho-correction and psychological counseling resulted in stronger personal and psychological tolerance towards external living factors as the adolescents and their parents grew convinced of their own life principles and world outlook. It made them confident when confronting with the social injustice, amorality, including that of the surrounding adults and teachers. The teenagers learned to remain tolerant to foreign life, religious or ethnic ideologies. And the stabilized psychological defense mechanisms enabled to communicate successfully and build working and friendly relations on the moral basis, when such humanistic ideas as justice, honor, conscience, shame and love formed the psycho-typological framework of the personality.

The psychological correction and counseling were aimed at revealing the moral and ethic values, motivations and attitudes of a teenager and his family, which is essential for an adequate psychological correction of personal experiences and behavior.

Sense of duty and responsibility were the main psychological principles in relations with others. Achieving positive results contributed to strengthening moral courage and boosting personal energy, thus preserving the usual moral values, attitude and motivation. Relations with peers re-

mained stable, balanced, with a healthy competition, proving the priority of honor and honesty in human relations.

As a part of the psycho-correction explicitly, the teenagers got a possibility to forecast the personal experience and behavior depending on the communication party, and choose the best behavior patterns, without compromising their life and communication principles. The adolescents learned to say "no" if they received offers that did not meet their moral and ethic requirements, and to follow their principles when the peers shared the same ones. On the one hand, independence and justice in relations receive a high esteem among the peers. On the other hand, the adolescents were convinced that it is necessary to make some socio-psychological forecasts, in order to achieve strategic or tactic goals, and preserve both personal dignity and ego and that of the others.

Together with the teenagers we analyzed the degree of compassion, necessary in communication with others. The adolescents were very satisfied if they managed to express empathy emotionally, as well as to help their peers with their adolescent problems. The psychologist did not deny the hedonistic tendencies in teenagers, but stressed that they were temporary and incidental. Moreover, a high risk of contradictions and conflicts with the society is to be expected, if hedonistic attitudes prevail and control the personal motives, attitudes and values.

During the psycho-correction in adolescents within the range of normal accentuation regardless of the psychological type structure, the signs of personality changeability were neutralized, which assured of no development in the direction of abnormal changeability of personality.

According to the analysis of the dynamics of personality traits in adolescents within the range of normal accentuation during the psychological counseling and psycho-correction, the constitutional, psycho-typological mechanisms of personal compensation and behavioral adaptation grew stronger, resulting in preserved balance of personal motivations, attitudes and values, their prevalence over the temperamental demands, principles and values.

The offered approach of psycho-correction and psychological counseling, aimed at anchoring the personality trait demonstration on the positive continual pole, reflects the stability of constitutional psychological defense mechanisms, which represents the psychological and psycho-correctional prevention of personality's negative changeability from the normal psychological accentuation towards the abnormal personality changeability.

To sum up, the results of the applied methods and techniques of psycho-correction and psychological counseling, appealing to the adolescent ego and their parents, prove that means of the psychological prevention such as symbol drama and transactional analysis, are more effective than the methods of personality-oriented psychotherapy. The family systems psychotherapy combines the psychological and ideological meanings of the primary psychological prevention of a probable abnormal changeability of personality.

Consequently, the more psychologists will provide the primary psychological prevention to individuals, teenage groups and families at schools, lyceums, gymnasiums and other social institutions, in form of strengthening the optimal type-determined mechanisms of personal compensation and behavioral adaptation, the less will be the risk of development of the psychological changeability of personality within the type-continual range of normal accentuation.

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**PSYCHOLOGICAL-STATISTICAL-
MATHEMATICAL ANALYSIS
OF HIGHEST PSYCHIC BEHAVIOR
OF PERSONALITY OF TEENAGERS
WITH DIFFERENT STRUCTURE
OF PERSONALITY PSYCHOLOGICAL
TYPE OF CONSTITUTIONAL
CONTINUOUS DIAPASON
OF PSYCHOLOGICAL
NORM-ACCENTUATION WITH
THE TENDENCY TO ADDICTIONAL
STEREOTYPE OF BEHAVIOR**

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For the definition of totality of psychological markers, which lay at the base of demarcation of main psychological types at the frames of behavioral personality changeability we carried out the comparative psychological mathematical analysis of the results of examined teenagers of the diapason of psychological norm-accentuation with addictive stereotype of behavior.

The comparative mathematical analysis of results of psychological examination of teenagers

with cycloid and hysteroid psychological type of diapason of psychological norm-accentuation with addictive stereotype of behavior allowed to discriminate mentioned groups with rather high degree of trustworthiness, when the percent of mistakes in both of groups doesn't transcend 15,79 %. Received results reflect the formation of hysteroid-cycloid structure of personality at the subgroups of both two groups. Teenagers of mixed groups are distinguished by the weakness of constitutional mechanisms of protection and by the influence of social stressors they have, registered at the experimental-psychological level, negative drift to the side of anomalous personality changeability practically of 16 % of teenagers. The representatives of compared subgroups are characterized by unstable personality compensation and behavioral adaptation, what reveals at sub depressive feelings, co-morbidity of anxious feelings. In combination with stable reactions of emancipation this leads to conflict behavior with peers, teachers, relatives around, and to the delinquent manifestations of behavior.

Received results testify to the necessity of separation of teenage group of risks of stable formation of addictive behavior, what requires immediate measures of special psychological help by the restoration and consolidation of constitutional mechanisms of protection at the view of personality compensation and behavioral adaptation.

Psychological-mathematical analysis of teenagers with cycloid and epileptoid psychological type of diapason of psychological norm-accentuation with the tendency to addictive stereotype of behavior led to the following results. There was defined the totality of psychological markers-delimiters, singled out groups. This totality of taken into consideration at the process of analysis psychological parameters demonstrates differential-diagnostic differences between cycloid and epileptoid representatives of the diapason of psychological norm-accentuation with addictive stereotype of behavior. Meanwhile the percent of probabilistic mistakes at differential diagnosis doesn't transcend 10,5 % at the first group and 5,26 % at the second group, emphasizing the tendency to the decrease of the number of revealed teenagers with mixed cycloid-epileptoid structure of personality psycho type, what indicates negative psychotypological drift to the side of diapason of anomalous personality changeability.

It should be noted that in this compared pair of teens with schizoid and cycloid psycho type we observe «curtaining off» the tendency to the use of alcohol by teenagers with behavioral delinquent manifestations that reflect negative psycho typological

logical drift to the side of diapason of anomalous personality changeability, which requires preventive measures that are directed to the misupdating of motifs and values of alcohol use. Low percent of probable mistakes at differential diagnosis (15,8 % at the first group and 10,53 % at second group confirm the trustworthiness of received results) on the one hand point to the revealed tendency to decrease of mixed schizoid-cycloid psycho typological structures while the formation of tendency to the addictive behavior, which testify to negative psycho typological drift at the diapason of accentuation proper. Connection of schizoid-cycloid psycho typological structures at teen age also leads at small groups to the weakening of constitutional mechanisms of protection and effort of personality compensation and behavioral adaptation in conditions of social-informational stressing of vital environment.

Psychological-mathematical analysis of teenagers with schizoid and epileptoid psychological type of diapason of psychological norm-accentuation with addictive stereotype of behavior allowed to receive trustworthy results of differential diagnosis.

Attracts attention to itself the evidence of the scale of hysterical reaction, which is combined with moderately expressed sub depressive neurotic feelings and anxiety, including constitutionally conditioned (the scale of anxiety Tailor), what reflects the formation of personality feelings and behavioral stereotype that drift to the side of the limits of anomalous personality changeability. We have already mentioned that the appearance of hysterical stereotype of behavior is unusual for schizoid or epileptoid teenage psycho type, indeed the appearance of mentioned stereotype testifies to the tendency to the anomalous personality and behavioral reaction. The totality of combination of listed psychological indicators lays at the base of addictive behavior causing the effort of constitutional mechanisms of personality compensation and behavioral adaptation, which by the influence of supplementary social factors can lead to the derangement of constitutional protective mechanisms and condition of personality decompensation and behavioral misadaptation. The confirmation of our reasoning is the strengthening of manifestations of psychological asthenization (the scale of asthenia) and psychopathisation (proneness to conflict, sequence of not understandings at relations), which in turn provoke negative psycho typological drift, leading to its steadiness.

Against this background firstly as the protective mechanism there forms addictive behavior – desire to use alcohol and forget about all teenage

problems or win big sum of money and solve simultaneously all problems of relations. Similar reasonings prevail at ordinary consciousness of teenagers with epileptoid or schizoid structure of personality that inclined to addictive behavior.

There is arising the question, does revealed mixed psycho type promote or oppose negative psycho typological drift at the diapason of psychological norm-accentuation? Most probably, the composition of schizoid-epileptoid traits at the period of adolescent maturation leads to the fact that 10,5 % teenagers with schizoid-epileptoid psycho type at the group with epileptoid psycho type and 15,7 % at the group with schizoid psycho type the instability of mechanisms of constitutional psychological protection. At these conditions while supplementary social-informative stressors increase the risk of negative psycho typological drift to the side of anomalous personality changeability. Empiric, phenomenological and psychological observations and descriptions of teens confirm our suggestion that from two compared groups of observed teenagers only part of them has negative psycho typological drift from the diapason of accentuation to the side of diapason of anomalous personality changeability. Done experimental-psychological researches with the treatment of results by discriminate analysis gives us an opportunity to single out quite concrete teenagers from the compared groups quite concrete teenagers, which at reliable level have personality and behavioral changeability at the limits of diapason of norm-accentuation and further to the frames of diapason of anomalous personality changeability. Thereby our research opens a way for individual psychodiagnosis, which is based on constitutional psychology.

Psychological-mathematical analysis of teenagers of schizoid and hysteroid psycho types, which situated at the diapason of psychological norm-accentuation with addictive stereotype of behavior, allowed carrying out differential diagnosis between compared groups.

Teens with schizoid structure of personality have hysterical stereotype of behavior, as we have already noted, as the psychological behavioral marker of anomalous addictive behavior, when use of alcohol allows at the beginning to conceal their problem feelings, and then gradually can't not to form psychological dependence. 26,3 % of mistakes at differential diagnosis of teens-hysteroids and low percent of mistakes – 5,3 % accordingly at the group of schizoid representatives of diapason of psychological norm-accentuation with addictive stereotype of behavior point to the high probability of mixed schizoid-hysteroid structures of personality. Meanwhile it is impossible not to pay attention

to the fact that among the teens-hysteroids almost one third is formed by teenagers with mixed schizoid-hysteroid structure of personality, what can provides strengthening of constitutional mechanisms of psycho typological protection at the expense of schizoid structure of personality. In other words 26,3 % of teenagers with schizoid-hysteroid structure of personality from the whole group will limit their own negative drift to the side of anomalous personality changeability by the influence of social-informational stressors. At the group with schizoid structure of personality 5,3 % of teens have high risk of derangement of constitutional mechanisms of personality compensation and behavioral adaptation with the formation of negative drift to the side of diapason of anomalous personality changeability. We can affirm that combination of hysteroid structure of the individual typological traits of teens to the conceptual «schizoid main body» of teenagers at the psychological level promotes loosening of psychological mechanisms of compensation and adaptation, improving the risk at the unfavourable social conditions of vital environment to carry out the negative psycho typological drift to the side of diapason of anomalous personality changeability.

The analysis shows that at the case of differentiation of psycho types at the diapason of psychological norm-accentuation with addictive stereotype of behavior there arises differential-diagnostic role of defined psychological parameters. If at the diapason psychological norm of accentuation is the distance between the centers of projections of psychological parameters of cycloids and hysteroid at three-dimensional space is small, that at the diapason of psychological norm-accentuation with addictive stereotype of behavior it considerably increases, demonstrating the remoteness of groups from one to another in the space, consequently, there is increased the trustworthiness of diagnosis of psycho types of diapason of psychological norm-accentuation with addictive stereotype of behavior at the view of psycho typological negative drift to the side of limits of anomalous personality changeability. With the help of psychological methodic, the results of which were treated by the methods of mathematical nonparametric statistics, we register not only peculiarities of psychological, personality, behavioral differences between psycho types, but also we register

negative psycho typological drift. There might be considered as interesting the fact that to the differentiation of schizoid and hysteroid, schizoid and epeleptoid, schizoid and cycloid psycho types at the diapason of psychological norm-accentuation with addictive stereotype of behavior the biggest contribution bring in the indicator of scale of hysterical reactions of clinical questionnaire for definition and assessment of neurotic condition. The analysis of average indicators of this scale has revealed that just to teens-schizoids with negative psycho typological drift to the limits of diapason of anomalous personality changeability at the biggest degree peculiar the traits of hysterical neurotic reaction, which, as is known, doesn't correspond to the structure of personality of schizoids and at the considerable measure weakens the mechanisms of psychological protection, most probably, at the expense of sensitiveness, which is compensated, and at the subgroups with negative drift is hyper-compensated by hysterical stereotype of behavior.

Thereby the change of concrete psycho typological structure with the appearance of uncharacteristic components, which are peculiar to other psycho typological structure, indicates to the unconstructive tendency of drift of schizoid traits of psychotype of diapason of psychological norm-accentuation with addictive stereotype of behavior at the constitutional continuum to the side of limits of anomalous personality changeability.

To generalize aforesaid let's noted that the differences between basic psycho types become more considerable at the case of their drift to the side of diapason of psychological norm-accentuation with addictive stereotype of behavior, which is carried out, first of all, at the expense of weakening of schizoid structure of personality by appearance of hysteroid stereotype of behavior or mixed hysteroid-schizoid structures of psycho types of personality. It's necessary to mention, that forming of schizoid-cycloid structures of psycho type also occurs at the expense of manifestations of hysterical stereotypes of behavior and emotional instability, inclination to dysthymia of teenagers with cycloid individual-typological traits of personality.

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Materials of Conferences

**THE PHENIBUT INFLUENCE
ON THE PHAGOCYTOSIS INDICES
UNDER THE IMMUNE
STRESS CONDITIONS**

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The phenibut phagocytosis – correcting activity study has been the main target of the present research on the lypopolysaccharide – induced immune stress model.

The present research has been carried out on the «Wistar» line 30 rats of the both sex, at the age of 5–6 months. The animals have been distributed into the groups (e.g. $n = 10$): the control 1 (e.g. the animals, having received the physiological solution, as «the placebo»); the control 2 (e.g. the animals with the immune stress, having induced by the *Pseudomonas aeruginosa* lypopoly-

saccharide (LPS) intraperitoneal introduction in the dose of 100 mkg/kg); the experimental group (e.g. the animals with the immune stress, having received the phenibut intraperitoneally in the dose of 25 mg/kg during 120 hours or 5 days). The latex test has been used for the phenibut influence study upon the neutrophils' phagocytal activity of the peripheric blood; the phagocytal index (PHI) and the phagocytal number (PHN) have already been defined.

As it can be seen from the results, having presented in the Table 1, the LPS – induced immune stress formation is being accompanied by the phagocytal number and the phagocytal index increase more, than for 30 %, in comparison with the control 1 (e.g. $p < 0,05$). The neutrophils' phagocytal activity restoration is being observed, under the animals' phenibut influence with the immune stress in the experimental group: the indices, having reflected the phagocytosis intensity (PHI) and the cells' number, having taken their part in the phagocytosis (PHY), are being decreased (e.g. $p < 0,05$), having achieved the background values in the control 1.

Table 1

The Phenibut Influence upon the Phagocytosis Indices on the LPS – Induced Immune Stress Model

The Experimental Groups	The Control 1: «placebo»	The Control 2: LPS. <i>Pseudomonas aeruginosa</i> (100 mgk/kg)	The Test: The Phenibut (25 mg/kg) + LPS. <i>Pseudomonas aeruginosa</i> (100 mgk/kg)
Phagocytal Index, %	$55,9 \pm 3,1$	$72,9 \pm 3,6\Delta$	$59,4 \pm 3,6^*$
The Phagocytal Number	$4,5 \pm 0,2$	$6,7 \pm 0,3\Delta$	$4,0 \pm 0,3^*$

The Reliability Degree, Concerning the Control 1 – $\Delta - p < 0,05$; the Control 2 – $* - p < 0,05$.

Thus, the results, having received during the experimental work, are being testified on the phenibut ability to be removed the immune system non – specific component disorders, having appeared under the LPS – induced immune stress conditions.

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*Materials of Conferences***STATE OF RAT LIPID EXCHANGE
IN CONDITION OF HIGH LIPID LOAD**

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It is proved by many experimental and clinical researches that organism adaptation to unbalanced nutrition leads to significant reorganization of lipid exchange in liver. This appears in metabolic changes of fatty acids (FA) and their etherification, apoprotein synthesis and lipoprotein assembly. The influence of high fat diet on lipid and lipidprotein structure in blood serum, fatty acids of polar and neutral lipids of Wistar rat's liver was studied. The basis of hyper caloric diet was 2 % of cholesterol (CS) and 19 % of beef fat of the total diet structure. Biochemical analysis of blood serum and liver tissue was made in 30, 90, 180 days from the experiment was begun. Blood serum fats were examined at biochemical analyzer FP-901 by «Labsistems» (Finland). Dimethyl ether of liver FA phospholipids (PhL), triglycerides (TG), sterol ether (ES) were analyzed at gas-liquid chromatograph Shimadzu GC-2010 (Japan). The results were expressed in relative % from the total FA quantity. There were used estimate indicators, characterizing ferments elongase and desaturase.

Keeping rats at hyper-caloric diet promoted forming alimentary dyslipidemia. On the 30th day of the experiment it was stated the increased level of CS, TG, atherogenic fractions of lipoproteins (ChS of low-density and very little density lipoproteins – CS LPLD, CS LPVLD) in blood serum, atherogenic index (AI) and decrease of CS high-density lipoproteins (CS LPHD). In 90 days of alimentary load it was detected decrease of TG and CS LPVLD concentration, the increase of CS LPLD and AI level. On the 180th day of the experiment the content of TCS, CS LPLD was increased in blood serum and CS LPVLD was decreased. The obtained data indicates that alimentary fats show vivid hyperlipidemic effect only on the 30th day of the experiment. Prolongation of high-fat diet to 90 and 180 days does not lead to accumulation of TG and CS LPVLD in blood, does not influence on content of CS LPHD. Apparently, liver barrier function limits lipotoxic load through inhibition of apoprotein synthesis and accumulation of LPVLD in liver.

Fatty acid metabolism in rat liver on the 30th day of the experiment was characterized by intensification of biosynthesis 18:1n9, 18:2n6, 18:3n6, 18:3n3, 18:4n3, decrease of 20:4n6, 20:5n3, 22:5n3, 22:6n3. Metabolic changes of fatty acids in liver were accompanied by $\Delta 9$ -, $\Delta 6$ -, $\Delta 5$ -desaturase and elongase activity changes. In 90 days of the experiment it was detected synthesis increase of 18:1n9, 18:2n6, 18:3n3, 20:5n3, 20:3n6. Moreover 20:5n3 was etherified mostly into sterol ether, 20:3n6 – into TG and PhL. It was also seen decrease of content 20:4n6 in PhL and its increase in TG and ES. The detected changes show switching on compensatory mechanisms on the 30-90th days of high-fat load, activating synthesis of physiologically important polyunsaturated fatty acids (PUFA). In 180 days of high-fat load action it was stated increase of Mead acid production (20:3n9) with competitive inhibition of n6 family acid synthesis (18:2n6, 18:3n6, 20:4n6) and some n3 PUFA (18:3n3, 20:5n3, 22:5n3, 22:6n3) in FA pool liver. It was seen the increase of 12:0 in PhL, TG and ES. Activity of elongase and $\Delta 5$ -desaturase in liver was decreased in 180 days of the experiment.

Thus, inhibition of lipoprotein formation, synthesis activation of monoenic n9, polyunsaturated n6 and n3 FA in liver with its predominant etherification into sterol ethers and triglycerides under influence of high-fat load is one of the aspects of adaptation to alimentary stress-factors.

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**THE CALBINDINE RESEARCH
IN THE THYMUS MACROPHAGES**

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The calbindine – the protein is being localized in the cytomembrane, in the cytoplasm, and also in the cells nucleus, it is being taken its part in the membrane folds generation, in the phagocytal processes formation at the phagocytosis early stages (e.g. Ohsawa et al. 2001), it is being expressed by the macrophage origin cells (e.g. Kohler C., 2007). The thymus macrophages are being related to the APUD – system, as they are

being revealed the positive reaction for the aldehyde – fuchsin (e.g. Smirnova T.L., 2008), they are being contained the neurotransmitter biogenic amines, the MAO ferment (e.g. Sergeeva V.E., Gordon D.C., 1991).

The Material and the Methods

All these experiments have already been carried out on the 30 sexually matured albino pedigreeless rats at the age of three months and their mass of 250 gr., having kept under the vivarium's standard conditions at the well – balanced food ration. All these procedures have been conducted in the work with the rats, according to the treatment's regulations and the rules with the laboratory and the experimental animals. And the thymus has been extracted under anaesthetic. The thymus frozen sections with their 15 micrometer thickness have already been stained by the hematoxylin – eosin. The calbindine (that is the calcium binding protein) has been revealed by the homogeneous antibodies. So, the preparations microscopy has been carried out by means of the «MIKMED 5» light microscope. The necessary presentation on the stained cells quantitative distribution and the morphometry has been received by means of the «Sigma Scan Pro 5» program.

Our researches and the studies results showed that the thymus lobules sections had been stained specifically into the brown lightly color. The calbindine – positive cells are being defined in all the gland lobules studied zones. The cells total quantity is higher in the cortico – medullary zone. So, the macrophages with the calbindine in the small number are being defined in the lobules' subcapsularis and in the deep cortical zone. The singular macrophages are being met in the lobules' substantia medullaris. The macrophages with the calbindine have the different form (e.g. the oval, the rounded, and the multidendritic ones). The cells' nuclear part is weakly stained. The calcium

binding the protein, on the whole, is being concentrated in the cells' cytomembrane.

Thus, the morphometric studies and the researches have been shown, now the area, now the cells' size is quite the various ones. The calbindine binding cells area calculation has been shown, that the small, the average, and the big macrophages are being revealed in the thymus. So, the small cells' area is being varied from 6,4 up to 11,3 mcm^2 , the average ones – from 11,4 up to 32,6 mcm^2 , the big ones – from 32,7 mcm^2 and more. The macrophages with the calbindine, having had the 11,4 mcm^2 area, are being predominated in the lobules' substantia medullaris, whereas the big cells are frequently being defined in the cortico – medullary zone.

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Materials of Conferences

**THE INDUSTRIAL POISONS TOXICITY
DEGREE RATING UNDER THE DUST
HIGHLY ENRICHED CONTENT
IN THE AIR CONDITIONS**

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The hazardous and the harmful substances with the dust combined action challenge has the considerable significance for the industrial and the agricultural hygiene in connection with the fact, that this type of the combinations are being met in the agriculture, at the mining, the building, the metallurgical, the chemical industry enterprises and the others. So, the existing literary material analysis is being testified on the comparatively this challenge not too deep development. In the overwhelming majority cases, the performed experiments and the tests results have already been come to the different and the various substances toxicity increase qualitative fact statement.

The researches series results generalization attempt on the dust impact study and the dust influence examination for the hazardous and the harmful substances toxicity degree, with respect to the living organisms and the life forms has been undertaken in the present work. For all this, the task has been raised up to be carried out not only the qualitative, but and the quantitative received results analysis and also to be presented the calculating dependencies, having permitted to be taken into the consideration these factors combined influence at the hazardous and the harmful substances content hygienic normalization and the sanitary standardization.

The data on the industrious poisons series have already been generalized, for the purpose of the quantitative dependence receiving of the substance toxicity degree change dependence, in the

combination with the dust. All kinds of the poisons have already been classified by the impact and the influence danger and the risk level upon the human organism, in accordance with the State Standard Specification 12.1.007 – 76.

The correlation type of $\lg LD_{50} = a \lg P + b$ has been accepted, as the generalized dependence, where LD_{50} – is the fatal dose, mg/m^3 , P – is the dust concentration, mg/m^3 .

The calculating formulae, having permitted to be considered the LD_{50} changes, at the dust highly enriched content in the working zone air have been received, as a result of the generalization:

For the extremely hazardous and the dangerous substances (the 1-st group):

$$\lg LD_{50} = -0,1011 \lg(P) - 2,1612;$$

where $1 \text{ mg/m}^3 \leq P \leq 120 \text{ mg/m}^3$;
with the error up to 1,5%.

For the highly hazardous and the dangerous substances (the 2 – nd group):

$$\lg LD_{50} = -0,0832 \lg(P) - 1,068;$$

where $1 \text{ mg/m}^3 \leq P \leq 120 \text{ mg/m}^3$;
with the error up to 1,4%.

For the moderately hazardous and the dangerous substances (the 3-rd group):

$$LD_{50} = -0,0013P + 0,8136;$$

where $1 \text{ mg/m}^3 \leq P \leq 120 \text{ mg/m}^3$;
with the error up to 23,35%;
where LD_{50} – is the fatal dose, mg/m^3 ,
 P – is the dust concentration, mg/m^3 .

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*Materials of Conferences***CULTURE SOCIOLOGY:
STATE HERMITAG – 2006, 2008**

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The research was carried out in State Hermitage in September 2006 and 2008, within one hour each working day from 15 o'clock till 16 o'clock whole month. The visiting by the inhabitants of St.-Petersburg of expositions «The Antique art» and «The art of ancient Egypt» was considered. The quantity of the visitors divided was counted up: youth (19-30 years), average generation (till 55 years) and senior generation (more than 55 years). In 2006 in research work have taken part 2496 volunteers, in 2008 – 3324 volunteers. The scheduled excursion groups did not undertake. As a result of researches the following facts were deduced. In 2006 on an expositions «The Antique art» and «The art of ancient Egypt» has visited 38,5 % of the visitors from volunteers number in the age of 19-30 years. In 2008 of an exposition «The Antique art» and «The art of ancient Egypt» was visited with 42,3 % of youth. In 2006 in age group 31-55 years of an exposition «The Antique art» and «The art of ancient Egypt» have visited 67,6 %, and in 2008 – 44,6 %. The visitors of the senior group have made in 2006 – 67,9 % and in 2008 – 64,7 %. It is necessary to note, that of the man's representatives in the younger group which has visited halls «The antique art» and «Art

of ancient Egypt», in 2008 was in 2 times more, than in 2006. The female representatives of the same group which has visited «The art of ancient Egypt» in 2008, was in 2 times, and the visited expositions «The antique art» in 1,6 times are more, than in 2006. In man's group 31-55 years quantity «The antique art» was reduced in 2,1 times, and «The art of ancient Egypt» in 3,8 times in comparison with 2006. In 2008 quantity of female group 31-55 years visited «The Antique art» was reduced in 2,3 times, and «The art of ancient Egypt» in 3,5 times as against 2006. The quantity of the men of the senior group has come on an exhibition «The Antique art» in 1,1 times less, and on an exhibition «The Art of ancient Egypt» in 5,5 times is less, than in 2006. The women of the senior group visited an exhibition «The Antique art» in 1,3 times less, the hall «The art of ancient Egypt» in 5,5 times is less in comparison with 2006.

Thus, visiting of expositions «The Antique art» and «The art of ancient Egypt» by youth till 31 years in 2008 has increased. The representatives of average and senior group visit expositions less. In modern social circle in the period global consolidation in sociology a priority direction should be the monitoring of cultural interests, as it reflects a condition of a society.

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*Materials of Conferences***INSTALLATION FOR OIL-WATER
EMULSION FUELS PRODUCTION FROM
ORGANIC WASTES, CONTROLLED
BY NUCLEAR MAGNETIC RESONANCE
RELAXOMETER**

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Problem of organic waste utilization and search for new alternative fuels is actual now. The authors propose to convert oil components of the organic/water waste in fuel emulsions (fuemulsions) with water content up to 20-30 %. Use of fuemulsions (for example bitumen/water emulsions) give advantages: practically complete combustion and conversion of carbon due to water drops bursts in flame; opportunity for combustion at oxygen lack; low temperature of the burner flame and hence decrease in orders of atmosphere waste by polyaromatic chance gene compounds and decrease on 65-80 % of nitrogen oxides NOX; concentration of the ash after combustion of the fuemulsions in 100 time lower, then from coal and the ash can be used as an ore for metals V and Ni, concentrations of which are 260 mg/kg and 55 mg/kg.

Used method for water decrease and hydrocarbon extraction from waste water - is treatment in rotating magnetic and nonuniform electric field [1] in compact installation device, controlled by nuclear (proton) magnetic resonance (NMR) express-analyzer (relaxometer). Installation can be sited directly near oil treating enterprises, sewage treating units, drains, tankers, sea platforms, automobile wash-outs etc. Method includes effect on emulsion of rotating magnetic field B, which

compels charged droplets to move down and so to decrease water concentration. Simultaneously electric field E coagulate small droplets in more large ones, which are also moved down in the area of precipitated water. NMR-relaxometer in this device support control of water concentration [2], dispersion of water droplets [3] in the range 1,5-15 mm, sulphure content [4] and so regulate B, E for maximum effectiveness. Device demonstrate high efficiency, allowing to decrease water content up to 0,2 %.

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CLASSIFICATION TECHNIQUES OF AUDITING

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Methods and techniques of audit activity that are used nowadays by audit organizations, individual auditors, and auditors that render audit services are studied in this article.

Audit uses the totality of effective methods and techniques that characterize the methodology of audit implementation. The methods of audit are referred to the process of collecting and saving audit evidence, analysis and estimation of information, obtained in the process of auditing. The variety of applied methods defines different approaches to their classification. In our opinion two most significant approaches to the classification of audit methods can be outlined: their division into general scientific methods and special methods. The group of general scientific includes the methods of: analysis, synthesis, induction, deduction, modeling, analogy, concretization, experiment, system and functional analysis. The second group includes special methodological methods of the inspection: documental and actual control.

Documental control includes the following techniques:

- The inspection of one single document-normative, logical, arithmetic etc.;
- The inspection of several documents of the same type or linked in their utility operations – opposite inspection, mutual verification;
- The inspection of system accountant records – control collation, recount of quantitative-sum data, chronological inspection, verification, tracing, preparing of alternative balance etc.

Methodological techniques of actual control include:

- Stock-checking;
- Inspection;
- Writing and oral questioning and explanation of the transactions conditions etc.

For example, methods that are used by an auditor in order to verify the results of stock-checking imply the implementation of the following actions:

Analysis of documents, that formalize the process of stock-checking according to formal indicators and on the merits;

Control of the actual remains of checked materials and accounting remains according to the

register of the corresponding accounts of the book-keeping accounting;

Arithmetic check of the calculations and results;

Analysis of the decisions according to the results of the stock-checking;

Checking of the correction and timeliness of the stock-checking results reflection in the stocktaking by testing the record of accounts 94, 73, 91;

Examination of the completeness and timeliness of the paying of deficit, losses and reception of the surplus that have been found out in the process of stock-checking;

Analysis of the results of the verification of the accounts of mutual financial liabilities and the process of the difficulties settlement, if such occur in a transaction;

Auditor request to various contractors in order to verify the amount of financial liabilities;

Auditor participation in control inspections.

We should outline, that while estimating stock materials auditor must consider the specifics of economic activity of the inspected person, that implies either widening or narrowing the range of audit procedures according to professional judgement of the auditor.

Methods of the audit activity can be divided into three groups depending on their usage in the process of audit services.

The method of conclusive base formation;

The method of audit valuation;

Methods that are used while rendering services that accompany audit.

The foundation of the first group includes the techniques of estimation of risks of significant artifact of the account report, significance, implementation of selective inquiries, actual testing. These methods are borrowed from statistics, they are well studied and explained. However their practical implementation in audit must base on the fundamental principles of audit and the regulations of audit standards. The second group includes methods of factor analysis, financial computation, prognosis, expert valuation etc. the third group includes special methods, that differentiate depending on the type of accompanied services (method of observation inspection, methods of procedure confirmation, method of financial information compilation).

Methods of audit are implemented to the audit objects. The most attention in the audit meth-

odology is paid to methods, that form the conclusive base of audit.

The selection of method for formation of conclusive base is defined by the peculiarities of specific customer and possible auditor's confidence about the quality of the inspection. While choosing the method of inspection the following techniques are considered: control methods; analytic methods; detail study of the operation.

Control methods include: the quality of the control from the customer's leaders; presence of computer control systems; means and procedures of the control.

Analytic methods include: distribution of letters among customers in order to verify the sum of an agreement or remains of accounts debts; study of increase or decrease in income dynamics, for example for the current or previous year.

Control and analytic methods are quick and less laborious. However they give less audit confidence.

The detail operations examination includes: the inspection of accountant document; actual operations inspection; inspection of entity accounting; comparison of the records and documents (as well as account records, documents and actual data of mutual operations), definition of the records identity.

The legality and correctness of the accounting operations are verified in the process of the accounting documents inspection as well as an authenticity of documents, correctness of the accounts, validity of accountant records. How-

ever a complete inspection of the documents is not excluded for the most difficult and responsible operations, that may have significant artifacts such as dishonest activities. Selective documents inspection method is reasonable in all other cases. While using it one can avoid the increase in risk if the right document selection is being carried out. Logical analysis, the examination aimed for the exposure of inner antagonisms in documents, character of accounts based on actual company resources are used for the documents inspection. For this, in particular, the following methods are used: interconnected documents method, opposite inspection. Detail examination of the operations is the most laborious, but it provides the biggest audit confidence.

Auditors, employees of self-regulative audit organizations, staff of scientific organization and methodological centres develop and improve methods, principles and techniques that are used in audit practice. Fundamental theoretic and practical developments are very important for the development of the audit activity as well as the researches of Russian and foreign scientists in the field of audit. Progressive ideas of audit activity are being advocated in candidate and doctor dissertations nowadays.

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*Materials of Conferences***THE CONTEMPORARY PRESENTATIONS
ON THE HUMAN PERSONALITY MENTAL
DEVELOPMENT NOTION**

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The mental development challenge its aspects in all the variety and the diversity, as of the right is being related to the most complex, the most complicated, and also the most contradictory sections category of the psychological and the pedagogical sciences. Such scientists and the scholars, as A. Klapared, G. Folkelt, K. Koffka, R. Arnheim, K. Goldstein, M. Shirer, H. Whitkin in the framework of the psychology – Gestalt, L.S. Vygotsky, A.R. Luriya – in the framework of the cultural and the historic conception, J. Piage – in the framework of the cognitive theory, A. Arikson, A. Adler – in the framework of the psychoanalytical direction, N.E. Chuprikov, J. Gilford, B.M. Teplov, V.D. Neblyczyn, A.A. Golubeva, V.M. Rusalov – in the framework of the psychophysiological direction, R. Sternberg, A. Torndike, J. Watson, D. Gartly, J. Pristly, E.A. Tan, G. Abbinhause, V. Vundt – in the framework of the associative psychology and etc. have been engaging in this challenge study. Then, A.V. Ushakova, N.N. Poddyakov, L.F. Tikhomirova, A.F. Govorkova, N.P. Batisheva, A.L. Venger, A.Z. Zak, N.A. Menchinskaya and etc. have investigated the mental development challenge in the framework of the pedagogical science.

And only few notions in the psychological and the pedagogical sciences are being attracted the more scrupulous and the more fixed attention, and few, moreover, are not being their way to the explanation so persistently, as the «mental development» notion. So, its meanings are being left, which are closely connected with the methods, having developed for its instrumentation, in spite of the numerous efforts, having undertaken for the last years, in order to be developed some independent the «mental development» term definition. Binet, the individual mental abilities test inventor, has considered, that the intellectual behavior and the conduct are quite able to be revealed in such abilities, as the reasoning and the ratiocination, the imagination, the insight, the judgment and the assertion, and also the adaptability. Therefore, he has developed his tests (e.g. the Binet tests) in such way, in order to evaluate only these functions. The other theorists have insisted

upon the fact, that it should to be emphasized and also to be singled out only three fundamental cognitive processes (e.g. the abstracting, the learning activity, and the handling with the new one). The third ones have already confirmed, that all these abilities are only the single basic factor manifestation (e.g. so called, the general factor), which, as it has been supposed, is being lied in the basis of all the intellectual functions.

Spirman, who is the great specialist and the expert in the field of the psychometrics, has been in despair to be defined this notion, on the whole, and he has named the mental development simply by the sound, by the word, which has so many meanings, that, in the final analysis, it has not any one. However, such deep pessimism has not decreased the psychological science necessity just in such notion. So, it is interesting, that until the movement for the tests and the instrumentation was began, this term had been meant «to make a good thing of the experience ability», that, first of all, had been implied the ability to behave oneself adaptively, and also to functionate successfully in the specific environment. Consequently, the every «mental development test», which is being considered the valid one, will be, exactly, predicted as the adaptive, well as the successful functioning in the defined and the specified environment. Thus, the intellectual development tests application has been predominated, as the school successes foretellers, since their appearance moment, and, therefore, certainly, it is not surprisingly, that the reasoning, and the ratiocination, the judgment and the assertion, the learning activity, the handling with the new one, the abstracting, and etc. have been considered the «adaptive and the successful» behavior patterns and the models. All such mental development tests always will be the socially and the culturally determined. So, they will be reflected the culture's ideals and the values, to which all these tests creators are being belonged to, and, moreover, the «adaptive and the successful» functioning always will be meant the «adaptive and the successful» functioning inside this culture. On the large scale, there is nothing bad in this. The fact, that this circumstances set is being promoted their irregular application, is not denied the society right to try to be distinguished, who from its citizens, with the most probably, will get a benefit from the fact, that the society has to be suggested to them. In the final analysis, the mental development, conceptually, will be the thing, that it has been always, that is, the ability to get the benefit from the experience, and,

pragmatically, what it has already become, and that the mental development tests are being measured.

Thus, in the broad sense, the mental development notion is being meant by itself all those progressive changes in the cognitive development, which are being happened in the individual in the course of time. So, the authors overwhelming majority (such as R. Sternberg, A. Binet, A. Wallon, J. Bruner, J. Gilford, R. Kettel, and etc.) are holding their opinions, that the «mental development» notion is quite identical with the «intellectual development» one.

The «intellect» notion characteristic, which rich in its content (in English «intelligence»; from Latin «intellectus» – the understanding, the comprehension, the cognition) is such as:

1) the general ability to the challenges cognition and solution, having defined the every activity successfulness;

2) all the individual's informative and the educational (e.g. the cognitive) abilities system: the sensations, the perceptions, the memory, the presentations, the thinking, the imaginations;

3) the ability for the challenges solutions just without any tests and the mistakes «in one's mind». The «intellect» notion, as the general mental ability is being applied, as the behavioral characteristics generalization, having connected with the successful adaptation to the new vital tasks. So, R. Sternberg has already singled out the 3 intellectual behavior, and the conduct forms:

1) the verbal intellect (e.g. the stock of the words, the erudition, the ability to be comprehend the reading one);

2) the challenges to be decided ability;

3) the practical intellect (e.g. the ability to be achieved the set goals and etc.).

In the beginning of the XX-th century, the intellectual development has been considered, as the achieved to the defined and the specified mental development level age, which is being revealed in the gnostic functions fully mature formation, and also in the mental abilities, the intellectual skills and the knowledge mastering degree. At present, the intellect dispositional interpretation and the treatment has been accepted in the testology, as the psychical and the mental quality (e.g. the abilities): the predispositions to be acted rationally in the quite new situation. So, the intellect operational interpretation and the treatment are also being met, having risen to A. Benet: the intellect – this is «that, what the tests are being measured».

Thus, the intellect is being studied in the various academic psychological and in the different academic pedagogical disciplines: for example, in the general, in the developmental, in the engi-

neering, and in the differential psychology, in the pathopsychology and in the neuropsychology, in the psychogenetics and etc.; in the general, in the developmental pedagogics, and also in the teaching and the training theory and etc. In the domestic science, the «mental development» notion has been considered by the following scientists and the scholars: V.S. Mukhina, A.V. shakov, V.A. Slastenin, E.F. Isaev and the others.

V.S. Mukhina is being understood the «mental development», as the mental and the psychical processes development. The mental development is being considered, as the dynamical system, the main state of which is being depended on, as from the general experience and the learning mastering, well as from the organic basis maturing (e.g. nervous system). The individual level is strongly able to be distinguished from the age – related and the age – specific indices.

A.V. Ushakov is being comprehended the knowledge, the abilities, the skills and the mental and the intellectual actions, having fully mature formed at their mastering and the learning aggregate under the mental development. The mental and the intellectual development level is being permitted freely to be operated by all these knowledge, the skills, and the abilities in the mentation processes, having provided the quite new knowledge, the skills, and the abilities mastering and the learning. So, the mental and the intellectual development, by A.V. Ushakov, is being reflected the personality's cognitive, the informative, the educational, and the creative possibilities state.

V.A. Slastenin, and E.F. Isaev are being comprehended – the personality's intellectual abilities and the skills development under the mental development.

At the same time, some authors (such as: G. Abbinhause, O. Zeltz, K. Koffka, and etc.) are being comprehended the human mental and the thinking activity development under the mental development. Indeed, the thinking is being interpreted, as – the activity reflection psychical and the mental process, the human creative activity highest form.

Thus, the «mental development» notion in the contemporary literature is being considered from the both positions: on the one hand, the mental development is quite identically to the «intellect» notion, and it is being characterized, as the intellectual development; on the other hand, – this kind of the notion is quite equal to the «thinking activity development» notion. At present, the human mental development conceptions analysis, due to the «mental development» notion itself interpretation ambiguity and the different assessments, and also

the fundamental and the basic components, having made up all these theories content, is the actual one. So, it is quite impossible to be noted this challenge consideration significance, in connection with its importance at the educational systems development, such as the developing teaching, the programmed learning, the challenge teaching and etc.

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THE PEDAGOGICAL – OCCUPATIONALLY ACTIVITY PERSONALITY STYLE DETER- MINANT SPECIFIC CHARACTER

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Many researchers have been engaging in the pedagogical abilities study. V.A. Slavenin has been detailing the main demands to the labor and the pedagogical worker personality in the whole book volume [1]. The well – established and the existing «discrepancy» between the excessive and the above – standard social waitings from the teacher, as the professional and the expert, well as the rather not high his labor assessment from the state's side is being resulted in all theoretical regulations rejection, in the negativism, in the skepticism, in the apathy, that is in the personality – occupationally deadadaptation. So, it should be refused from the ЗУНОВ detailing and the abilities in every specific pedagogical worker's labor assessment, in favor of his activity personality style analysis, having permitted the teacher to be in his occupation and to be achieved the quite positive results during many following years.

The socio-psychological context of this notion – that is the teacher's interaction moment with the pupil is being taken for the basis in the pedagogical psychology, when it is mentioned on the activity styles. The pedagogical (e.g. the paternal) conduct and their behavior styles are usually based on the both systems: the children vital activity and the vital functions control system and the interpersonal relations system. So, the styles themselves designation is being left the traditional one: the liberal one (e.g. the control low level, the warm relations); the indifferent one (e.g. the control low level, the cold relations); the authoritarian one (e.g. the control high level, the cold relations); the

authoritative one (e.g. the control high level, the warm relations). Thus, the notion personality aspect, that is «the pedagogical activity style», is being left beyond the researchers' attention bounds. The publications series in the «School Psychologist» newspaper [1, P. 123–124] is being presented the special interest, where the teacher's activity is being considered, from the point of view of his behavioral responses and his conduct reactions in this context. Their peculiarities and the special features teachers' manifestation 8 types in the pedagogical labor are being marked out, and they have given the metamorphic names them. The teacher's activity types separation and their characteristic description are being based on the statement on the fact, that pedagogical labor is being presented by itself the three spaces unity – that is the pedagogical activity, the pedagogical communication and the teacher's personality. And there is the reference for the corresponding works by A.K. Markova [2] and L.M. Mitina [3]. The teacher's each type behavioral manifestations are being connected with the occupational self – consciousness peculiarities and the special features, but to be more exactly – with his further development levels. So, the low levels are being correlated with the volitional – emotionally sphere disorders, with the behavior flexibility, and with the self – regulation. That is, the self – consciousness insufficient development is being connected with the teacher's psychological health disorders, that, in its turn, is being exerted their influence upon the pedagogical labor whole process.

The compensation and the personality individuality principles are quite able to be the key ones of the pedagogical activity analysis. For all this, the compensation is quite able to be considered at the three levels:

- 1) the compensation at the separate mental function level (e.g. L.S. Vygotsky, N.A. Vigdor-chik);
- 2) the mental or the physical handicaps substitution by the personality traits (e.g. K.K. Platonov);
- 3) the compensation at the specific occupational activity level (e.g. V.D. Shadrikov, N.P. Ansimova).

The compensation by the personality individuality – this is the key to the contemporary teacher success comprehension, having worked under the unrealistic assigned task conditions.

The «activity individual style» (AIS) notion has firmly been confirmed in the psychology. The two definitions, having given by E.A. Klimov, are usually listed and mentioned in the works on AIS. In the narrow sense, – this is the conditioned one by the typological peculiarities and the special

features activity methods stable system, which is being made up and is being formed at the person, having speeded to this kind of his activity realization by the best way. In the broad sense, the main challenge is on the psychological means peculiar – individually system, to which the person is being resorted to consciously or spontaneously, for the purpose of the best equilibration of his (e.g. typologically conditioned) individuality with the activity object, and the external conditions. Let us attract our attention to the fact, that the activity style is being considered, as the subject's adaptation factor. The idea on the expression through the personality's adaptive mechanisms occupational activity is being presented by us rather the fruitful one with only that reserve that the adaptation notion has to be interpreted in the broader sense, than it is simply the environmental adaptation and the further accommodation.

In the psychology, the style challenge has actively been developed since the beginning of the 50-es years. Such kinds of styles, as: the cognitive ones, the emotional ones, the perceptive ones, the reactive ones, the affective ones, the efficient ones, the empirical ones, and the others have already been studied and have already been described up to the present time. The style challenge study in the psychology, from the person's individuality positions, has got the sufficiently old and the ancient traditions, and this has already been reflected in the separate academic disciplines – such as, in the differential psychology and the differential psychophysiology. So, we shall note the considerable differences, as in the domestic, well as in the foreign approaches to the style challenge. So, the style notion is being developed in the framework of the activity approach, where the style itself is being comprehended, as the activity demands interaction integral phenomenon and the person's individuality in the domestic psychology. Then, the style study is being connected with the personality factors over the mental processes, that it is being resulted in his comprehension, as the personality traits, in the Western psychology. Thus, the four types of the styles are being distinguished in the approaches diversity: «the cognitive styles», «the activity individual styles», «the managerial (e.g. leadership) styles», «the vital activity and the vital functions styles» (e.g. the behavior and the conduct, the human communications, the activities)».

It is also quite possible to be distinguished the different and the various approaches to the challenge in the managerial and the leadership styles study: the personality one (e.g. it is being reflected, mainly, the manager individuality emphasis, as his

style main determinant); the behavior and the conduct one (e.g. it is being coordinated the style with the behavior and the conduct, with some personal peculiarities and the personality special features, with the human relations and with the motives of the subordinated people); the complex one (e.g. it is being expressed in the tendency and the intention to be generalized the most well – known style determinants); the structural – functional one (e.g. it is being characterized by the challenge statement on the style internal organization). So, each from all these style directions is being distinguished by its originality and its peculiarity (as well as, by the approaches variety and their diversity, and also by the phenomenon itself explanations). The pedagogical activity styles variety and their diversity are being originated from the teacher's personality individuality. So, we shall define those special features and their traits, which are being characterized the activity personality style. Firstly, the personality style is being connected with the internal activity organization, that is, it has the internal determination. Secondly, it, as well as the individual style, is being presented itself the realization psychological means system of one or another activity. Thirdly, the activity personality style is being revealed especially, and it considerably is being influenced upon the occupational activity efficiency in the «man – man» system. Fourthly, the personality style, as well as the person himself, being not the typological one, but the human phenomenological characteristic description, is quite be possible to be described only in the context of the personality maturity level. Fifthly, the activity personality style formation has the vital sense meaning, from the point of the readaptation view to the occupation and also through the vocation in the crisis situation. The pedagogical activity style, having developed by the teacher's mature age, is quite able to be considered, as the controlled behavior and the conduct variant, in the process of the personality – occupationally readaptation. So, the method, by which the personality is adapted to the destructive effects, is being meant under the controlled behavior and the conduct style, in this context. The intermediate styles are being declared, as the most efficient ones, from the point of the pedagogical activity effectiveness view.

Thus, it is quite impossible to be bypassed the challenge on its intellectual reflection level, having said on the pedagogical activity style personality determinants. The thinking quality and the intellectual activity efficiency, to the considerable extent, are quite able to be conditioned by the personality's stable dynamical tendencies (e.g. by the motivation character, by the heuristic competence,

by the orientation for the current state or for the action). The high level heuristic competence, in combination with the success achievement motivation is being provided the insistence and the efforts long – termed organization on the goal attainment, the independence and also the orientation for the activity subject logic. The low level heuristic competence, in combination with the failure avoidance motivation is being resulted in «the retreats from the activity». The orientation for the current state is being resulted in the activity products partial losses. The orientation for the action, on the contrary, is being promoted the integral target structures formation. Hence, it follows, that pedagogical activity personality style will be the clearer to be taken the controlled behavior and the conduct character, the more it is the task – orientated one, but not for the emotions and especially as for the avoidance. Such kind of conclusion is being entered into the contradiction with the traditional presentation on the personality emotionality and the teacher's activity emotional saturation.

The accent on the pedagogical activity communicative direction in the works on the pedagogical psychology and the pedagogy of the last two decades years has been given the rise of the pedagogical communication styles numerous and the diverse typologies appearance. All these styles are frequently being distinguished only by those metaphorical names, which are given in the similar styles by their descriptions, with one or another frequency, having situated on the «democracy – authoritarianism» scale. Let us dwell at length on the typology, having suggested by S.A. Shein, because the styles analysis, at this author, is being accompanied by their developing influence potential analysis upon the alumnus personality, that it is quite possible to be greeted, from the point activity efficiency view, having drawn the consecutive anthropocentrism line. Thus, the following human communication styles have already been singled out by the author: the dialogic – confidentially one, the altruistic one, the conformal one, the indifferent – passively one, the manipulative – reflexively one, the monological – authoritarily one, and the conflict one. So, the obtained results have already been confirmed the styles this typology representativeness of the pedagogical communication, and, moreover, they have been revealed the mediated styles influence upon the aesthetic – morally human relations formation, as a result of the psychological mechanisms analysis. The conclusion has been drawn on the fact, that the dialogic reorientation is being permitted to be turned the pedagogical communication into the personality formation leading factor.

Thus, the personality style, as well as the personality himself, having been not the typological, but the subject's phenomenological characteristic description, it has been in the context of the personality individuality, his sense – valuely sphere, the occupational activity motives characteristic description, the interpersonal interaction style, and the metaindividual presentation. The efficient pedagogical activity personality styles are being included the intellectual reflection, the volitional control, and also the ability to the decentration mechanisms from the point of the controlled behavior and the conduct view.

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THE UNIVERSITY DEPARTMENT METHODOLOGICAL – EDUCATIONALLY COMMISSION ACTIVITY PECULIARITIES IN THE MODERN PERIOD OF THE HIGHER EDUCATION MODERNIZATION (BY EXAMPLE OF THE STAVROPOL STATE UNIVERSITY PSYCHOLOGY DEPARTMENT)

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The Department Professional and Teaching staff instructional work efficiency is directly being dependent upon the Chairs lecturers' and the instructors' methodological skill level, therefore the Department Methodological – Educationally Commission (MEC) activity – is the training process integral part.

The MEC main purposes at the Department are the following: the students' teaching methods and the education, and the training systematic im-

provement and the methodological perfection; the lecturers' and the instructors' pedagogical and the educational skill rise; the organization new efficient methods and the teaching and the educational processes conducting development; the students' teaching and education and the training best practices generalization and the spreading; the methodical – educationally materials publication by all the directions and the specialties, having realized at the Department. The MEC activity at the Department is being provided for the Professional and Teaching staff methodological training quality improvement through the learners' guides and the other methodological materials development. The MEC is being guided by the University progress plan, by the University Council and the University administration solutions, the Department Council solutions, and the MEO in its activity. The Methodological – Educationally Commission (MEC) activity is usually being included into the Department progress plan, where the activity main forms are being raised: the scientific researches on the students' teaching methods and the education, and the training challenges; the Methodological – Educationally Commissions meetings on the methodological – educationally challenges, namely: the methodological developments, the teaching aids and the text editions, the schoolbooks and the text – books quality traceability; the studies mutual visitation, the methodological – scientifically conferences and the Department conferences, the methodological seminars organizations.

The lecturers' and the instructors' methodological skill improvement challenges, the Department Professional and Teaching staff professional skills improvement progress programs and the plans results, the opened studies control results and the mutual visitation, all types of the academic studies conducting quality improvement, the Department lecturers' and the instructors' experimental methodological – scientifically activity organization and the conducting stimulation on the new progressive forms and the teaching and the education methods on their application in the teaching and the training process, the students' independent work organization, the teaching and the training process control results: the examinations, the tests, the final examination pass, and the graduation qualification works defense, the students' teaching, the education and the training quality improvement ways are being considered challenges and etc. at the MEC meetings. The MEC is being carried out its meetings, as it is necessary, but not often than once time monthly, and it is being drawn up and completed them by the proceedings. So, the Department Dean, the Dean's deputies, the Meth-

odological – Educationally Commission chairman, the Chairs managers, the managers deputies on the methodological – educationally activity are being entered into the Methodological – Educationally Commission structure. The MEC structure is being defined by the Department Council, and it is being confirmed by the Department Dean.

The methodological materials – the schoolbooks and the text – books content and their construction, the teaching aids and the study programs, the methodological – educationally aids and the programs; the methodological – educational complexes terms, the quality preparation, and their publishing on the disciplines at the Department; the tasks volume to the students for the independent and the controlled work, the test tasks and the test items types and also the other teaching and the educational process improvement challenges are being discussed at the MEC meetings. The discussion results are being expressed in the methodological developments recommendation to the publication, in the directions and also in the other methodological documents. The information on the academic disciplines methodologically – educationally materials provision, having realized by the Department's all the directions and the specialties, is being retraced by means of the automated information data system (e.g. the AIDS module).

Annually, the Department takes its part in the methodological – educationally complexes competition, having organized by the Institute of the higher education, by the College, and the University methodological – educationally management, for the fulfillment purposes of the Regulations demand on the methodological – educationally complexes, where, in the prescribed manner, the MEC is being formed by the all academic disciplines of the curriculum. This is being promoted the printed matter quality improvement, the experience exchange between the Department, the university IIIC, and also the motivation creation to the IIIC innovation activity. The innovation processes methodological management at the Department is being carried out under the Department Dean, the Department Methodological – Educationally Commission Chairman leadership, and it is being constructed on the innovations Chairs mastering, which are being resulted in the pedagogical and the educational system functioning state change and its further development, in the pedagogical process quality provision, in accordance with the science last achievements. All these challenges successfully are being solved at the information computer technologies (ICT) application.

So, the teaching innovation methods are being applied by the Psychology Department Chairs Professional and Teaching staff in the teaching and the educational process: the dialogue – communicatively technologies – the group discussion, the focus – group, the interview, the dialogue, «the aquarium technology»; the playing – imitatingly technologies – the business plays elements, the role plays, and the imitating – occupationally plays, the psychogymnastic exercises and the trainings; the searching – challengely technologies – the case – technologies, the individual projects development and their protection; the reflexive technologies – the perceptive – socially, the communicative, and the autopsychological trainings elements. So, the Department is being realized not less, than 30 % from the ППТC auditorium hours' general number with the teaching and the educational interactive methods application. «The Interactive Methods Teaching Control and the Planning Map in the Teaching Process» is being made up by each staff person in the beginning of the academic year.

Thus, the special demands are being made for the purpose of the occupational and the academic competences generation, having proceeded from the Federal Agency contemporary educational policy on the science and the innovations to the higher school future specialist and the corresponding expert, as to the final improved and the advanced labor product. The given target is being demanded the innovation technologies application (e.g. the case, the multimedia) from the Department Professional and Teaching staff in the opened lecture and the practical studies conducting practice, at which the lecturers and the instructors demonstrate the special, the general occupational, the general scientific, and the personal – socially competences by their personal example. The opened studies visiting by the Methodological – Educationally Commission Chairman and the studies mutual visiting by the Chairs' lecturers and the instructors with the following their discussion are of the great benefit and the good purpose in the methodological skills improvement and the united views working out for the academic disciplines teaching. As all the academic disciplines and the corresponding subjects are quite specific by their main content, the forms, and also the teaching their methods, then its private teaching methods will have to be worked out for each from them. These studies visiting proceedings, where the general methodological approaches to their, as the organization, well as the conducting were reflected, had been specially developed and worked out for the methodological – instructively, the demonstration, the opened, the test studies for the conducting quality assessment at the Depart-

ment. So, the methodical – instructively studies are being conducted, for the purpose of the most efficient methodological methods development and the working out of the studies conducting on the topic, on the whole, or on the separate academic challenges, and also for the purpose of the topic separate challenges total comprehension and their interpretation establishment by the lecturers and the instructors. The demonstration studies are being conducted by the Chair's Professors, the lecturers, and the instructors, who are the most prepared, in the methodological respect, for the purpose of the model organization showing and the studies conducting methods demonstration. The opened studies are being conducted, for the purpose of the separate academic disciplines methods study and the teaching experience generalization, and also the lecturers and the instructors help and the assistance rendering of the advanced methodical experience. The test studies are being conducted by the young lecturers and the instructors, for the purposes of the initial methodological experience mastering. Simultaneously, their methodological preparation and the training level control is being carried out. The Department MEC Chairman takes his part in the University MEC activity, having the members' rights; so, he presides the meetings; he confirms their solutions and the guidelines, and the recommendations; he organizes the MEC activity current leadership; he reports on the activity results at the academic study end at the Department Council.

Thus, the Department Methodological – Educationally Commission (MEC) activity is being assumed, on the one hand, the teaching and the training function realization, but on the other hand – the controlling function realization.

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**THE INDIVIDUAL DIFFERENCES
STUDY IN THE PERSONALITY'S MENTAL
ABILITIES IN THE FOREIGN
PSYCHOLOGICAL SCIENCE**

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The mental abilities and the intellectual faculties nature study is being conducted rather many years long ago, but this challenge, as before, is being left to be opened. The thinkers have been

searching the answer this challenge at all the times (e.g. Platon, Confucius, J. Lokk, C.A. Gelvecius, Kant and the others). On the whole, they have based upon their own everyday observations, the speculative reasoning, the ordinary experience generalizations in their searches and the investigations. The detailed scientific research and the research study task of such subtle matter, as the human mind and the intellect, practically, it has not even been raised up, having considered, in principle, the quite unsolvable challenge, throughout many millenniums. Today, the mental and the intellectual abilities theme has once again been become the actual one, that is being conditioned by the economical – socially conditions, and the society state.

Nevertheless, the mental and the intellectual abilities development unified theory is not quite being existed, in spite of the psychologists' rather considerable contribution (e.g. F. Galton, A. Bine, T. Simon, J. Piage, R. Sternberg, G. Aizenk, E.M. Sechenov, L.S. Vygotsky, S.L. Rubinstein, A.N. Leontjev, B.G. Ananjev, Ya.A. Ponomarev, P.Ya. Galperin, N.F. Talyzina, O.K. Tikhomirov, N.S. Leytes, V.N. Druzhinin, M.A. Kholodnaya, N.E. Chuprikova and the rest) in this challenge the experimental and the theoretical development. Generally, the testology has been engaged in the mental and the intellectual abilities study abroad. So, the «intellect» and «mental and intellectual abilities» terms have been considered the quite identical ones with each other, in the framework of this direction. Let us observe and follow the presentations formation logics on the intellect, as they, simultaneously, are being reflected, as well the mental and the intellectual abilities nature.

For the first time, F. Galton has begun to speak on the individual differences existence in the mental and the intellectual abilities. He, moreover, has supposed that the intellectual powers and the possibilities are naturally being conditioned by the human biological nature peculiarities and the special features, and they are, correspondingly, being situated in series, as his physical, well as his physiological characteristics. So, the sensory distinctive sensibility has been considered by him, as the common ones index – the intellectual abilities.

But A. Bine and T. Simon have the other intellectual abilities nature comprehension. So, they have recognized environmental influence upon the cognitive further development peculiarities and the special features, in the contrast to F. Galton, who has considered the intellect, as the inherent psychophysiological functions constellation. A. Bine gives the following definition: the

intellect – this is the notion that is to say, which is named by the common sense, by the practical understanding, by the ability to be adopted oneself to the current circumstances. So, the intellect has been defined not so much, as the human ability to the cognition, rather than the mental and the psychical development achieved level, having revealed in the defined and the specified cognitive functions formation indices, and also in the knowledge mastering and the skills acquisition power indices in the context of the given approach. It is quite possible to be considered the first step to the intellect practical research the test challenges set creation by A. Bine and T. Simon for the mental and the intellectual development level assessment. Later, L. Termen qualified the Bine – Simon test, having used the intellect coefficient notion, which had been introduced much earlier by V. Shtern. This has been resulted in the following results: at the general consensus absence on the fact, what the intellect is, the psychologists have actively been studying its quantitative side; the relative constancy has been revealed, and also the direct dependence between the intellect coefficient indices and the school successes indices between the most prestige occupations and the mastering by them has been fixed it up; besides, it has been made the conclusion on its inherent conditionality during the investigations. Later on, the two conceptions have been appeared in the intellect nature study in the framework of the testological approach: the monofactor one and the multifactor one. The monofactor conception supporters (such as, Ch. Spirman, R. Cettel, A.R. Jensen, S. Bart, F. Vernon, L. Hamfrays, J. Raven and the rest) have been connected the intellect nature, as the ability with the one factor, which, in the different degree, has been presented at all the intellectual activity levels. The multifactor conception representatives (such as, L. Terstone, J. Hilford, H. Gardner, D. Feldman) have been considering the intellect nature, as the intellectual factors (e.g. abilities) multitude. So, the enumerated researches theoretical result has been the «general intelligence» or the «general mental and the intellectual ability» existence acknowledgement, that is some total foundation, with more or less specific weight, having presented in the intellectual activity different and the various types. So, the mental and the intellectual abilities are not only various and diverse, but and they are being in the defined and the specified correlation, that is the intellectual activity highest and the lowest levels have already been singled out. It, moreover, should be

noted also the controlled influences presence idea in the intellectual components system, having had the different and the diverse generality level, that is the heredity and the environmental role is quite different in the mental and the intellectual abilities development.

Thus, the theories by J. Piage and A. Val-lon are being occupied the special position in the foreign psychology. The cognitive structures operational characteristics of all the levels, including the conceptual one, have exhaustively been analyzed in them. So, J. Piage considers, that the developed intellect is being revealed in the universal adaptiveness, in the individual's «equilibrium» achievement with the environment. And, consequently, the human behavior is the more «intellectually», the more complex and the more varied trajectories have been become, by which the subject influences on the objects are being passed, and, moreover, they are being carried on to the more progressive compositions. From the internal side the intellect, by J. Piage, these are the systems, having coordinated between each other of the reversible operations, which are being formed the ensemble: «The psychological reality is being consisted from the total operational systems, but not from the isolated operations, having comprehended, as the previous elements by these systems». So, the mental and the intellectual abilities nature is being borne the adaptive, and the active character in the framework of this approach.

At present, the cognitive approach in the mental and the intellectual abilities study is being developed in the foreign psychology. First of all, it has been based on the intellect comprehension, as the cognitive structure, the specific character of which is being defined by the individual's experience. This direction's representatives (such, as R. Gleiser, J. Carrol, N. Frost, A. Hunt, R. Sternberg, G.S. Halford, R.M. Clark) research the cognitive processes, the strategy and the approaches peculiarities and the special features, which are being provided the successful tasks solution to the individual. So, R. Sternberg, for the first time, has undertaken his attempt to give the definition to the «intellect» notion at the level of the ordinary behavior and the everyday conduct description. He has chosen the experts' opinions and the specialists' judgments factor analysis, as the definite and the specified method. So, the intellect, in his point of view, would be much better to be measured in those spheres and the areas, where the tasks for the individual are being the relatively new ones, and

the cognitive skills and the habits are being at the automatization stage. According to the given model, the intellect – is the purposeful activity, having pursued the total three global targets achievement: the environmental adaptation, the environmental formation, and the environmental choice. So, the each one from them has the special, the peculiar and the specific realization in the people's life. The diverse and the different contextual environments are quite able to be resulted in the further different mental and the various intellectual abilities development.

On the whole, the mental and the intellectual abilities nature has been turned into the ordinary and the everyday explanation, into the ecological bases and the cultural grounds. J. Carrol has already received the 24 intellect factors: the image data mental handling, the verbal fluency, the syllogistic mental decisions and the conclusions, the perceptibility to the contradiction and etc., having applied the factor analysis for his test data processing, but, at the same time, having based upon the cognitive psychology ideas (e.g. the decisive significance – is the information processing). So, the special direction is being developed, having connected with the central nervous system structures study, with the electrophysiological brain activity indices, having lain on the basis of the intellectual abilities (such, as G. Aizenk, R. Chalk, J. Artle), side by side with the above – considered directions in the foreign psychology.

Thus, it has been given much consideration to the mental and the intellectual abilities challenge abroad from the antiquity times and up to our days. The science and the practice growing interest is being observed to the quite different and the various work types with the personality's mental and the intellectual abilities. So, this kind of work has been acquired, especially, the wide – ranging swing in the USA. The US economic and the social development contemporary level is being demanded the highest occupational level from the experts and the specialists of the every activity sphere and the area. In this connection, it has been directed the country's attention to the gifted pupils' needs, who are the every society development potential, according to the American scientists' and the scholars' convictions.

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**THE RESEARCH ABILITIES
AND SKILLS ELEMENTS FORMATION
AT THE JUNIOR SCHOOLCHILDREN
IN THE MATHEMATICS
TEACHING PROCESS**

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Many methodological challenges solution in the mathematical preparation and the training system in the primary and the high school is being assumed the pupils' mental and the intellectual development the defined and the specified level obligatory formation. This kind of level will have to be provided the pupils' active cognitive – educationally activity, to be promoted the succession realization in the teaching. And it, moreover, will have to be the basis for the future research practical activity. In this connection, it is quite possible to be spoken on the purposeful and the well – directed formation task significance at the pupils in the mathematical preparation and the training process, such the fundamental intellectual operations, as the analysis, the synthesis, the abstracting, the generalization, the comparison, the classification, having been the research abilities and the skills basis.

As it is generally known, the research abilities and the skills formation will have to be carried out, simultaneously, with the knowledge mastering and the linear learning. The things and the phenomena essence cognition is being carried out, by means of the mental work and the intellectual activity methods, which are underlay of the research abilities and the skills basis. And, that is why, they will have to be entered into the education content. But in the school practice, the mental work and the intellectual activity methods are not being acted, as the academic subjects special mastering and the academic disciplines special learning, their formation is being on, spontaneously, in the process of the separate academic subjects and the separate academic disciplines study. So, the actions by the pattern organization is being left widely – spread in the traditional primary education, that is not being promoted the independence development and the thinking activity, but, consequently, and the research abilities and the skills formation.

The psycho – educational works content analysis, having devoted to the pupils' thinking development theory and the practice, has been shown, that, on the one hand, the many researches results are already able to be served, as the basis for the following conditions development, having

provided the formation challenge successful solution at the pupils of the research abilities and the skills elements secondary educational school in the mathematics teaching process. On the other hand, the formation challenge at the pupils of the research abilities and the skills elements junior forms and the grades, at the mathematics lessons, is being left insufficiently completely solvable, as in the didactic, well as in the methodological schemes.

In our opinion, the researched challenge is being characterized by the following contradictions, which are emerged:

1) between the psychologists' researches results and the research abilities and the skills elements pupils' mastering and the linear learning real level;

2) between the requirements, having made for the mental and the intellectual activity methods formation, having made the research abilities and the skills basis, the psycho – educational sciences, the documents on the school, and the mathematics teaching methodology;

3) between the research abilities and the skills elements formation means, having suggested by the psychologists, the teachers at the junior schoolchildren and the thinking development means, having used by the junior forms and the grades teachers in their work.

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LEARNING GEOMETRY IN ELEMENTARY SCHOOL

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One of the most important tasks of the modern school is to develop child's intellectuality basing on the targeted formation of creative imagination. Imagination does not only help in learning, but is also important for children's cognitive development and personal growth.

The way the elementary school children learn geometry and acquire knowledge about space, makes its necessary to unite geometry learning and development of spatial representations and imagination during the first school years. However, the issue of an elementary geometry course remains questionable; the content and the sequence of learning of the geometric material are being disputed.

Children of elementary school develop spatial thinking abilities, and get basic skills and knowledge in geometry, drawing and measuring, only by chance, as the school does not address the issue enough.

In the elementary math program, geometric material can be found occasionally (only some small parts of it). It is a diminutive addition to arithmetic rather than a complete course, which in our opinion, a course of visual geometry should become.

The existing geometry introduction at school has a number of disadvantages:

1. There is no connection between the first geometric knowledge obtained at elementary school and geometry in the 5-6th grades. For example, notions «sphere» and «triangle», used in the first grade in such tasks as: «How many triangles, squares or spheres can you see in the figure?», are almost never used further at elementary school and the 5th grade. The only example of the space notion in the math book for the 5th grade, is a rectangular parallelepiped. So, a schoolchild learns only the definitions and primitive constructions in his elementary math, as the school program use neither the natural interest of pupils to geometry in this age, nor the rich geometric experience of children, which they gain in their everyday activities, it does not aim to develop their geometric intuition.

2. There is no proper system of introducing geometric facts of elementary and introductory geometry at middle school. According to our experience and observations, pupils cannot recognize segments on the rectangle sides (or other figures); they do not see the measuring of the length and width of a rectangle as measuring of the segment

length; they do not find segments in the surrounding reality. While getting acquainted with the simple geometric facts, students narrow their educational chances, as they learn the spatial relations of the material world and geometry of objects only through measuring.

3. The teaching process is not dedicated and logical enough, though it is desirable and possible at both elementary and middle school.

Moreover, teaching geometry elements in a more integral form at elementary school would be rather useful, as it could solve the difficulties, which many pupils face when they first begin to learn geometry. These problems are:

- 1) the child must realize the most essential geometric facts;

- 2) it needs to master the unusual methodology (definitions, logic proof).

If a pupil already knows the basic geometry and his geometric imagination is more or less developed, then he can understand the material of a regular geometry course much better.

The recent debates concerning the content of the school geometry are definitely helpful: during the last decades geometry courses have become «more geometric», the course books, which used to be too boring, have become more visual, and the extreme illustrative ones – more logical.

However, the observed development of geometric education is scarce. We believe that the introduction of course «visual geometry» at schools and universities, will let the future teachers explain geometry to children (provide geometric propaedeutics) in a more integral, task-oriented and systemized way, using the child's life experience and its rich imagination; and prepare for a better study of elementary geometry at the university.

In our opinion, the visual geometry course solves the following didactic tasks:

- provides a proper training for a regular geometry course (at school and university);

- helps develop spatial representations and imagination in school pupils (and students);

- gives students a practical knowledge, needed for learning of other school subjects: geography (for example, knowledge on angles, plan and scale), nature study (for example, configuration of leaves and flowers), physics (measuring areas, volumes), drawing (draw from nature);

- gives an opportunity to reason (inductive, realistic and etc.), assert hypotheses (their proof or disproof);

- develops artistic taste and esthetic culture in children (and students).

These are probably not all the educational goals that can be achieved by means of the visual

geometry, but there have been mentioned enough to assure of its benefits.

We believe that teaching visual geometry will interest the teachers, who care about the further development of children, and are willing to help their students learn geometry. We are sure that visual geometry would be attractive for teachers with wide imagination, who search for new ideas in their profession. And hopefully, the course of visual geometry will find its place in the system of professional education for elementary school teachers.

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EDUCATIONAL SPACE OF HIGHER EDUCATION

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Market period of development of Russian federation is characterized by the rising role of informative technologies, intellectualization as the most important condition and direction of development of productive powers. The base of progress while this becomes the knowledge, experience and value guideline of personality: ability of person to make his own decisions, readiness to carry out the responsibility for them, aspiration for professional promotion, to the reaching of compromise. These qualities of personality are laid at the period of studying and are improved during whole further life of person. That's why in the opinion of specialists of UNESCO the device of XXI century will be Education during the whole life that means uninterrupted education as social necessity and duty of citizens of postindustrial society. In the traditions of our country, while the importance of the process of knowledge acquisition, the education is not identical with teaching. At Russian perception education is inseparable from upbringing, forming and development of human's personality.

Federal program of development of education states that the number of educational institutions of non-traditional kind (lyceums, professional lyceums, gymnasiums, colleges) has reached more than three thousands, the number of students who study there has increased more than a third. There

is formed the new system of higher education, which includes state and private educational institutions. This promotes the access of Russian citizens to get higher education and at the same time creates a big number of critical problems that are connected with contents of education, the quality of preparation of specialists. To guarantee educational institutes on different types of expert personnel is one of the tasks of institutions of higher education. To prepare not just professional at concrete sphere of activity but to give to graduating student an opportunity to choose the field of their application on one's own this is a task of university education. Conflicting character of social-economical reforms that are held in the country negatively affects the condition of graduates of high school. The most critically behind them there stand questions of job placement: unemployment, psychological unpreparedness to it, insufficient quality of preparation, uselessness of knowledge, remuneration of labour. Practically all institutions of higher education of the country, including technical ones, continue to widen intake of students to such specialties as economy, management, business accounting, jurisprudence thereby they intensify cruel competition at the labour-market one the one hand, and they fail their own specialization in chase of profit on the other hand. Changes at the economy of the country reflected at the change of motivation of students to studies. Consequently of selective questionnaire of 200 student of institutions of higher education of Stavropol krai about motives of getting higher education there was revealed following: the motivation to the study of 30 % of students of first courses is desire for receive a diploma of higher education without connection with the choice of speciality, as the possibility of getting well-paid job, 40 % of them just want to be highly educated. For the students of graduation course on first place also stands the factor of getting high education in condition of education by «easy» speciality. About 70 % of students consider that they will get second higher education by the speciality that corresponds to the elected job, after finishing the institution of higher education. It follows from this that for the majority of students speciality that was gotten at the institution of higher education is not a base of job placement by the speciality. The reforming of Russian system of higher education and its bringing into a correspondence with generally accepted world standards is today's necessity. But the main task consists not in reforms, not in technologies, but in carrying out the whole complex of transformations, which guarantee the conditions for the development of personality of competent person, fully developed, independently thinking. Speak-

ing about development of educational system, noting saved by high school intellectual potential, we can't pass over the silence about crisis phenomena, critically revealed hardly not every day. Unsatisfactory financing, ruining of material and technical basis, increasing deficit of teaching personnel and inevitable aging of personnel of higher qualification considerably complicate and difficult process of reforming of education as it is. According to carried out social questionnaire of teachers of Omsk state university, the basic number of teachers 54 % are not satisfied about their pay, 48 % of them said that the main stimulus that has an influence on intensiveness and quality of their labour is «public recognition», 27 % named «academic degree», 35 % named «bonuses, increments». No one of the teachers named as a stimulus to the teaching activity the fact of receiving of qualitative knowledge by students, and consequently their job placement by the speciality and to the well-paid post. About 70 % of magistral stuff are at the age of 45 and older. Russian high school during the long years of its existing and development accumulated reach experience at the sphere of preparation of high-qualified specialists for all sectors of the national economy. Even abroad they appreciate such considerable traits of Russian system of higher education as the use of latest achievements of science and technology at teaching, depth and fundamentality of professional knowledge that is shared with students, the general availability of education. By the standard of preparation, by the contents of education and by the methods of teaching leading institutions of higher education of our country are absolute equal with the foreign educational institutions, and sometimes excel them.

The work by reforming of existing system of higher education requires deep and comprehensive taking into consideration international experience, which was accumulated at this sphere. One of the main directions of reforming of the system of education is conversion to multilevel preparation of specialists (bachelor, master). The results of this conversion at some institutions of higher education revealed number of problems. In the first place there appears the necessity in new technologies of teaching and rethinking of accumulated experience at the sphere of preparation of specialists. Secondly appears the guaranteeing of quality of education.

Nowadays in the country there is no harmonious mechanism of coordination of system of preparation of the personnel, there is a problem of discrepancy between demand and supply of labour-market. Labour-market dictates his conditions. Drawing on the experience of foreign insti-

tutions of higher education and of our universities we can conclude that for both of sides (institution of higher education and enterprise) there is considered to be interesting such type of interaction as carrying out of scientifically-practical works by the order of enterprises. Meanwhile companies often supply with equipment or give other base for carrying out of researches, direct their workers for participation at joint developments. University from its side gets involved in the research works not only science workers and teachers, but also postgraduates and students, what in the future open behind them the possibility of full realization of their own potential. To enterprises the assistance of institutions of higher education at carrying out the researches and developments, qualitative and inexpensive execution of orders that answer to the specific and possibilities of institution of higher education, consultancy of personnel of enterprises by specialists and scientific workers of institutions of higher education are of extra interest. It's necessary to carry out activities that are directed to the solving of such problems as forming of conditions of mutually beneficial collaboration "HEI-enterprise", definition of criterions of competitive graduate, diagnosis of condition, prognostication of necessities and tendencies of development of labour-market by sectors, bringing to a correspondence the system of preparation of personnel to the necessities of labour-market at qualitative and quantitative aspects. The result of coordinated joint activity of higher education institutions and enterprises will become: the rise of professional knowledge of students and graduates of HEI, the development of Russian science, real help to representatives of business by guaranteeing with professional personnel resources. Organization of multi-level educational complexes at the base of existing educational institutions allows to widen diversification possibilities. Diversification scheme of multilevel preparation of specialists allows to widen the diapason and forms of education, to create the structure of educational subdivisions that give such number of educational services, which will guarantee succession of educational programs that take into consideration the specific of professions, and allows at the base of initial professional education receive higher professional education, including education by short programs. Such scheme gives to students an opportunity to acquire comprehensive knowledge and practical skills of profession side by side with getting of higher education, what is traditionally valued at the sphere of professionals, allows them to widely use their possibilities and in the sequel be competitive at the labour-market, and also increases their social proofness, creates real

premises for combination of social necessities and desires of students.

University with the assistance of Federal agency of education, ministries of education of Stavropol krai carries out active policy by creation at the base of active at the region branch offices of multilevel educational complexes, including, as at the leading research institute, the structurally-integrated institutions of primary, high and higher professional education. Big perspectives of organization of the system of open education HEI sees at the further development of technologies of distance education at the base of corporative local system of university, at the increase of possibilities of Internet-library of SSU (Stavropol State University). In connection with destruction of sectoral systems of rising of qualification and retraining of personnel at SSU big attention is paid to multilevel supplementary education, interaction with the job centers, realization of educational services by the educational plans, which were came to agreement with consumers of personnel.

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TRAINING TECHNOLOGIES THAT ARE USED WHILE THE DEVELOPMENT OF NONVERBAL COMPETENCE OF PEDAGOGUE

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Under the nonverbal competence of pedagogue we understand the integral characteristics, which defines the ability to solve professional problems and typical professional tasks that appear at the real situations of professional pedagogical activity with the use of knowledge, professional and life experience at the sphere of nonverbal communication. Nonverbal competence includes both skills of encoding and decoding (interpretation) of nonverbal information. But researches of nonverbal communication while the organization of educational process show that communication between teacher and students is spontaneous (E.U. Semykina, V.K. Rydzova and others). Therefore there is necessary socially-organized development of nonverbal competence.

While teaching of decoding of nonverbal information of pedagogues the most effective is training technology, which allows creating a process of education with the taking into account of specificity of nonverbal mean of communication, peculiarities of interpretational process of identification of nonverbal behavior. The complicity of use of this technology consist in that in literature there is no accepted by everybody concept about training as the type of educational activity. In connection with this often at the didactical developments of training there is noticed the mixing of training technology with other independent interactive technologies, such is carrying out of practical, organizationally-action and other games, technologies of group discussions etc.

We issue from the understanding of training as independent interactive technology that includes psychogymnastic exercises, role play and group discussion, analysis of situation; specially organized group work that is directed to the achievement of defined goal.

The aim of our training for teachers of comprehensive school is development of skills of decoding of nonverbal information (near aim) and improvement of pedagogical competence at this base (distant aim). The aim of our training allowed formulating of tasks: awakening of interest of listeners and of aspiration for cognition and comprehension of one's own nonverbal behavior, nonverbal habits, nonverbal masks, peculiarities of nonverbal communication and interaction; conceptualization of concept about nonverbal means of pedagogical communication; revealing of problems that don't allow to every participant of group to effectively use nonverbal means in communication with children; actualization of professional position of pedagogue at the work with children; development of ethnocultural sensory, attention and observation.

With the taking into account of specificity of this form of work, we planed further stages of training:

1. Organizational stage – The orientation at the specificity of training as the method of education (lesson 1).

2. Preparation stage – Self-determination of members of group and defining by group the aims of its work; creation in the group such atmosphere that will promote self-knowledge and self-manifestation; destabilization of stereotype conceptions about oneself and of motivations of one's own behavior; actualization by everyone of one's own professionally-pedagogical position (lesson 2, 3, 4). Base stage – Rethinking of conception about oneself at the base of feedback, the analy-

sis of what is going on in the group and reflection; widening of the sphere of realized things at the cognition of actions of another person; forming of sensitivity to the nonverbal means of communication; training of effective means of nonverbal communication (lesson 5, 6). Projecting and construction by every member of group effective means of communication (empathic comprehension, ability to give feedback etc); training of individual strategies and tactics of effective pedagogical communication with the use of nonverbal means of communication (lesson 7, 8, 9) 4. Final stage – Reflection of changes that occurred with the members of the group and group during the training, prediction of future professional plans of members of the group (lesson 10). The structure of our lesson included following structural components:

- 1) greeting;
- 2) warm-up;
- 3) base part (discussions, plays, exercises);
- 4) reflection (debriefing);
- 5) farewell.

Base methods of training included following methods of work.

Exercises – group or individual actions, which are carried out due to defined instruction. Exercises are directed to the solving of concrete tasks that are laid at the program of training, promote reaching of the aims of training. Part of exercises was borrowed by us from the methodical literature by trainings and was adapted to the aims of our training, other part was developed independently (for example, exercises «Sound ping-pong», «Image maker» etc).

While carrying out of the course we used warm-up and etude exercises. A warm-up exercises (or creative warm-up) were surely used by us at the beginning of every lesson or during the lesson. They served as original “warming-up” of members of training. Choice of warm-up exercises is defined by concrete aims of every lesson. Thus at the first lesson we use exercises that promote deepening of meeting and forming of unity of group (exercise «Compliment»: lesson begins with the mutual greeting of all members of the group, for example, to say to your neighbor something pleasant; to give a present; give by touching kind feelings etc). Warm-up exercises carried out not only function of preparation for the work, but also promoted the creation of positive group atmosphere, dynamic.

Etude exercises are directed to the reproduction of some situations, fragments of real life. They imitate actions not too much long, in which

there are no role orders. The example of etude exercise is exercise «Pantomime». The host of the training gives a theme, which participant should open pantomime. Theme can be given to one person, to pair, to part of group or to the whole group. Themes for: individual show – «Who I am?», «Who I want to be?»; pair – «To carry in the log and to cut it», «To carry in the carpet in the room and to fix it on the wall», «Meeting at one bench», «Consolation of offended person», «To move on the narrow board over the big puddle», «To cross the rock bridge over the precipice»; group – «Zoological garden»: every participant feigns some animal, and the choice of animal and interaction with other animals symbolically reflects some qualities and relations of participants; «Meeting of friends (classmates) after the separation of many year». After the presentation of corresponded sketches everybody generalize their feelings and share impressions. We recommend not to include such exercises into first lessons, because they are oriented to the without valuation perception, require sufficient emancipation of participants.

Group discussion is the principle method of discussion of all questions and problems at the group. Of no small importance place at the training there occupied plays, first of all role ones. Their topic was connected to the professional activity («Once at the lesson»), and to abstract topics. Play as a modeling of behavior of person at different situations, as the realization of role perceptions (spontaneous and given) is the meaningful element at the training. Spontaneous orders were connected with the big part of activity of students. We recommend bringing plays into lessons gradually, starting from their elements, accumulating the experience of different public performance behind the group.

Thereby while the teaching of teachers of comprehensive schools of decoding of nonverbal information we used as the didactical technology training technology, which includes the totality of methods and ways: exercises (warm-up, etude), elements of practical and role play, the analysis of pedagogical situation, modeling of pedagogical situation, discussion, culture assimilator, method of «round table». As the auxiliary ways we used bringing of diary notes, filling in of questionnaires «Feedback».

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**THEORETICAL ASPECTS
OF THE SYSTEM
OF AESTHETIC UPBRINGING**

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Every social-pedagogical structure of aesthetic upbringing is made up of the unity of two structures. The first substantial structure gives clear presentation of principle aims of two structures, of methodological approaches to the definition of contents, forms and methods of its realization. There are two parameters in this structure. With the help of one of them there is defined and formed base set of concrete substantial tasks. To them there are referred: the development of physiological and psychological base of aesthetical culture. The development of culture of perception and estimation of artistic and aesthetical phenomena from the position of unity of form and content; training of artistic taste in its unity with the moral and aesthetical ideal, forming of especial type of artistically-figurative thinking; The development of emotional sphere of personality; substantial enrichment of the process of spiritual life, development of spiritual necessities and guaranteeing of deep aesthetic feeling. With the help of other measuring of the system all enumerated tasks should be situated sequentially by the ages with the taking into account of peculiarities, possibilities of children and growing pedagogical influence.

Big sense for the development of problems in pedagogy have those sciences as sociology, ethics, aesthetics. Sociology, which researches influence of social environment to the person and relations between people, studies the peculiarities of development of economy, culture, their influence on the forming of the personality of human. Ethics, as the sector of scientific knowledge, which do the development of morality, is ingenuously connected with the questions of moral upbringing. Aesthetics, which studies general conformities to the development of aesthetic attitude of person to the reality and art, and also to forming of aesthetic ideals, service as science base of of aesthetic upbringing. The connection of pedagogy with the philosophy and other social sciences, generality of solving scientific problems accentuate social character of pedagogy and testify to the necessity of solving of all questions of upbringing at the complex with the number of other social problems. Relying on the facts of social sciences, pedagogy studies objective necessities of society at the upbringing and conditions of their realization. The object of education and upbringing work of pedagogues is growing and developing human, and so pedagogy has close

connection with sciences, which study human. If the problem of person as the member of society is done by the social sciences, then human as the product of biological evolution is the test subject of biological sciences. Human as the organism is the sphere of studying of physiology. Person as a personality, thinking being with its psychical inner world, psychic is the test subject of psychology. For example, at the preschool age the main attention is laid to the development of essential powers at the process of artistic varied activity. At the school age at the base of the studying of literature, music, figurative activity, while the development of culture of perception, it's necessary to concentrate on the forming of aesthetic ideal, artistic sensitivity, and also on the special development of figurative thinking, active creative ability. The development of substantial structure allows to early come up to the consideration of second formal structure of the system of aesthetical upbringing that executes examined earlier substantial tasks. In this outward structure there are formed establishments of enlightenment and culture, events and activities, which realize with the help of their organizational forms main substantial aesthetically-educational tasks. Moving from one establishment to another, from the kindergarten to the school, parallel going in for hobby groups, studios, houses of children's creativity, musical artistic schools, child reaches defined achievements of aesthetical culture and aesthetical development. Outward structure should correspond to the substantial inside requirements, in order that every child can reach maximal possible for himself level of aesthetic civility. The effectiveness of the system of aesthetic upbringing depends on the understanding of art as the social phenomenon.

Thereby, the essence of the system consists in that thing that in the center there is situated the personality and individuality of child. Artistically aesthetic upbringing and education is carried out at the base of scientific complex approach to the whole affair of upbringing, which is the methodological base and important principle. On it there is based the necessity of close interdisciplinary connections at the process of teaching of art. As the principle of the system of aesthetic upbringing is also the idea of combination of class, out of class, out-of-school studies and organized influence of art with the help of mass media. Big meaning for the aesthetic and whole development of personality has the principle of the unity of artistic general psychical development of personality of children. Getting used to motivate all mental forces at the process of studying of arts child consequently spreads this ability and to any other activity. At

the choice of forms of education some innovative schools use aesthetical approaches at the teaching of general subjects. Children are cultivated in such notions as aesthetic of labour, mental work, physical culture and sport. Specific principle of the system is the principle of artistically-creative activity and amateur activity of children. At last the big sense has the principle of aesthetic of all children's life. In the live of child literally all have upbringing meaning: decoration of placement, neatness of costume, form of personal relations and communication, conditions of labour and entertainment. Social function of art consists in that thing that it with the help of images opens to the person the whole world of real existed beauty: aesthetical sense of life activity, ideals, relations of labour and nature. One of the social functions of art is cognitive-didactical or educational function. Art correspond itself the most accessible for children means of carrying out spiritual and physical exercises. Filling the leisure time of children it fills it with the socially valuable contents, satisfying the interests and necessities of schoolchildren, promotes their versatile development. So far as art is concentrated, substantially, fully of content, capaciously reflects and expresses in the artistic form the aesthetical essence of reality, in so far as it is sharp and effective weapon of forming of person's attitude to life. Carrying away of person, concentrating his attention at the new and impressive impressions, satisfying spiritual necessities, art carries person into a world of such feeling and emotional conditions, which switch over psychic activity, take off the tension, create discharge. Of course communication with art also creates tension. But this is qualitative psychical tension, which is rather different from the created by daily activity and relations. Psychical discharge consists not in the absence of tension, but in their change, in qualitative variety and originality of impressions. With the help of this change of spiritual tension art carries out peculiar psychotherapy, carries out psychohygienic, medical role. Aesthetical upbringing, education, provides to pupils not only spiritual, but also physical health.

Thereby, as the historical analysis of question shows, the problem of upbringing of harmonically developed personality excited many outstanding pedagogues and thinkers of humanity from ancient times. Particularly in our own motherland best minds noted the importance of laid in the school aesthetical and creative origins. As it was shown earlier, nowadays in Russia there are existed all premises to all over again revive general system of aesthetical upbringing, with taking into consideration of experience of previous generations of pedagogues and teachers, but with regard

to the realities of today's necessities. At scales of one school it should be done today, now. To teach children to understand and create wonderful one can without especial material investing, for this there is requires only putting one's heart and soul into a process of any study. Every teacher can do aesthetical upbringing, if he loves children, knows and loves his subject and creatively approaches to its teaching.

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THE JUNIOR GRADES FUTURE TEACHERS OCCUPATIONAL TRAINING IN THE MATHEMATICS TEACHING PROCESS

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The contemporary society labor market is being demanded the high level occupational and the applied knowledge mastering, the skills to be orientated in the information flows, and the habits in the new technologies mastering from the specialists and the experts.

The mathematics teaching pedagogical – occupationally direction, the essence of which is being consisted in the students' formation not only the knowledge, the skills, and the habits, but, as the ability, well as the preparedness to be used them in their future occupational activity, is being promoted the junior grades department high school graduates' mobility and the competitiveness provision.

So, the consecutive, the purposeful work on the studied and the target material with the mathematics initial course on the connection making by the following directions would be promoted the student to be realized the mathematical knowledge necessity in his future occupational activity, ipso facto to be brought up the necessity in his preparation and the training improvement, to be formed the skill and the habit to be orientated in the academic subject content, and also to be worked with the textbooks by the mathematics for the junior grades at him:

– the tasks and the necessary materials use just from the mathematics textbooks for the grade school at the students' motivation creation for the

higher school course theoretical regulations illustrations;

- the tasks performance, having designed with the textbooks material use for the junior schoolchildren;

- the students' familiarization with the tasks search from the mathematics initial course, having connected with the studied and the target material in the Institute of the higher education, in the College, and also in the University;

- the textbooks pages logical – mathematical analysis by the defined and the specified scheme carrying out for the junior grades.

So, it is necessary to be used also the necessary tasks on the alternative textbooks, in the form of the following circumstances:

- a) the grade school programs by the mathematics have been undergone the considerable changes: the teaching developing tasks are being put in the forefront;

- b) the mathematics teaching is being carrying out on the alternative (e.g. developing) systems in many schools (especially, in the junior grades).

Such kind of work is being permitted to be carried out the succession and the continuity between the mathematics school and the higher school courses on this academic subject.

Such succession and the continuity manifestations, as the repetition and the propaedeutics are being acquired the special significance, from the point of the mathematics teaching improvement view on the ФHK. So, the repetition role is the great between the secondary school and the Institute of the higher education, the College and the University. The mathematics school course repetition in the Institute of the higher education, the College, and the University will have to be provided the presentations non – stop development on the mathematical structures. For this purpose, it should be cited to the theorems and the examples at the lectures, and the practical studies, which are quite known to the schoolchildren from the school, having permitted them much better to be comprehended the new mathematical fact, the phenomenon, or to look at the already quite known one just from the higher level.

So, it is being presented reasonable the academic mathematics propaedeutic course, which is necessary in the junior grades future teachers pedagogical – occupationally preparation and the training to be included into the junior grades department academic studies curriculum (by the new State Standards – STS), for the purpose of the basis creation for the basic mathematical notions and the divisions mastering of the full value.

Thus, the main tasks and the aims of such introductory course will be quite able to be the following:

- 1) the first – year students mathematical culture development up to the level, which is quite enough for the «The Initial Mathematical Education Theoretical Bases and the Technologies» course mastering full of the content and the substance;

- 2) the skills and the habits system working out at the students in the up – to – date mathematics basic notions handling and the operation.

As A.G. Mordkovich notes, one from the mathematical preparation and the training pedagogical – occupationally direction indispensable conditions «is the statement and the regulation on the fact, that the general scientific and the methodological line consolidation is usually being made up the academic mathematical discipline building basis in the Teachers' Training College». So, he has called this statement and the regulation by the binarity principle. In accordance with this principle, the academic mathematics study by the ФHK students will have to be provided not only the broad outlook achievement in the academic mathematics, the academic mathematical culture defined and the specified level, but and the acquaintance with the academic mathematics school course exposition methods.

The junior grades future teacher methodological preparation and the training, by means of the academic mathematics, are quite able to be carried out by the different methods application: the comprehensive material's summarization and the development, the exposition and the description (including the school options and the versions); the didactics principles application teaching; the challengeability in the teaching; the independent tasks on the materials preparation for their application at the lessons, the studies, the mathematical circles; the business plays application; the lessons' parts and the fragments preparation on the defined topics and the specified themes, having had their practical application into the school program; the tasks selection and its didactic comprehension and their understanding. Thus, the student is being carried out the following work, at his independent task realization on the lesson's part and the fragment preparation:

- he is studies the pupils' knowledge, the skills, and the habits level to the topic and the theme study moment;

- he studies the theory part and the fragment all the possible variants and the options;

- he is choosing the most convenient variant and the option, from the point of the having the

pupils' knowledge, the skills, and the habits level and also its perception possibility;

- he is defining the material's summarization and the development, exposition and the description level, having singled out the special moments, which will not be able to be proved in the strict manner;

- he is carrying out the methodological study and the research on the strict evidence substitution by the intuitive presentations, having confirmed by the given examples and so on;

- he is making the studied academic subject part and the fragment building;

- he is developing the exercises system for the theoretical material and the necessary skills and the habits working out consolidation.

Such kind of the systems will have to be contained the special exercises, having had the brightly expressed «school» direction; having realized the main and the basic lines rich in their content of the school course – that is, the numerical one, the equalizations and the inequalities, the graphic – functionally one, the geometrical one; having promoted the skills working out on the examples and the tasks making up, on the notions and the conceptions formation in the school.

It has been provided and foreseen the academic discipline study by the students by the new academic studies curriculum program (e.g. by the new State Standards – STS, 2005) at the ФHK: «The Initial Mathematical Education Theoretical Bases and the Technologies». So, it is presented, that the given course is being created the large possibilities for the more qualitative discovery of the pedagogical – occupationally direction methodological aspect of the junior grades future teacher mathematical preparation and the training.

So, it is necessary to be paid much attention for the teaching process close relevance and the interconnection establishment at the ФHK with the junior grades teacher's work experience, and also for the primary and the elementary research skills and the habits formation, which are constantly necessary for the improvement teacher in his occupational activity at the given and the adopted course content development.

Thus, the pedagogical – occupationally direction in the academic mathematics teaching of the junior grades future teachers is quite able successfully to be carried out at the following conditions observance: the «mathematics» academic course study motivational provision, the academic mathematics teaching methods and the forms orientation for the students' preparation and their training for the occupational activity, as the junior grades teacher, the curricular auditorium, the extra –

curricular and the research – scientifically work orientation with the students for the practical needs and the academic mathematics teaching challenges just in the elementary and the primary school.

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HEAD TEACHER COMPETENCE AS AN EFFECTIVE CONDITION FOR DEVELOPMENT OF PROFESSIONAL TEACHING STAFF

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School is a mirror of social changes. The national education policy urges school management to develop a democratic education system, which guarantees essential conditions for the complete and qualitative education at all levels. School principals' knowledge of laws and regulations governing the comprehensive school activities, and

their ability to apply it on practice create a legal platform for an effective management of educational institutions.

Good job performance of the comprehensive school principal depends on how competent he is in determining the content of education, linking education and personality development, quality and practical side of the education. If the school principal focuses his efforts on personality-oriented education, then he is also developing his professional competence. A modern head teacher of a comprehensive school should clearly understand the results of education, the frameworks of management and teaching; he should be able to set educational goals for the institution in general and teaching staff members in particular, plan the education results for academic terms and for the long term, always compare the goals and the achieved results, search for the reasons of the revealed differences, regarding the condition of the aim-result comparability.

Professional competence of the comprehensive school principal can be described as a multiple system, which also includes legal culture. The modern head of an educational institution should have a clear view of laws and regulations on education, conditioning the school management. Professional competence of a school manager is his self-consciousness through work. It means to understand own demands, interests, goals, values, social roles, and motivation; assess the own professional abilities (knowledge and skills); compare own professional qualities with the job requirements; develop an individual line of conduct and working style basing on self-assessment. In general, the professional competence can be defined as principal's self-perception in each of the three sides of the job: professional activities, professional communication and his own personality.

The ideal level of professional competence of the comprehensive school principal requires such integrity of knowledge, skills and essential professional qualities, which let him do his job effectively and appropriate. Management comprises a number of functions such as information and analytics, motivating and setting objectives, planning and forecasting, organizing and performing, control and analyses, regulating and correcting. They determine the structure of professional activities of the school head teacher. The principal of the comprehensive school is professionally competent when he realizes and evaluates his qualities, knowledge and skills with regard to his job, can assess his own professional needs and motivation. In our opinion, criteria of professional competence development could be the following: self-evalua-

tion of professional skills, qualities, motives and goals; ability to define objectives, develop and undertake efforts for the purpose of accomplishing these goals, analysis and correction. During the study, we have defined external and internal conditions that influence the professional competence in the course of the career development.

Personal creativity characterizes the personality development of the school principal, his level of knowledge of the methods for self-development, self-regulation, moral, life and professional self-determination; it reflects his personal position in educational, legal and managerial issues.

Reflective abilities of the comprehensive school principal are an effective mechanism providing actualization of his human potential. Due to that fact, the reflective abilities are regarded as one of the most important characteristics of managerial culture. It should be mentioned that personal creativity gives the managerial culture a social focus and makes it individual, thus reflecting person's creative individuality, experience and abilities. Manager's personality benefits from his moral and creative activities aimed at the school transformation. The personal creative element of the principal's managerial culture turns the management of educational institution into a creative act. Mastering the values and technologies of management, the school principal changes and integrates them, which is determined by his individuality as well as specifics of a particular educational institution. Through his managerial activity, the school principal fulfils himself as a personality, manager and tutor.

Technical part of the managerial culture of the school principal includes tools and methods of educational management. The school management techniques aim at solving specific educational tasks. Task solving is conditioned by manager's skills in educational analysis, planning, organization, control, regulation and correction. The level of the managerial culture of the school principal depends on how good he knows the tools and methods of management. The technical element of the head teacher's professional culture includes understanding the philosophy of management and developing an appropriate ideology, policy, means and methods of educational management. A creative manager develops his own managerial technologies according to the specific needs of the school and his personal creative abilities. Technique variety should help the school principal achieve good management results. It is also important for the manager to use information technologies and be people-oriented.

Successful use of professional knowledge and skills depends to a great extent on such busi-

ness qualities as being purposeful, well organized, realistic, consequent, confident, being able to set and achieve objectives, persuade the subordinates of his decisions; be modern, have a creative approach to work; have strong analytic and synthetic abilities in order to evaluate work processes and results; constantly update knowledge in issues of education, psychology, economy, law and management of comprehensive school.

Nowadays, much attention is being paid to such aspect of management as work with people. Professional communication means, first of all, to respect people and pay attention to their needs. In this respect, are very important manager's professionalism, managerial and general culture, as well as moral position.

The head of the comprehensive school is in the first place, an expert in personnel issues: his position requires skills that enable him to build relations with the subordinates und supervisors, other educational institutions, be responsible for the staff training and development, have a well developed psychological, educational, legal and managerial culture, enable self-actualization and personal growth of the staff. A very important quality of a manger is his ability to regulate his own behavior. Good manager should not be too bossy, but take care of better working conditions. Manager is responsible for personnel professional achievements and safety; he organizes and coordinates staff efforts to accomplish desired goals. Normal functioning of the school depends on proper delegation of authority and responsibility. Personality development and professional growth in conditions of society transformation highlights the problem of communication skills of the educational manager. Competence in communication cannot be regarded as a final characteristics and isolated individual experience. Taking into account that the stable development of communication skills increases the management effectiveness, it is necessary to organize professional trainings for the comprehensive school principals. Consequently, not only the role of competence in communication is worthy of our attention, but also the task of focusing professional efforts on communication skills development, the choice of the content of professional trainings; forms, methods, means and techniques of development and improvement of competence in communication in the course of the career development, making the competence in communication a valuable part of general professional culture of the comprehensive school principal, which is becoming more and more important currently.

In addition, educational, legal and managerial culture of school principal affects the effec-

tiveness of educational management considerably. And if these factors are insufficiently developed, it influences the managerial abilities of the principal.

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ANALYZING THE PSYCHOLOGICAL DIAGNOSTICS OF THE OCCUPATIONAL SELF-DETERMINATION IN HIGH SCHOOL PUPILS OF URBAN AND RURAL SPECIALIST SCHOOLS

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The research questions and goals of the following experimental study have determined the choice of the theoretic, empiric and diagnostic study methods; stages and logics of the conducted research; its content and the used techniques. Study and analysis of the relevant literature on psychology and education science helped to understand the current state and level of knowledge on the problem, with a conclusion that the occupational self-determination among high school students of specialist schools is a timely and an insufficiently covered issue in science and practice.

The following diagnostic methods were used: Batarshhev's method of pupil's self-evaluation; Self-evaluation of personal creativity; Diagnostics of social communicative competency (SCC) and Diagnostics of self-actualization by A.V. Lazukin and N.F. Kalina. The choice of methods was determined by need to study the occupational self-determination of high school students through its components: self-esteem, creative potential, possible estimation of success in future professional activities, level of self-actualization (time orientation, values, attitude to nature, cognitive demands, character, creativity, autonomy, spontaneity, self understanding, auto-sympathy, sociability and flexibility).

460 pupils of the 10-11th grades of specialist schools took part in the study, including 230 high school students of urban schools, which formed a control group (CG), and 230 rural high school students – an experimental group (EG).

Basing on specific criteria, we defined three levels of the occupational self-determination in high school students of specialist schools: high,

middle and low. Let us analyze the results of our diagnostics of the occupational self-determination in high school pupils.

42 % of the urban students and 19 % of the rural students presented a high level of self-evaluation. 41 % of the urban high school pupils and 47 % of the rural ones estimated themselves adequately. Low self-esteem had 34 % of the rural respondents, and considerably less – only 17 % – of the urban pupils. So, the average level of self-esteem among the rural school students (EG) is lower than in the urban group.

According to the self-evaluation test of creativity, 48 % of the urban and 25 % of the rural respondents have a high creative potential; low creative potential presented 18 % of the urban and 46 % of the rural high school students.

Students who highly estimated their creative abilities (nearly half of all the urban pupils) can be characterized as people with a considerable inborn creative potential, which offers them a wide range of creative possibilities. If they manage to realize their potential, a large variety of artistic activities will be available for them in the future.

The respondents with a low creative potential (almost half of the rural high school students) underestimate themselves. Lack of believe in own forces make them think they are not capable of doing new things and being creative. 34 % of the urban and 29 % of the rural pupils with a middle creative potential have enough creative abilities but are blocked by some barriers: every new idea passes through the stage of unexpectedness, surprise or rejection by others. They are limited in their creativity by fearing to be disapproved by the others for their unusual behavior, ideas or feelings, which leads to destruction of a creative personality.

Qualitative analysis of the data, received with the help of «Diagnostics of social communicative competency (SCC)» method, let conclude the following.

High score in Factor A characterizes people as open, easy and sociable (urban pupils – 40 %; rural – 43 %); low index – as unsociable and close (urban pupils – 9 %; rural – 10 %). High score in Factor B indicates a well developed logical thinking and mental agility (urban pupils – 31 %; rural – 31 %); low score – inattention or weak logical thinking (urban pupils – 13 %; rural – 16 %). High score in Factor C characterizes the respondents as emotionally stable, mature and quiet (urban pupils – 32 %; rural – 46 %); low score – as emotionally unstable, changeable, sensitive (urban pupils – 6 %; rural – 5 %). 49 % of the urban pupils and

41 % the rural are cheerful, unworried and merry (level of Factor D); 4 % and 7 % correspondingly are quiescent and serious (low level of Factor D). 36 % of the urban pupils and 29 % of the rural (high score in Factor K) are sensible, seek contact to other people, have creative thinking; 12 % of the urban and 31 % of the rural high school students rely on themselves, are realistic and rational (low level of Factor K). High score in Factor M shows that 41 % of the urban and 35 % of the rural pupils prefer own decisions, are independent; 19 and 36 % correspondingly, are group-dependent, sociable, join the public opinion. 34 % of the urban and 31 % of the rural pupils can control themselves and follow the rules (high score in Factor H); 14 % and 16 % correspondingly are impulsive, disorganized (low score in Factor H). High score on scale P (disposition for asocial behavior) indicates to personal problems in life: in the family, relations with friends or other people. This was the case for 11 % of the urban and 9 % of the rural pupils.

Degree of self-actualization, according to method «Diagnostics of self-actualization», was determined using eleven criteria (scales) with the following results.

1. The scale of time orientation shows to which extent a person is focused on the present, does not putting off life until later and seeking shelter in the past. The majority of the urban respondents (78 %) share the existential value of life «here and now», are able to enjoy the current moment and not to compare it with the past joys without or expected success in future. The majority of the rural respondents (57 %) are neurotically focused on the past experiences, have extreme success motivations, are mistrustful and show lack of confidence in themselves.

2. Value scale. High score on this scale in urban (83 %) and rural (79 %) respondents proved that they share the values of a self-actualizing personality (such as truth, good, beauty, integrity, no dualism, vitality, unique character, justice). Preference of these values means their striving for balanced life and human relations.

3. A person can have either a positive or a negative attitude to nature. This scale describes the faith in people and in the power of human abilities. As in the previous paragraph, the respondents from both groups presented high scores on this scale, which can be regarded as a stable basis for sincere and balanced interpersonal relationships, natural sympathy and trust towards people, honesty, open-mindedness, friendliness (81 % of rural and 85 % of urban pupils).

4. High cognitive demands are typical for a self-actualizing person who is always open for new

experience. High score on this scale was observed in 94 % of urban and 42 % of rural high school students, i.e. they search for something new without thinking of satisfying their demands only.

5. Creativity is an essential attribute of the self-actualization, which can be called a creative attitude to life. High scores in this criterion were observed in 89 % of urban and 31 % of rural high school students.

6. Autonomy, according to the majority of humanitarian psychologists, is the main criterion of mental health, the integrity of the personality. Self-actualizing personality is autonomous, independent and free, but it does not mean to deny solitude. High scores were assessed in both groups: 78 % in the CG and 75 % in the EG.

7. Spontaneity results from confidence in oneself and trust to the surrounding world. Ability to act spontaneously is frustrated by cultural norms; natural spontaneity can be observed only in little children. High scores on this scale were observed in 85 % of the urban and only in 21 % of the rural high school pupils. For those, is self-actualization a way of life.

8. Self understanding. High score on this scale indicates person's sensitivity to own wishes and demands (87 % of the urban and 34 % of the rural respondents).

9. Auto-sympathy is a natural basis of mental health and integrity of a personality. Low scores usually have neurotic, anxious and unconfident people. High scores on this scale were observed in both groups (CG and EG) – 79 % and 75 % correspondingly.

10. The scale of sociability assesses person's ability to build stable and friendly relations with others. In the self-actualization questionnaire, sociability is understood not as a level of communication skills, but as a general predisposition to creating mutually useful and pleasant contacts with other people, as a necessary basis for synergic orientation of personality. High scores were observed in 89 % of the urban and 34 % of the rural high school pupils.

11. The scale of flexibility in communication refers to the presence or lack of social stereotypes, ability to express oneself adequately via communication. High scores – 97 % of the urban and 46 % of the rural respondents – prove their self-expression skills and ability to interact authentically with other people.

Qualitative analysis of the first research results let conclude that the processes of self-determination and self-esteem development within the self-actualization differ considerably in pupils of urban and rural schools.

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THE DEVELOPMENT OF HIGHER EDUCATIONAL INSTITUTION'S INNOVATIVE POTENTIAL

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Higher educational institution's innovative potential has recently become an object of active regulatory control, which usually shows the update of the social problem and recognition of the necessity of its solving by public administration.

So, tendencies of the development of innovative activity in education system generally and particularly in higher education institutions were reflected in the adopted by Russia's Ministry of Education in April 2000 Concept of scientific, science-engineering and innovation politics in the education system of Russian Federation 2001-2005 and also in Basic lines of Russian Federation's policy in the field of the development of innovation system till 2010 approved on the 5th of August 2005 and in the Strategy of the development of science and innovations in Russian Federation till 2015 [1; 3-6].

It is marked in the documents that contemporary higher education institute should become not only science-education centre. Because of the development of innovation activity, infrastructure of its support, establishing communications between education, science and innovation segments transforms it transforms into special higher education complex – education-science-innovation complex (ESIC). Only such a complex allows characterizing higher education institute as innovative. Nevertheless state-financed science and higher education institutions until recently could not independently establish business companies and small innovation commercial enterprises. It significantly slowed down the innovation activity of higher education institutions.

In August 2009 a law, allowing state-financed science institutions bringing in intellectual properly into authorized fund of business companies to introduce the scientific work results, was adopted (FL №217 from 02.08.2009). The adoption of this law means that higher education institutions now may establish small innovation enterprises. Never-

theless the majority of higher education institutions don't have intangible assets (patents, licenses) that can be brought in as foundation contribution into small enterprise. Moreover, higher education institutions and institutes cannot manage license duties; therefore the developers have no motivation to achieve new results of intellectual activity.

It is planned that in 2010 government will pay special attention to problems of small innovative companies. Russian venture company has created so called seed fund with capitalization 2 milliard which is generally determined for these goals. The same program only with much less capitalization exists in the Fund for the Promotion of the Development of Small Forms of Enterprises in the Scientific and Technical Sphere. RUSNANO has already adopted the concept of development of seed funds with the support of small enterprises. The Ministry of Economic Development will give subsidies from the federal budget resources which along with regional resources will support small businesses and special programs financing small high-technology business.

One more draft law is in its final stage about innovative system of RF. More than 50 constituent entities of the Federation have appealed to the Committee of Science and science technologies and also to State Duma to make a law about innovations. It is in the stage of agreement with ministries and departments.

Key moment to introduce the law to life should be stimulation of demand for innovation. In order to have work small enterprises should have consumers of their products, that is big companies. They should search for such consumers.

Abroad venture business helps the development of higher education science. Since 1980, venture funds began investing actively into universities in the USA, for example. In Great Britain in 1983 a venture company Seed Capital Ltd has been established, now it's called Oxford Technology Management, it's investing into university scientists' developments. In Russia the concept of venture capital appeared in 1994, when World Bank created first venture funds. Now there are 155 such funds, money of which can be invested into higher education science.

At annual meeting of science-educational community of Higher School of RF, which was in St. Petersburg State Mining Institute named after G.V. Plekhanov (technical university), minister of education and science marked that additionally to basic financing 90 milliard rubles will be given so that higher school could become equal participant in developing science in our country along with RAS. The Ministry of Education and Science is suggesting spending additional resources given by

the government to higher school in 2010-2012 in several directions [2; 5]. First of all additional state support of programs of development of national, federal and national research institutes will be provided. It is also planned to support projects of development of higher education institution cooperations and academic groups and science departments of cooperative sector in regions. One more direction is state support of measures of attracting recognized scientists into leading higher education institutes, including Russian scientists from abroad. Moreover, the money will go not only for a scientist's and team's salary, but also equipment and supplies. Finally, creation of infrastructure for the development of small productions in higher education institutions will be supported: certificate centers, seed funds, patent and marketing services, training-consulting and engineering centers.

It's necessary to mark that managing innovation activity in higher education institutions is a system process, comprising all types of its activity: management, education, science, production. Consistency in managing innovations leads to that higher education institution becomes highly integrated system, serving base of the development of fundamental science, which becomes literally built into education system.

It integrates educational processes and science research, on basis of which development of students' creativity and training of high quality specialists takes place on the one hand, from the other- creation of science technologies, introduction of these technologies into life.

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Materials of Conferences

**PECULIARITIES OF RUSSIAN
COLLOQUIAL SPEECH
IN INTERNATIONAL COMMUNICATION
OF BILINGUALS**

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A problem of mastering colloquial speech by bilinguals is considered in the article. The necessity of knowing the peculiarities of colloquial speech which is uncoded style of Russian language is emphasized. Intonations and logical stress that has special meaning in communicator contact are highlighted.

Keywords: bilingualism, code switch, colloquial style, communication, intonation

There is a serious shortage of Russian-speaking communication as stylistic amorphism of speech, appearing in mixing colloquial and booky words in Russian speech of bilingual Dagestani. As Russian scientist I.S. Ulukhanov said: «Many things in a bilingual's speech are not irregularities but a choice of necessary language units from the existing possibilities» [Ulukhanov I.S., 1991, 387].

A misunderstanding of differences between codified literary language and its colloquial form leads to appearing curiosities. Bilinguals choose language units to describe a situation and to use the expression according to rules, and also conscious and unconscious usage of code switch, that is a system of rules with the help of which any information can be passed [Soviet Encyclopedia Dictionary, 1981, 595].

A language shift is seen while code switch – using of elements of one language in the speech in another language. M.B. Amalbekova in her work «Phenomena of bilingual personality in ethno-language landscape of Kazakhstan» pointed out 5 different types of code switch:

- 1) when addressing to a native speaker of a different language or changing an addressee;
- 2) when changing social roles or role functions of a speaker (for example, switching to a confidential conversation);
- 3) when changes appear in communicative act;
- 4) when citing statements;
- 5) when accidental (by mistake) or intentional switch to a different, well-known language [Amalbekova 2009, 387].

Colloquial speech is a functional form of a literary language. That's why bilinguals should know its peculiarities.

Unpreparedness, negligence are seen in a quite free speech behavior – in using reduced vocabulary, active gesticulation, mimic movements, in competency of topical polyphony, that is in breaking a principle of a topic unity.

Term «*colloquial speech*» is used in two meanings: broad and narrow; in a broad understanding the term represents «vast and discontinuous assembly of facts», in narrow meaning the term *colloquial speech* is used as a doublet of a term *colloquial style*.

E.A. Zemskaya in her work gives the following definition of a concept «colloquial speech»: «...Russian colloquial speech- is a speech of native speakers of the literary language functioning in oral form in conditions of spontaneous unprepared communication. In other words, colloquial speech- is such language sphere of communications for which it is typical: oral form as a basic form of realization; spontaneous of communication; non-officiality of relations between the speakers; unpreparedness of a speech; participation of the speakers in the act of communication; strong support on extralinguistic situation leading to that extralinguistic situation becomes part of communication act, «fused» into speech; using of un verbal communicative means (gestures, mimics)» [Zemskaya 1979, 11].

Appearing of a significant quantity of uncoded nominative units led to that some specialists conclude that colloquial speech is uncoded style of Russian language.

Should pupils of national schools get acquainted with all this? Pupils of national schools should have an idea about peculiarities of Russian colloquial speech.

Unfortunately, in Dagestan national schools, where there is no natural Russian-speaking environment, pupils have no opportunity to listen to Russian colloquial speech answering to norm of literary language.

The essential disadvantage of traditional teaching Dagestanis Russian language is that teachers orientate the pupils at exceptionally full style of pronunciation. Unfortunately, teachers do not get pupils acquainted with the peculiarities of phonetics of colloquial speech of Russian language. Consequently it is not a surprise that many bilinguals consider pronunciation by Russians of such words as : nuuborke «na uborke», zuuralom

«za Uralom», pugulyat' «pogulyat» – a mistake. «Quite often you can hear bilinguals complaining that if the Russians make mistakes in speech, then ours are even more excusable. Such things are said because of not knowing peculiarities of Russian colloquial speech» [Abdulaev 1995, 42].

Word frequency plays a great role in facts of colloquial phonetics.

Intonation and logical stress in colloquial speech gets special meaning. If in codified literary speech different feelings, reactions can be expressed with the help of vocabulary and syntax, then colloquial speech uses all possibilities and riches of Russian intonation.

Peculiarity of colloquial speech is that it has significant contrasts of different intonations. Intonation of colloquial speech is more contrast than intonation of codified literary language. In colloquial speech variations of height, volume of sound, pronunciation speed is seen more often than in codified literary language. Excited emotions are peculiarities of colloquial speech. The intonation can convey this emotionality. That's why it's hard to overestimate the role of intonation in colloquial speech.

There's an opinion that intonations of codified literary language and colloquial speech are opposite.

One of the peculiarities of colloquial speech is less in comparison to codified literary language text monotony: in colloquial speech there's more often change of high and low tones, different types of intonation constructions, different timbre dyes, often variations of speech speed.

Colloquial pronunciation style usually differs in heightened pronunciation tempo, but it is not an obligatory character of a colloquial style.

Such intonation means as pause and syntagmatic articulation are common for both literary and colloquial speech. However, some differences in their functioning are noticeable. Pause and syntagmatic articulation (intonation-meaning unity) often do not coincide in colloquial speech. Pause rarely follows articulation during normal speech speed and not long syntagmas, even on the opposite it is often made without any connection to articulation. In literary speech a pause aims to call some specific meaningful or emotional effect. In

colloquial speech a pause occurs except for this reason because of physiological reasons (to catch one's breath) and because of unprepared speech, lacking preliminary considering, consequently there appears necessity of grammar change.

One of extra-linguistic peculiarities of colloquial speech is direct talk exchange of a speaker with an addressee that is *direct contact of communicators*.

Thus, «colloquial speech – is not just reduction of codified speech, according to specific rules, but is an independent system, and transfer from this system into another is unavoidably connected with text structure changes» [Kazartseva, 1973, 463].

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*Materials of Conferences***PARALLEL EXPLICIT RUNGE-KUTTA METHOD 2ND ORDER: ACCURACY AND STABILITY CONTROL**¹Novikov E.A., ²Vashchenko G.V.¹Institute of Computational Modelling SB RAS,²Institute of Computational Modelling SB RAS,

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Differential equations arise in many fields of application, such as in the simulation

of phenomena in physics, mechanics, chemistry, biology and so forth. These equations are often in the form of a stiff initial value problems [1]-[3].

We describe a parallel explicit Runge-Kutta integration scheme second order in which an accuracy and stability control algorithm are included. The primary objective of this work is to illustrate a definite potential for the parallel performance.

Consider a stiff initial value problem

$$y' = f(y), \quad y(t_0) = y_0, \quad t_0 \leq t \leq t_k, \quad (1)$$

where $y: [t_0, t_k] \rightarrow R^N$,

$f: [t_0, t_k] \times R^N \rightarrow R^N$,

$[t_0, t_k]$ – interval integration.

Without loss of generality, assume that (1) is an autonomous system. Note that a non-autonomous system $y' = f(y, t)$ is always possible to write

in an autonomous form as (1). Assume that there exists a unique solution to the problem (1).

Assume that p is an amount of processors on computational system, N is a dimension of the system (1) and $N > p$, we write a parallel explicit Runge-Kutta scheme as in [4]

$$\begin{aligned} y_{j_s}^{(n+1)} &= y_{j_s}^{(n)} + 0.5 \left(K_{1,j_s}^{(n)} + K_{2,j_s}^{(n)} \right), \\ y_{j_s}^{(0)} &= y_{j_s}(t_0), \end{aligned} \quad (2)$$

$$1 \leq j \leq p; (j-1) \cdot s \leq j_s \leq j \cdot s,$$

where $s = N/p$, if N multiple p , or $[N/p] + g$, otherwise,

$$y_{j_s}^{(n)} \in \text{proc}(j),$$

$$K_{1,j_s}^{(n)} = h_n f_{j_s} \left(y^{(n)} \right) \in \text{proc}(j),$$

$$K_{2,j_s}^{(n)} = h_n f_{j_s} \left(y^{(n)} + K_{1,j_s}^{(n)} \right) \in \text{proc}(j).$$

We design a parallel algorithm by using a graph reduction technique and decomposition technique on a subtasks [5], [6]. Our method based on the use of automatic control of accuracy and of stability dynamically as the solution develops. A value of a step size h_n which will give the required solution with an estimated local error exactly equal to the requested tolerance and stability condition. The theoretical justification for using variable stepsize algorithms to integrate stiff problems has been given in [1]. It is shown that when a variable stepsize of integration is used, the efficiency of the explicit Runge-Kutta method can be increased by

means of a step choosing algorithms in which an accuracy and stability are controlled. In our method, a stability control is based on using of a estimation of a largest eigenvalue of Jacobian matrix by a power method across of right side system (1) differential and the following control as $h \mid \lambda_{\max} \mid \leq D$, where D is a stability region size. This approach leads not to increase in a calculation cost.

Parallel numerical algorithm is as follows.

The $y_{j_s}^{(n)}, f_{j_s}(y^{(n)})$ are distributed onto a p of processes according to the block scheme to ensure «good» load balance as well as the scalability of

the algorithm. An each task U_j is performed on one processor $proc(j)$, $U_j \in proc(j)$. $Proc(1)$ defines a value hn and broadcasts to the other $proc(j)$, as operation one-to-all. An each $proc(j)$ computes $y_{j_s}^{(n)}$ its part and broadcasts to the other $proc(j)$, as all-to-all. In additional, $proc(j)$ calculates a local norm, $\|K_{2,j_s}^{(n)} - K_{1,j_s}^{(n)}\|$ and sends to the $proc(1)$.

The program code is written in C/C++ with MPI –functions. It is available from the authors. The computations were done on a cluster MVS ICM having 99 processors [7]. Some numerical results are presented to show the efficiency of the parallel method. In additional, we give the number of integration steps, number of a function f evaluations, number of callbacks, i.e. isa, ifu and iwo, respectively.

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*Materials of Conferences***FORESIGHT IS THE INSTRUMENT
OF QUALITATIVE SOCIAL RESEARCH**

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TH TUMNGU

Recently there increases the number of publications in mass-media and in scientific literature, which doesn't correspond to base requirements of Professional code of sociologist and which doesn't answer the existed ethic norms. There decreases the level of trust of population to the presented information. Specialists at the sphere of sociology often present the results of their researches, which inadequately reflect actual condition of concern. [1] For the solving of this problem many scientifically-methodical advices, sociological centers, laboratories suggest while the development of program of research using the methods and technologies, at the base of which there exist sources of verification.

At actual period at foreign science there is widely spread the system of research - Foresight. Appeared near 30 years ago this technology became one of the base instruments of innovative development. About its effectiveness there testifies the degree of development of such countries as USA and Japan, which use this system during far not one decade.

Modern science singles out a majority of definitions of this term, for example, contained at the fundamental two-volume edition UNIDO: «Foresight is the systematical attempt to look in the long-term future of science, technology, economic and society with the aim of identification of the zones of strategic research and appearance of ancestral technologies, which are bright to bring the most big economical and social benefits» [2]. The deputy of director of the Institute of statistic researches and economy of knowledge State University – High School of Economics Alexander Sokolov, at his speech at the scientifically-research seminar «Perspectives of civil society in Russia: problems of estimation and choice», cited one of the most spread definition of this method: «Foresight is the systematical process of estimation of middle and long-term horizons of development that is based on the participation of all interested parties, that is directed to the making of actual decisions and mobilization of combined actions» [3]. Foresight was projected as the program for the development of perspectives of scientifically-technical sphere. Its evolution promotes the use of sys-

tem for different ecological and socially-economical aims.

From the ninetieth years of last century Foresight started to be used at the socially-political sphere. Last decade there are actively carried out the projects of cities: Dublin, Barcelona, Stuttgart; projects of social development of countries: Great Britain, Austria, Finland, France. Foresight becomes an instrument for forming of social reality. Countries that pretend to the leadership at the modern world began to work to the creation of their social future and began to transform outdated institutes, through the way of «prediction».

Properly, Foresight is not a method or technology, Foresight is the practice of use of all existed methods of research, development of programs of development, researches of future, prognostic etc in compliance with the defined principles.

The aim of Foresight consists in the idea that to promote forming of necessary potential (scientific, innovative, technological, human), and also new nets between different structures, which were able to develop and realize strategies of preemptive character [4].

There exist several types of Foresight, which in compliance with the degree and sphere of use subdivide into: national, interregional, corporative, regional, sectoral, subject and other. Depending on classification type system provides for the choice of defined method of prediction and research: brainstorm, expert questionnaires; method of Delphi; method of critical technologies etc).

This system can be used as the technology of any sociological research, depending on stated tasks. If the base aim of work is not the solving of actual problem (creation of recommendations, prognoses etc), it's possible to use only some methods of foresight for study of social opinion. While the development of program of sociological research with the use of system Foresight, it's necessary qualitative analysis of stages (table 1) with the taking into account of possible methodological problems.

While the foresight projecting and the choice of technology it's necessary to take into consideration factors, which have influence on the object of research, for example: mentality of population, regional development of economy, industry and culture, development of infrastructure of city etc, just on them there will depend success and qualitative effectiveness of work.

Table 1

Base stages of forming of program of research

The structure of standard sociological research	Foresight system
<ul style="list-style-type: none"> – preparation of research: defining of problem, hypotheses, aim, tasks, object and subject of research, methodology and plan; – collection of initial sociological information; – preparation for the treatment of materials of research at computer; – the analysis of information, preparation of account up the sociological research, conclusions and recommendations. 	<ul style="list-style-type: none"> – analytic stage; defining of problem, hypotheses, aim, tasks, object and subject of research, the analysis of choice of methods, expert group; – research of perspectives of development, introduction of Foresight methods, work with stakeholders, the organization of work of informative site; – scientific platform: the development of strategies, mechanisms, technologies.

At science there are known a lot of examples of use of methodology of Foresight with regard to the studying of society. The striking example is carried out fundamental research of civil society of Laboratory of research of civil society (LRCS) under the State University – High School of Economics. For reaching of base tasks and exactly: study of approaches to the defining of perspectives of civil society and preparation of some pilot project at the base of methods of Foresight, there were used questionnaires, method-Delphi, «staging», «mapping».

The director of center «The voice of nation» of the Institute of sociology RAN Alexander Kinsburgsky estimated presented project «as successful experience». «In my opinion, this is the most adequate method», – he noted. This method is adequate because it allows considering civil society at all forms of self-organization of population. Secondly the methodology of Foresight allows considering civil society at wide context, including political, economic, social and international aspects» [5].

While the analysis of this project famous political scientist Joseph Diskin noted particularly, that in that case we «can speak about the success of research project, because it's necessary to enrich the arsenal of research methods of civil society, which is rather many-sided and multiple-aspect. And it's good when while its research there are used different methods». But there are problems. «The method of Foresight is used there where at the big degree the object situated at the arms of direction. They are scientifically-technical programs, built programs, where self-organizing, genetic part doesn't define the destiny of the development of the process. But civil society by it means is an object, which is in very high degree develops at the expense of its inside, genetic

factors». This, in the scientist's words, «fragile organism» can be easy ruined by the way of «normative influences» [6].

If we compare Foresight with other innovative systems of sociological research, that its advantages don't raise doubts, because it allows:

- Firstly, to accumulate expert assessments of big number of experts, involving it to a process of collection of sociological information.
- Secondly, to bring in the element of discussion between the experts.
- Thirdly informative openness and availability for all concerned persons, at the all stages of research.
- Fourthly to carry out the comparative analysis by the wide expert circle of used methods and results, what excludes the subjectivity of methods.
- Fifthly to make under the results of research concrete decisions and predictions to the long-term perspective, to reveal problem places into a forming of future.

At the sight of above-stated the system of Foresight is an effective form of qualitative sociological research, at the base of which there lays complex analysis of social and expert opinion, studying of perspectives and tendencies of stated range of problems, and scientifically-based strategy of development.

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FORMATION OF CIVIL COMPETENCE OF STUDENT YOUTH

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The problem of civil competence, which is understand simultaneously as social phenomenon and social quality of personality, is the undeveloped at the modern scientific literature.

The problem of civil competence was and is mainly examined at the frames of other questions, and exactly of range of problems of civil society, questions of civil and political socialization, range of problems of civil culture, theory of forming and socialization of personality, forming of professional orientations of different categories of population etc. The competence in translation from Latin *competentia* means the number of questions, about which person is well informed has knowledge and experience. Competent at the defined sphere person has corresponding knowledge and skills that allow him to judge about his sphere and effectively act in it.

At modern psychologically-pedagogical science there is met a whole number of rather close by their content terms – «civil competence», «competences of civicism».

Under the civil competence it's accepted to consider the readiness of use knowledge about rights, politics, society, state, politically-legal skills and abilities while the carrying out of different civil roles. It is directed at the literate behavior of citizen at different political, legal and social situations. In the opinion of V.Sh. Maslennikova, civil competence is the totality of readiness and ability, which allow to personality active, responsi-

ble and effective realizing of the whole complex of civil rights and charges at the democratic society, use of one's knowledge and skill at practice. Under the «competences of civicism» it's accepted to consider: knowledge and observance of rights and charges of citizen; freedom and responsibilities, self-reliance, own dignity, civil duty; knowledge and pride of the symbols of the state (arms, flag, hymn).

Person by reaching of age, which is stated by the law, becomes the citizen. And that means that he finds belonging to the policy and legal norms of state. Creation and development of civil society, as Z.J. Kapustina fairly notes, depends on patriotic upbringing of citizens, compound part of which is preparation of young generation to active participation at the politics of state, to the participation at lawmaking and carrying out of vital functions by the actual laws.

Civil competence side by side with civil ripeness and civil education is the most essential characterological sign of civicism. Civil competence of personality is the totality of abilities and readiness, which allow it active, responsible and effective realization of the whole complex of civil rules and charges at the democratic society, use of one's knowledge and skills at the practice of interaction of individual with the society. Formation of civil competence of youth is inseparably connected with the forming of basic values of Russian and world culture, which define civil self-consciousness.

Civil ripeness. The sign of ripeness is the degree of social direction of personality, the measure of its socialization. It was noted that everyday values are ignored in favour of ideals, that it leads to the appearing of disharmony between official values and «natural and social practice with the organically inherent in it common sense. It causes alienation from the imposed to the person guidelines and leads to the reorientation of personality». (G.N. Filonov).

Civil education. Traditionally at civil society to the education there is assigned a part of translator of historical experience: knowledge, traditions, cultural and other values, ideological paradigms. But the role of educational institutions as institutes of civil society is insignificant. In connection with this condition there appeared strategic aim: to raise the status of schools, HEIs and social consolidations of citizens as the institutes of civil society through the realization of their interactive role at the society.

Civil education at the educational institutions should be directed to the creation of the conditions for the democratic direction of establishment, new pedagogical technologies, which reflect

base democratic values. At different levels of the educational system should be solved following groups of tasks that promote the development of civil competence and senses of patriotism:

- upbringing of love and devotion to the motherland, its history and culture;
- upbringing of devotion, loyalty with respect to state system;
- upbringing of love to one's nation, national peculiarities;
- upbringing of love and careful attitude to native nature;
- upbringing of love to native region, to the little motherland;
- transmission to the future generation human experience, upbringing of humans of high moral standards, educated, spiritually rich and loving their Motherland.

Thereby, civil education should be directed to the forming of civil competence of personality as the totality of readiness and abilities that allow it active, reliable and effective realization of the whole complex of civil rights and charges at democratic society, use of one's knowledge and skills at the practice. Civil competence should be announced as one of the most important study results of civil education (side by side with civil values and experience of civil actions).

Civil competence can be opened through the number of key competences, each competence is kept by defined number of abilities, which compose this competence: research competence – abilities, which are connected with the analysis and assessment of actual social situation; competence of social choice – abilities, which are connected with the skill to make a choice and reach a decision at the concrete social situation, while the meeting with the concrete social problems; competence of social action – abilities, which are connected with the tasks about realization of made choice, reached decision; communicative competence – abilities of interaction with other people (including tolerance), first of all while the solving of social problems; educational competence – abilities, which are connected with the necessity of further education at the constantly changing conditions.

So far as civil competence sings out as synthesizing competence, which is based at the whole number of key competences, in so far as the task of creation of conditions for its standing should not have been solved by means only of traditional civil education (disciplines and courses of socially-political cycle). The huge role in this process is played by other educational components.

Civicism as the compound of direction of personality, in our opinion, should include follow-

ing priority values: social good, rights of person, freedom of choice at the base of the realized law-abiding, social justice, equality behind the law, morality and truthfulness at the proceedings, family household relations, patriotism and tolerance.

Forming of civil competence is phased process, which affects deep personality structures and which defines in the final analysis moral self-identification. Civil competence at the psychological level corresponds itself the unity of installations and actions of subject, defined way structured content of knowledge about society, world and one-self, which is realized only in the situations of principle choice. Readiness of personality to the civil action is formed during the whole life person. The optimal sensory phase of development of the traits of civicism is the period of youth, when there occurs forming of self-identification and self-determination and consolidation of the system of the ideological views. Civicism and the competence with it as the special form of senses, morality and consciousness is formed gradually by the course of specialization of personality and accumulation of life experience. To bring up the citizen means to form in the person the number of ethic, legal, socially-philosophical values, which are the center of its ideology.

Educational sphere of higher educational institution is the most favourable for the forming of personality, which carries respect to the state power, love to the Motherland, sense of one's dignity and discipline, harmonious sign of patriotic and civil feelings.

In the opinion of Torohti V.S., the most important mechanisms of forming the civicism, which are realized by educational establishments, is socially-pedagogical activity with youth and accumulated experience at the sphere of social upbringing. Attraction of youth to the joint activity during the education at educational establishment promotes increase of activity, independence and aspiration for communication of participants, builds the vision of new ways of solving of vitally problems, forms self-consciousness and responsibility between others.

Active joint activity, which is directed to the solving of social problems, promotes forming of the feeling of responsibility behind the country, behind the society where we live in, what in turn define the formation of civil competence. The process of civil upbringing supposes as the most important priority reaching at the personality level of mass scale real standards of approved by society legal behavior, observance of moral norms and tolerance at business, international, interpersonal and interconfessional relations. The most effective

is the attraction to the active joint activity at the sphere of civil and patriotic upbringing, ingenuously from the teen age. Educational work at the educational establishments, which are oriented to the civil upbringing of teen and youth gives an opportunity of distraction of them from the negative influence of street sphere and attraction to the community service, forming of the legal and moral culture of younger generation, professionalism and civil activity.

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**PROFESSIONAL LABOR
SOCIALIZATION OF A PERSON GROWS
OUT EFFICIENCY OF INTEGRATION
OF EDUCATIONAL STANDARDS**

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It is experimentally proved that professional labor socialization of a person grows out efficiency of integration of educational standards.

Socialization of a person is the process of occurrence of an individual in the social environment, its mastering by skills of practical and theoretical activity, transformation of really existing attitudes to qualities of a person [1, 725]. Still Mudrik A.V. writes, that «the essence of socialization is presented as a combination of the adaptation and isolation of a person in the society» [2, 266]. We consider, that in a legal society a person live and work under his plan individually put by him in view of his interests, deposits, abilities and opportunities and in view of traditions and customs of the country where the person receives formation. When this all coincides successful conditions for effective professional-labor socialization of a person in the integrated international educational standards are created.

Socialization assumes active participation of a person in development of culture of human attitudes, in formation of the certain social norms, roles and functions, developing the skills necessary for his successful realization [2, 725].

Studying the process of professional labor socialization of a person we measured before and

after pedagogical experiment (out-of-class works: collective creative affairs, the psychological trainings focused on professional self-determination of students, discussion of industrial situations, debates) representations by satisfaction by their future trade by N.V. Kuzmina and A.A. Rean's technique. In sample participated: in control group – 15 persons, in experimental group – 15 persons too.

Thus, in the control group of students before experiment by significant factors 100 % of them have noted the 7th, 11th points: work corresponds to abilities, reaching of social recognition and respect), and after experiment they chose the 1st, 2nd, 11th factors – their trade is one of the major in the society, they work with people, reach social recognition and respect.

At the same time in the experimental group before experiment by significant factors they have not noted any of the offered factors but after the pedagogical experiment the following points have been allocated: the 1st, 11th – the future trade is one of the major in the society; they will reach social recognition and respect.

So in the control group after the experiment the 6th, 7th, 8th factors (the opportunity of professional developing, work corresponds to person's abilities, work corresponds to one's character) had got the return importance but later they became positive.

And in the experimental group before the experiment the positively significant factors were the 1st, 2nd, 3d, 7th, 8th, 11th – the chosen trade is one of the major in the society, they will work with people creatively, their work corresponds to their abilities and characters and they'll reach social recognition and respect. But after the pedagogical experiment the following points: the 2nd, 6th, 7th have been allocated especially significant – they'll work with people, they'll have opportunity of professional self-improvement, the work corresponds to one's abilities.

Thus the pedagogical experiment has shown that during the experiment there was the significant change of the experimental level concerning control one under the following factors: the 4th, 6th, 7th, 11th – work does not cause over fatigue, having the opportunity of professional self-improvement, the chosen work corresponds to abilities of respondents, the opportunity to reach social recognition, respect by means of the chosen profession. The difference of the level of importance under the 11th point – reach social recognition and respect, working in the chosen profession has made 0,27 between the control

The table of the factors influencing a choice of the future profession

Factors	Results of measurements in the control group			Results of measurements in the experimental group			Change of an experimental level concerning control
	The Significance value		Change of a level	The Significance value		Change of a level	
	Initial	Final		Initial	Final		
1. A trade is one of the major in a society	-0,35	1	1,35	0,93	1	0,07	-1,28
2. Work with people	-0,14	1	1,14	0,93	0,93	0	-1,14
3. Work demands constant creativity	-0,50	-0,26	0,24	0,73	-0,51	-1,24	-1,48
4. Work does not cause tiredness	-0,50	-1	-0,50	-0,93	-0,86	0,07	0,57
5. Great wages	-0,80	-1	-0,2	-0,93	-0,93	0	0,2
6. An opportunity self-improvement	-0,14	0,86	1	-0,38	0,73	1,11	0,11
7. Work corresponds to one's abilities	1	0,86	-0,14	0,73	0,93	0,2	0,34
8. Work corresponds to one's character	-0,21	0,60	0,81	0,38	-0,38	-0,76	-1,57
9. A small working day	-0,64	-0,73	-0,09	-1	-0,43	0,57	0,66
10. Absence of frequent contact to people	-0,67	-1	-0,33	-1	-1	0	0,33
11. An opportunity to reach social recognition, respect	1	1	0	0,73	1	0,27	0,27
12. Other factors	Development	Altruism	Happiness of others	Self-development	Dialogue, altruism	Happiness of others	Happiness of others

and the experimental groups after the experiment. But the following important factor – «happiness of other people» has been added by all respondents as the control and the experimental groups. It shows that the experiment has changed professional values of students: Professional self-development, dialogue, altruism, the desire to benefit people, the organization, the native land, all people, and mankind as a whole have been allocated in addition.

By the results of the test it is visible that the technique has high validity in the sense that allows understanding and predicting the mechanism and results of professional-labor socialization of a person.

Thus during the pedagogical experiment conditions of effective professional-labor socialization of a person train have been confirmed: integration of all components of professional labor socialization of a person, correctional labor edu-

cation, purposeful indoor and out-of-class work of labor orientation, the system of versatile additional formation focused on the international educational standards.

The carried out scientific research has shown that at continuous professional-labor socialization a person can effectively develop the professional creativity, diligence, bring economic advantage to the country that will lead to increase labor productivity, reception of greater profit by the enterprises, improvement of conditions of the scientific organization of work on places, creation of favorable psychological climate in labor collectives, growth of labor discipline, reduction of fluidity of manpower reserves, increase of own professional culture of a person, development of labor

activity, business sociability, professional keenness of a worker at the decision of various industrial problems at globalization of the society.

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*Materials of Conferences***EFFECT OF IRRADIATION IN VISIBLE AND INFRARED RANGE OF SPECTRA ON NUCLEAR MAGNETIC RESONANCE PARAMETERS OF OIL COMPONENTS**

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For express-analysis of oils high weight components (asphaltenes, resins, heavy isoparaffins) existing methods of analysis – near infrared spectroscopy, X-rays and mass-spectrometry are not fast enough for operative control and require sample preparation. Nuclear magnetic resonance spectra also can not give information about nanodimensional high molecular compounds and cannot be used as method of control. But optimization of technology, prevention of accidents and ambient protection require express-control of fuels and raw materials. Such opportunities possess nuclear (proton) magnetic resonance relaxometry (NMRR) method, which is demonstrated on the examples of several physico-chemical properties of oils and bitumen determination [1]. NMRR also is unique for slow motions study in aggregates, especially by spin-spin relaxation times T_{2i} . But it was found, that determined by NMRR concentration of asphaltenes and paraffins, differs from determined by ISO 3405-88. This can be explained by restrictions of molecular motion in nondimensional structure fragments and by shortening of relaxation times below the opportunities of NMR-relaxometer (due to dead time of probe coil). We suggested [2, 3] to «warm up» molecular motion in this fragments by irradiating samples at the wave length of their energy absorbance. This will increase amplitude of molecular motions and so selectively increase their relaxation times, which give opportunity to measure them with higher sensibility using NMR-relaxometer.

Effect of laser irradiation in visible and near infrared range of spectra on relaxation times raise $DT \cdot 2i = T \cdot 2i - T_{2i}$ (where $T \cdot 2i$ and T_{2i} are times under and before irradiation) in natural oils is reported. Dependence of NMR-parameters from oil components concentration, affected by irradiation were studied and quantitatively interpreted in terms of energetic levels populations behavior. Correlations of $DT \cdot 2i$ with components concentration were revealed.

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ABOUT METHOD OF INCREASING BIOCHEMICAL ACTIVITY OF LACTOSE FERMENTATIVE YEAST

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Lactose fermentative biological objects, being technically useful microflora, should have technological characteristics. In this regard search of new methods of their cultivation, increasing the efficiency of fermentation process is very important.

Many researchers have been studying influence of medium formulation on microorganisms' growth. So, Zalashko got the best results of cultivating strain *S. Fragilis* on milk whey adding 0,75 % of ammonia sulphate, 0,5 % of monosubstituted potassium phosphate and 0,1 % of yeastrel (37,05). Wasserman et al. got the maximum crop by adding 0,5 % of ammonia sulphate, 0,5 % of monosubstituted potassium phosphate and 0,1 % of yeastrel to milk serum [1].

According to Bannikova [3] cultivation of yeast in temperature close to upper limits of comfort temperature of growth usually stimulates their growth.

Abramov S.A., Kostenko S.T., Khalilova E.A., Islamova F.I., Omarov M.M. [3] grew yeast on nutritional medium where as mineral and organic nutrition geothermal water of non phenolic class was used, watered down up to mineralization 4,0–4,2 g/l. The method allows decreasing spending deficit components of mineral and organic nutrition.

Abramov S.A., Kotenko S.T., Dalgatova B.I., Efendieva D.A., Khalilova E.A. [4] made nutritious medium for growing bakery yeast in the following way: into molasses watered down up to mineralization 2,0–2,4 g/l we add geothermal water till 9,5 % carbohydrate status and then diammonium phosphate. And medium ratio is (g/l): molasses 160–180, diammonium phosphate 1,0–1,5, geothermal water – the rest.

Polandova R.D. and Bykovchenko T.V [5] worked out a method of getting yeast biomass, providing yeast baking strength improvement up to 20 %, fermentative activity up to 8,0 %, yeast cells increase up to 11,5 %. The method includes preparing brew out of flour and water, its saccharification, fermentation with thermophile lactic-acid bacteria, adding mineral salts K_2HPO_4 and $(NH_4)_2SO_4$ and growing yeast on the obtained nutritious medium with extraction of liquid yeast and giving nutritious medium every 3-4 hours.

Thus using microbic cell's ability to change its metabolism with environmental factors changes it becomes real to manage the yield of biomass and base products.

Important object is to increase biomass of lactose fermentative yeast yield. With that it makes sense to use peptone as source of nitrogenous mat-

ter, yeastrel as bioactive substance, geothermal water as mineral compound.

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Short Reports

**FEATURES OF MANAGEMENT
OF ECONOMY IN RUSSIA AT
THE PRESENT STAGE
(THE ECONOMIC AND LEGAL ANALYSIS)**

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The article shows that the chosen variant of economic reforms was from the very beginning focused not on the structural reorganization and bringing an elementary order into the economy, but on the removal of certain administrative restrictions, which, according to the ideologists of the reforms, braked the economic activity of potential proprietors.

Keywords: economy, national economy structure, management of economy, economy planning, corruption, legal regulation, business

Some of the conditions for a sustainable social development in the Russian Federation are formation and management of economic and political state institutions, and strengthening the role of the civil society organizations in carrying out and controlling social and economic changes in the country.

Current transformations in the country's economy extend interaction between the social indicators and their influence on the national and foreign economic stability. At the same time, a package of measures is needed to preserve life and health of people, solve social problems, bring the crime under control, eradicate unemployment, change the structure of consumption and reduce income differences, because all these factors, as being repeatedly stressed by Russian president Dmitry Medvedev, contribute to development of an organized crime and corruption.

The current system of corruption in Russia is definitely determined to a large extent by the economic factors, and is a result of an accelerated transition of the country to market relations, against the background of the rash globalization in the world (one should not forget the fact of the crime globalization).

Corruption causes a number of negative effects in the economy.

Speaking about economy management and struggle against corruption in today's Russia, we should mention the financial basis of corruption, the financial streams and ways to control their circulation; the monopoly groups in the key branches of economy.

The chosen alternative of economic reforms aimed from the beginning not at the structural change of an economy, or imposing elementary order in the country's management, but at lifting some administrative restrictions and easing brakes that, according to the ideologists of the reforms, hindered potential property owners in running business activities.

Expansion of corruption cannot be endless. It is narrowed by the limited natural resources as well as other criminal or legal competitors.

Effective management of the economy, which does not give corruption a chance, national integrity of the society based on the trust to authorities and economic reforms considerably determine the success of such important goals as: fighting the crime in the country and as a result, the safety in the Russian Federation, in particular:

- overcome the crisis and provide the production recovery, followed by an independent and nationally oriented economic policy;
- strengthen the social integrity, Russian national identity and federalism basing on the legitimacy and transparency of state activities, annual expense report for all federal state officials;
- create an atmosphere of interethnic peace and harmony in the country, eliminate the reasons of sharpening ethnic conflicts in Russia, which lead to accumulation of the shadow capital;
- strengthen positions in the defense sphere and suppress corruption in the Russian Army, police and other security services, as well as at all levels of state authorities.

Protection of the Russian national interests in economic sphere should lay the foundation of the federal policy on fighting corruption and raising economy, which will enable to implement an independent and unique national economic policy. Otherwise, the issue of corruption will remain «evergreen», till the complete collapse of the Russian state.