STUDYING OF POLY MORBUS CONDITION WITH CHRONIC OBSTRUCTIVE ILLNESS OF LUNGS AT AGED PEOPLE

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The retrospective analysis of death rate 88 sick patients with chronic obstructive illnesses of lungs (COIL) was carried out. Accompanying diseases have been distributed on a degree of risk deadly outcomes. The character and frequency of an accompanying pathology, electrocardiographic changes has been established. Thus, accompanying diseases and electrocardiograms signs of a hypertrophy right ventricle of heart are important prognostic's signs of failure COIL at aged people.
Keywords: aged people, lungs, poly morbus

At aged people and senile age preconditions for development of a pulmonary pathology and aggravation of its current [2] are created. The essential role is played by restriction of functionality of external breath at practically healthy older persons that reflects the phenomena of the latent respiratory insufficiency and facilitates decompensation external breath in the conditions of a pathology.

Analyzing features of current chronic obstructive illness of lungs (COIL) in geriatric practice, it is necessary to take into consideration and multi morbus at one patient. Frequency accompanying COIL diseases and a maximum of their combinations with the years accrues.

Research objective

To study frequency and character of accompanying diseases at patients COIL at aged people.

Materials and methods

We spend on estimation of death rate of 88 patients with COIL, passing treatment in clinics of the Tashkent Medical Academy. Accompanying diseases have been distributed on degree of risk of a deadly outcome. I category included such diseases as - a heart attack of a myocardium, illness of peripheral vessels, diseases of vessels of a brain, dementia, rheumatic diseases, peptic an ulcer, diseases of a liver and a diabetes. II category has made gemi-, paraplegia, diseases of kidneys, a leukaemia, lymphoma. III category was made by cancer diseases. The index of accompanying diseases represents an average arithmetic digital values of the presented illnesses.

Results and discussion

In table 1 the characteristic of the surveyed persons, the diseases transferred by them, electrocardiogram infringements is presented. It is necessary to consider that fact, that during 1980-1990 18 patients has died. Most often basic disease was accompanied by the raised arterial pressure, a diabetes, heart diseases (changes of an electrocardiogram as a hypertrophy right ventricle of heart (RVH) met in 60% of cases).

In table 2 duration of supervision over patients COIL depending on character of accompanying diseases is presented. Decrease in volume of the forced exhalation for 1 second (FEF_1) closely correlates <590 ml with duration of stay in hospital >33 days, electrocardiograms-signs of ischemic illness of heart, ventricular arrhythmia, chronic diseases of a liver. The mention of a heart attack of a myocardium in the anamnesis poorly correlates with death rate of patients COIL.

In table 3 are reflected prognostic factors of development of death from the various reasons. So, diseases of kidneys have the highest prognostic factor. The model of forecasting of death of patients COIL developed by us the next 5 years has sensitivity of 63,4% and specificity of 76,6%.

Results of the carried out research have shown, that infringement of activity of kidneys and presence CHD have appeared the most significant factors at forecasting of outcome COIL at the patients, passed a course of hospitalisation concerning COIL. The given accompanying diseases are markers of

Table 1. Distribution of aged people patients COIL on a sex, age, character of accompanying diseases

Indicators	Number of the studied patients n=70	Number of the patients who have died in 1980-1990 years (n=18)
Number of patients m/w	56/14	14/4
Age	67±9	67±12
Duration hospitalisation (days)	28±20	32±22
Sharp respiratory insufficiency n (%)	6 (8,6%)	1 (5,5%)
Necessity artificial lung ventilation, (ALV) n (%)	11 (15,7%)	2 (11,1%)
Diabetes, n (%)	10 (14,3%)	3 (17,6%)
Hypertension, n (%)	20 (28,6%)	4(22,2%)
Chronic diseases of kidneys, n (%)	4 (5,6%)	2 (11,1%)
Chronic diseases of a liver, n (%)	4 (5,6%)	1 (5,5%)
Vascular diseases of a brain, n (%)	2 (2,9%)	-
Coronary heart disease (CHD), n (%)	7 (10,0%)	2 (11,1%)
Myocardium heart attack in the anamnesis, n (%)	4 (5,6%)	1 (5,5%)
Electrocardiogram signs of a hypertrophy RVH, n (%)	42 (60,0%)	10 (55,6%)
Electrocardiogram signs CHD, n (%)	15 (21,4%)	8 (44,4%)
Electrocardiogram signs ventricular arrhythmia, n (%)	4 (5,6%)	-

Table 2. Duration of supervision over patients COIL depending on character of accompanying diseases

The indicators authentically connected with death rate	Duration of supervision (years)		Factor of Vilkokson	p
	Risk presence	Absence of risk		
Partial pressure of oxygen in arterial blood (PaO_2)	1,76 (0,29-4,25)	3,29 (1,46-5,04)	3,071	0,001
Chronic defeats of kidneys	0,84 (0,25-2,35)	3,17 (1,29-4,99)	2,917	0,002
Electrocardiogram signs of hypertrophy RVH	2,62 (0,89-4,35)	3,50 (1,06-5,53)	2,371	0,009
FEF_1	2,88 (0,73-4,79)	3,89 (2,35-5,80)	2,235	0,012
Duration of stay in a hospital	2,23 (0,65-4,57)	3,36 (1,39-5,04)	2,195	0,014
Electrocardiogram signs CHD	2,19 (0,69-3,97)	3,26 (1,27-5,21)	1,913	0,027
Chronic diseases of a liver	1,45 (0,33-3,76)	3,11 (1,04-5,04)	1,839	0,033
Electrocardiogram signs ventricular arrhythmia	2,39 (0,48-3,45)	3,12 (0,98-5,04)	1,822	0,034
Presence in the anamnesis of a heart attack of a myocardium	0,84 (0,50-3,20)	3,12 (1,14-5,02)	1,738	0,041

increase in death rate at subsequent aggravations COIL.

The second most important prediction of death of patients COIL are electrocardiograms-signs of overload RVH. In our point of view it is very important conclusion, because the given parametre is simple for measurement. In the literature it has already mentioned [1; 3; 4], that results of treatment of patients COIL correlates back with presence of a pulmonary hypertensia and that patients with electrocardiograms signs of hypertrophy RVH have a pulmonary hypertensia and pulmonary heart. Our researches have

proved, that development of chronic pulmonary heart is a turning point of current COIL in advanced age. Moreover, we have found out authentic correlation between FEF_1 and signs of hypertrophy RVH. This condition is necessary for estimating as an independent marker of weight COIL.

Table 3. Prognostic factors of development of death of patients COIL from the various reasons

Indicators	Factor
Chronic defeat of kidneys	10
Electrocardiogram signs of hypertrophy RVH	9,7
FEF_1<590 ml	6,7
Electrocardiogram signs CHD	5,7
Age	0,62

The present work represents important prognostic on age role at COIL. It is reflected in age-dependent increase in weight COIL and direct interrelation between the age, accompanying diseases.

It is impossible to deny value of lowered indicators FEF_1, but they have no crucial importance in forecasting of a deadly outcome of patients COIL.

In conclusion. Accompanying diseases and electrocardiograms signs of hypertrophy RVH are important prognostic signs of failure COIL at aged persons.

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OXIDATIVE HOMEOSTASIS CONDITION IN PATHOGENESIS, DIAGNOSTICS AND PROGNOSTICATION OF INFECTED PANCREATIC NECROSIS

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A complex dynamic analysis of oxidative homeostasis state in patients with various forms of acute pancreatitis was carried out. It has been established that an authentic decrease of minimal chemiluminescence intensity indexes and blood serum antioxidant activity number can serve as an additional criterion of infected pancreatonecrosis early detection. The lack of the tendency for erythrocyte peroxidative resistance increase in the postoperative period in pancreatonecrosis patients testifies to a poor prognosis of the disease. The complex diagnostics perfection allows optimizing the surgical approach and reducing the number of early traumatic surgical interferences to the minimum.
Keywords: diagnostics, prognostication, chemiluminescence analysis, free radical oxidation, acute pancreatitis, pancreatonecrosis

Introduction

Over the last 30 years a world-wide tendency for acute pancreatitis case rate increase has been depicted [1, 4]. The basic quota of the patients is still formed by the persons of active working age, and among the causes of the disease the alcohol dependence and alimentary factors rank first [5, 7, 10].

The number of the disease destructive forms, which make up to 44%, grows everywhere [2, 6, 7, 11]. Thereat, if the total mortality for the last 10 years has a tendency to decrease, then the postoperative one, reflecting the patients' most serious category treatment results, is still calculated by double figures [1, 3, 8].

The purpose of our research has been the improvement of acute pancreatitis patients' treatment results due to the application of a new diagnostic complex based on the chemiluminescence analysis use.

Materials and methods

Under our supervision there were 160 patients with various forms of acute pancreatitis aged from 22 to 76 years old. 54 acute pancreatitis patients having received treatment in the general surgery clinical unit of the Krasnoyarsk State Medical University named in honour of V.F.Vojno-Yasenetskij during the period of 2003-2005, their chemiluminescence kinetics features being estimated retrospectively, the ozone therapy method being not used, made the fIrst group. The prospective research was carried out during the period of 2006-2009 and included 106 patients of the second group, the pancreatitis destructive form diagnostics and prognostication developed criteria being used for them.

The acute pancreatitis patients' examination included general clinical, laboratorial and instrumental methods. The acute pancreatitis severity was evaluated according to the scale of V.B. Krasnogorov in all the patients. The average score in the clinical groups made 4,6±0,31, that conformed to a severe pancreatitis. The crucial moment in the destructive pancreatitis form verifIcation was considered a bacteriological research.

For the peroxidative homeostasis state estimation the method of iron-induced luminol-dependent chemiluminescence with the application of the biochemiluminometer БХЛ-06М was used. Erythrocytes and blood serum served as the chemiluminescence analysis object.

The work was performed thanks to the internal-university's grant of Krasnoyarsk State Medical University (Competition A-2009) on the project «Correction of operational-anaesthetic stress in emergency surgery of pancreatic-biliary system».

Results and discussing

The chemiluminescence analysis of the blood serum testifIed that in all the edema-

tous pancreatitis patients an authentic 3,14 times increase of the maximal luminous intensity (I max) with respect to the norm and considerably less manifested light-sum growth - 1,92-fold, are recorded at their admission. The coefficient K reflecting the total antioxidant activity of the serum exceeded the admission control indexes 1,65 times. In the dynamics of the disease together with peroxide concentration a gradual decrease of the blood serum antioxidant potential was registered, the tg a and coefficient K decrease testifying to the fact.

In spite of the fact that antioxidant activity indexes in the edematous pancreatitis didn't differ authentically from the control ones, beginning with the third day of traditional therapy, the total blood serum oxidative activity remained high.

The highest admission chemiluminescence intensity values were registered in sterile pancreatonecrosis patients. The level I max exceeded the age norms indexes 7-fold within the first week of hospital treatment and decreased authentically to the 21 st day only against the traditional therapy background.

In the patients with diagnosed infected pancreatitis an extremely low chemiluminescence intensity value within the first week of hospital treatment came under notice, it not exceeding 30 mV irrespective of the patient's age and sex. The coefficient K in this group remained more than twice lower compared to the age group indexes for the entire research time. The infection process resolution criterion in the pancreatonecrosis patients has been the increase of hydroperoxide content increase in the blood serum (3,8-fold compared to the index I max) and the increase of total anti-oxidative activity according to the chemiluminescence analysis data.

According to the contemporary idea the process of free radical oxidation is of physiological character and always attends vital processes of a healthy cell. That is why the oxidative homeostasis profound disorders detected by us in the infected pancreatonecrosis patients signalize about a massive necrosis extent, the formation of a superantigen and the overlay of bacterial contamination, which require a high flow of active oxygen forms, in the early stages of the disease already.

The chemiluminescence analysis was prospectively used by us in the complex diagnostics of infected pancreatonecrosis in 55 patients with various forms of destructive pancreatitis. Thereat, the sensibility, specificity, predictive value of both negative and positive results of the method offered by us achieved 85-90%.

There were no authentic differences of erythrocyte oxidation resistance values in sterile and infected pancreatonecrosis detected. At the admission to the hospital the maximal chemiluminescence intensity exceeded the age norm 1,7 times, and the light-sum - 2,1 times. The minimal erythrocyte resistance at the acute pancreatitis destructive forms occurred right after the operative intervention performance, the highest light-sum value conforming to the top of chemiluminescence intensity.

An increase of erythrocyte resistance, peroxidation and antiperoxidant defence parameters approached normal ones on the 20th day within the postoperative period in the patients with destructive pancreatitis at a favorable course of the disease.

In the 9 patients died of pancreatonecrosis a decline of erythrocyte chemiluminescence intensity was registered in the early postoperative period against the background of the light-sum double increase, that testified to the erythrocytic membranes' destabilization. There was no tendency to the increase of oxidation resistance of erythrocytes depicted in those patients in the following.

The perfection of complex diagnostics in the patients of the second group allowed minimizing the number of early traumatic surgery interferences owing to the peritonitis unascertained source cases number reduction and infected pancreatonecrosis overdiagnosis.

When defining the infected pancreatonecrosis criteria the intensive care volume in the preoperative period was extended. Af-

ter the necrosis presumptive extent estimation with the help of V.B Krasnogorov's prognostic scale at the score less than 6 mini-approach operations were performed, more and equal to 6 - supramedian and laparotomic approach operations with pancreas abdominization, duct-rinsing drainage, peritoneal omental sac marsupialization and nasointestinal drainage.

The infected pancreatitis diagnostics improvement allowed restricting the indications for extensive and traumatic single-step interferences and expanding the indications for staging surgical sanitations.

The operations on pancreatonecrosis were performed one time and in the mode of relaparotomies: "programmed" and "on-call" ones. In the first group patients at the lack of approachable criteria of the disease course prognostication and high traumatism of operations the surgical aid was tended to be restricted by a single interference, which could include all the programmed volume. In the infected pancreatitis patients of the second group the diagnostics improvement allowed restricting the indications for extensive and traumatic single-step interferences and expand the indications for staging surgical sanitations.

As a whole, the perfection of complex diagnostics allowed improving the results of acute pancreatitis patients' treatment and reducing the level of postoperative lethality from 32,1 % to 20,7%.

Conclusions

1. In edematous pancreatitis patients an authentic 3,14 times increase of the maximal luminous intensity with respect to the norm is registered at the admission. The blood serum chemiluminescence breakout amplitude in sterile pancreatonecrosis patients exceeded the age norm values 7, 16 times. In infected pancreatonecrosis patients the blood serum chemiluminescence intensity 2,5-5-fold decrease is registered within the first week at the hospital.

2. The criteria, which are indicative of the infected pancreatonecrosis development, are the values of maximal serum chemiluminescence intensity less than 30 mV, the coefficient K less than 0,056 c.u. with the sensibility and specificity of 92,5% and 83,7% accordingly. The poor prognosis criteria of the disease is the decline of erythrocyte chemiluminescence intensity against the background of double increase of light-sum and the lack of a tendency to the increase of peroxidation resistance of erythrocytes in the course of the disease.

3. The perfection of complex diagnostics and prognostication of pancreatonecrosis severe forms course allowed improving the results of acute pancreatitis patients' treatment and reducing the level of postoperative lethality from 32 1 % to 20,7%.

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ECOLOGICAL ASPECTS OF VIRUS INFECTION SIGNS IN THE NATIVES AND ALIENS OF EXTREME TERRITORIES

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This work represents comparative analysis for the peculiarities of epidemic process and severity of epidemic roseola (measles) clinical course in aliens and natives of the Extreme North, tropics and subtropics in the succession of generations. We revealed considerable distinctions in the functioning of macroorganism (human subject) – microorganism (measles virus) system under extremely low and high temperatures. It was shown that in the succession of generations the selection of highly virulent virus populations happens in subjects, living in air high temperature areas and naturally weakened under low temperatures.

Background

At present time measles ranks first in some countries among common children infection morbidity and mortality indices. According to WHO data, up to 20 mln measles cases are being registered annually in the world. Over 500 000 of them are lethal cases (873 000 lethal cases were registered in 1999, 530 000 in 2003) [1]. The analysis of measles lethality clarifies that the diseased subjects were registered not only among aliens but among natives as well. This was marked first of all in Tropical and Subtropical Zones of Africa and Asia. Among lethal cases the share of Africa, i.e. higher temperature areas, is 60%, Southern-Eastern Asia 30%, Eastern Mediterranean 10%. Despite over 1.5 reduction of annual lethality resulted from vaccine prophylaxis in 1999 – 2003 the ratio recovery/ lethal cases in unvaccinated group did not change.

We analyzed the severity of measles clinical signs in the natives and aliens of the Extreme North for the last 55 years. Before the seventies of the XX century the measles morbidity reached over 4 000 as per 100 000 population in the Siberia Extreme North and the Far East [2, 3]. Before vaccination period, measles morbidity in the natives and aliens of Extreme North was not lower and even higher than in tropics and subtropics [1, 4]. But during this period in the second half of the XX century during mass vaccination since the seventies of the last century and during the first 8 years of the XXI century there were no lethal cases of measles registered in the Extreme North. The disease proceeded mildly with full recovery. As the course of the disease was mild we offered to the session of Soviet Union Academy of Medical Sciences the discussion on advisability of vaccine prophylaxis among native and alien children and adults in the Extreme North [5]. The necessity of children immunization and adult revaccination was predominantly caused by the possibility of virus distribution from the Extreme North to other Russian territories and abroad.

The researchers of tropical and subtropical climate associate measles morbidity and lethality with low living standards of population, starvation, high level of bacterial and virus infections [6]. But in the Extreme North and hot climate subsistence the minimum of subsistence in between the inhabitants is different. There is native and alien population in the survey territory. In tropical and subtropical countries measles mortality is equally high among both groups of population. Life span in Northern people is 10 years shorter than in Russia on average [7]. Children of Polar regions suffer from acute respiratory virus infections, pneumonia and other infections very often. High prevalence of intercurrent infections and their severe course contribute to considerable weighting of measles with lethal cases [8]. It was marked that 80 – 100% of native and alien children tolerate the disease being vaccinated before 1 to 2 months and during the first month after.

In the period before vaccination 85-96% of population in different countries had measles in childhood. In middle ages when great cohorts of population moved from Europe, they brought the infection agent to America, which lead to its contagion to aboriginal children and adults. Measles in isolated and relatively isolated populations amazed with its scope and consequences (Table 1).

Table 1. Measles in isolated and relatively isolated populations in the period before vaccination

№	Location	Year	The Cohort of the Subjects	The diseased	Lethality
1	Faeroes	1846	Isolated Population	70 %	high
2	Fiji	1875	Isolated Population	100 %	20 – 25 %
3	Africa and Eastern Mediterranean	1912 - 1914	French Army Soldiers	Is unknown	1 740 people died
4	Tahiti	1929	Population	100 %	No data to work on
		1951		96 %	
		1960		67 %	
5	Greenland	1951	Population	90 %	No data
6	New Guinea	1944	Population	80 %	No data
7	Australia	1944	Population	50 – 80 %	No data
8	Russian Polar regions	XIX век	Population	96 – 100 %	50 – 70 %
9		1948	Relatively isolated populations	19 %	3 – 9 %
10		1960 - 1968	Native and alien population	2 000 to 4 000 per 100 000 of the population	0 %

P.Panum in 1846 observed measles in natives of Faeroes Islands in its absence during 65 years. 6 000 inhabitants of 7 782 were taken ill and the majority died. Those who survived after the previous epidemic of 1781 didn't fell ill for the second time. Glyanvill Corney described the epidemic in Fiji islands in 1875 when nearly 20 000 people died, which made 20 - 25% of the population. It is evident from measles morbidity analysis in Tahiti that intensification of contagion of the agent lead to the lowering of the morbidity as a result of pro-epidemising. It was marked that in small native populations the measles agent is preserved for limited time, eliminating fast. For instance, in Tahiti island in 1929 all the population suffered from measles, in 1951 only 96% of the inhabitants and in 1960 the number was 67 %.

76 000 soldiers from France were positioned into Africa and Eastern Mediterranean. The number of the diseased with measles is not known but the number of lethal cases was 1 470, so measles mortality was 2%.

Data on the dynamics in world morbidity during many centuries in the natives of the Extreme North is very few. There is data on the contagion of measles agent to Yakutia and Kolyma in the XIX century when 96 - 100% of all the inhabitants were ill with 50 - 70% lethality cases. In the middle of the XX century the lethality was lowered and during the last 55 years no death caused by measles was revealed. At the same time common morbidity in the Extreme North exceeded the morbidity in middle latitudes 5 to 10 times [5, 9 - 12]. As a result of planned mass vaccination in the Extreme North there were only single cases of measles since 1990.

So, despite the influence of extreme factors on native and alien population in the Extreme North during the last 100 years, considerable lowering in severity of illness

and outcome took place. In the XIX century as a result of measles contagion to isolated and relatively isolated native populations the single breakouts of very severe measles happened in children and adults. But since the middle of the XX century and before mass vaccine prophylaxis, the children fell ill with clinical signs being mild and without lethal cases. Measles epidemic took place in native and alien population simultaneously.

So, in Siberia Extreme North before the XX century the measles epidemics developed as a result of bringing an agent into isolated or relatively isolated native populations of the Extreme North. The same situation took place in islands, far away from continents (Faeroes Islands, Fiji, Tahiti). In scanty territories with small population groups epidemics resulted in pro-epidemising of children and grown ups with further elimination of an agent. The subsequent measles epidemics developed mostly after repeated contagion of the virus into the population of non-immune people. Technical progress influenced transport systems. Especially since the XX century the exploitation of natural resources of the Extreme North favored the intensive migration of people from middle latitudes to the Extreme North. New towns appeared. Contacts of native and alien population intensified, the population size increased considerably. These factors lead to the preservation of measles agent in population after epidemic outbreaks with disease periodicity, typical for middle latitudes.

However, it should be explained why in the Extreme North measles appreciably evolved during the last 100 years from the severe disease with mostly lethal cases into the infection with rather mild clinical course followed by recovery. At the same time in tropical and subtropical areas lethality is still high in native and alien people. Social factor (starvation of the natives in tropical and subtropical area, other infectious diseases, etc.) hardly explain this situation, because children of both poorest and socially well provided population as well as the aliens of middle latitudes equally suffer from the most severe measles with lethal cases. Migration of the population is substantially increased both southwards and northwards – to the extreme southern areas and Extreme North. Measles virus was imported into isolated populations mainly from middle latitudes of Eurasia continent [13, 14].

It should be mentioned that genetic typing of measles virus was started in the period of mass vaccine prophylaxis at the end of XX century. The data was obtained and they testified on importing the viruses into the countries and territories with different climatic ecological conditions [12, 13, 15, 16]. At present two genotypes re the most prevalent. $Д_4$ was revealed in the middle latitudes of Russia in the hotbeds with evidently milder clinical course of measles. The lethality was lower than in the countries with tropical and subtropical climate, but it had more severe course than in the Extreme North. $Д_6$ is circulating in Euro-Asian, American and African continents (Table 2).

Gene typing for measles virus was not carried out for Russia Extreme North, USA and Canada because the disease was almost absolutely eliminated in these territories as a result of mass vaccine prophylaxis. Different course of measles in different territories requires the explanation (Table 3).

Extreme North, tropics and subtropics are extreme areas with low life span for both alien and native population. Any virus infection including measles is developing as a result of interconnection inside the system “macroorganism – virus”. In hotbeds of different types the system is influenced by ecological factors, including extreme ones. However, neither lowered immune reactivity in natives and aliens in the Extreme North, nor going through different infections or low life standards, can provoke measles severe clinical forms with high lethality [3, 8].

It is reasonable to analyze the influence of special ecological factor of the Extreme North and extreme territories of the South, namely, temperatures, under which the “macroorganism – virus” system is functioning. As measles virus is air-

communicable, we implemented thermo – reographic parallels analysis in diagnosis and clinics of inflammatory diseases in perirhinal sinuses in subjects of Extreme North and Siberia [17]. We found “northern” variation of the “norm” of thermal picture of a face. Under Extreme North conditions local temperature on the face is 3ºC lower on average as compared to the middle latitudes of Siberia. On the background of the lower temperature of a face the higher frequency of latent infections became typical. In the Extreme North inhabitants latent antritis is met 2 times more often than in Siberia middle latitudes (22.2% and 13.3 % correspondingly). To our regret we failed to find available data on the results of the same research in tropical and subtropical areas.

Table 2. Geographic prevalence of measles virus genotypes

Genotype	**Countries with genotypes, which are endemic there or countries identified as the source of measles viruses imported to other countries (1995 - 2001)**
A (A_{20}, A_{22}, A_{23})	Russia (Siberia)
B_1	Cameroon
B_2	Gabon
B_3	Congo, Gambia, Ghana, Kenya, Nigeria, Sudan
C_2	Czech Republic, Denmark, Germany, Luxemburg, Morocco, Spain
D_2	Spain, Southern Africa, Zambia
D_3	Japan, the Philippines
D_4	Ethiopia, India, Iran, Kenya, Namibia, Pakistan, Russia, Southern Africa, Zimbabwe
D_5	Japan, Namibia, Thailand
D_6	Argentina, Brazil, Bolivia, Dominican Republic, Germany, Italy, Luxemburg, Poland, Russia, Spain, Turkey
D_7	Germany, Spain,
D_8	Ethiopia, India, Nepal
J_2	Indonesia, Malaysia
J_3	East Timor
H_1	China, Korea, Russia (Siberia)
H_2	Viet-Nam

Table 3. The types of measles hotbeds in the period before vaccination in the 2-nd half of the XX century

№	**Characteristics of hotbeds**	**Territory**
1.	With high morbidity and lethality	Africa, South-East Asia, Eastern Mediterranean
2.	With high morbidity and mild clinical course	Russian polar regions
3.	Clinical course is milder than in № 1, but more severe than in № 2, low lethality	Middle latitudes of Euro Asia continent, American and Australian continent

Wild strains of viruses, including measles agents, consist of mixed populations on different stage of pathogenicity. After the experiments for tissue cultures we found that virulence of the viruses of measles, rubeola, parotitis, poliomyelitis and others correlates with their ability to reproduce themselves under different temperatures (rct sign). Under higher temperatures reproduction activity is depressed in naturally weakened virions in virus populations and under low temperatures in virulent virions. It is evident that as a re-

sult of natural selection in the Extreme North the naturally weakened agents of infectious diseases prevail. Measles is one them and they lead to the development of the infection with mild enough clinical course [9]. Most probably, in tropical and subtropical area high temperatures influence the selection of highly virulent populations of the virus.

Conclusion

Under various ecological geographical conditions a distinctive ecological homeorhesis is being formed, i.e. homeostasis systems go into conformity with ecological factors on population, species and interspecies level. The basis of its formation is adaptation, natural or artificial selection, geno- phenotype modifications [18]. When measles virus is brought into isolated and partly isolated human populations, the whole population or the majority is affected by the agent as a result of the absence or low level of specific immunity. At the same time the diseases were very severe under different ecological geographical conditions not only in tropics and subtropics but in the natives of the Extreme North as well. Virus elimination in the isolated populations stopped epidemic and interrupted the epidemic chain of ecological homeorhesis formation in the succession of generations. The increase of population size and the development of transport connections strengthened the importing of virus between different ecological geographical areas. Its ongoing circulation started in the Extreme North. The selection of naturally weakened virus populations in the ecological system "human organism – virus" happened under the influence of low temperatures of the North. Clinics of the disease evolved to the development of mild obliterated forms of the infection. However the morbidity in the Extreme North before the introduction of vaccine prophylaxis was as high as under extreme conditions in tropics and subtropics. This is explained by intensive circulation of naturally weakened populations of the virus in the Extreme North under lowered immune response to specific anti measles antigen in the inhabitants [8, 19].

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STRUCTURAL AND FUNCTIONAL CHANGES IN HEMOGRAMS OF PATIENTS WITH TUBULOPATHY ASSOCIATED WITH ARTERIAL HYPERTENSION

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It is shown tubulopathy associated with arterial hypertension are characterized by disorders in leukocytes and platelets relationship. It is supposed that development and progression of arterial hypertensia associated with tubulopathy, can be caused by considerable influence of mechanisms of interstitial defeats of kidneys on dynamics of leukocytes and platelets parameters.
Keywords: arterial hypertensia, tubulopathy, leukocytes, platelets, blood

Urgency

Developing and progress of the arterial hypertension (AH) is realized through the several mechanisms such as kidney function disorders by hematology homeostasis irregulation. Due to this point, the arterial hypertension developing up against tubulointerstitial pathology can be named as secondary. Essential hypertension is developed as primary and dependence from hematology homeostasis regulation not so visible. But progressive form of AH can neutralize clinical differences between its secondary and essential forms such as arterial hypertension associated with damage of target organs leads to vascular changes. To a lesser degree these risks are studied for combination of tubulointerstitial defeats and AH.

Aims: to study of the structural and functional parameters of leukocytes and platelets in blood of patients with arterial hypertension associated with tubulopathy.

Patients and methods: 43 patients (29 females and 14 males, age 17-52 years) were examined; they divided in to three groups. In first group are patients with tubulopathy (TP) like chronic pyelonephritis in remission (without urinal infection) and patients with interstitial kidney pathology against toxic factors (such as alcohol, metabolic disorders, drug intoxication, saluric diathesis) without AH. Second group includes patients with essential arterial hypertension (AH), which diagnosis was exposed on the basis of complex clinical-and-tool and laboratory research after exception of diseases which complication is AH; third group consists from patients with tubulopathy associated with AH (TP + AH).

The object of investigation was venal blood of patients with TP, EH and with combination of these two pathologies. The investigations were made by using of hematology analyzer BC-3200, Mindray. It was detected number of White Blood Cells (WBC), Lymphocytes (Lymph), Granulocytes (Gran), quantity of middle sizes cells (Mid), quantity of platelets (PLT), Mean Platelet Volume (MPV), Platelet Distribution Width (PDW), Platelet Grit (PCT).

The statistical analysis of the received data was used of a package of applied programs STATISTICA version 7.0 taking into account the computing methods recommended for biology and medicine. The analysis of the received data included calculation of average arithmetic of variation number (M) and its errors (m). For revealing of relationship between parameters and its power have been calculated a Pirson coefficient of pair correlation (r).

Results and discussion

WBC fraction data was shown on table 1. According to our data on table 1 was fixed reduction of leukocytes number at patients with EH in relatively comparing with other groups of patients and control healthy group also. So, the percentage of leukocytes content correlates with preference data.

Table 1. WBC poll data in blood of patients with tubulopathy, essential arterial hypertension and tubulopathy associated with AH

Patient groups	WBC $\cdot 10^9$/л	Lymph $\cdot 10^9$/л	Mid $\cdot 10^9$/л	Gran $\cdot 10^9$/л	Lymph %	Mid %	Gran %
Refer-ence data	4,5–10,0	0,8-4,0	0,1-0,9	2,0-7,0	20-40	3,0-9,0	50-70
TP (n=23)	6,24±1,2	2,04±0,52	0,49±0,12	3,71±0,25	34±2,8	8±1,3	58±3,2
AH (n=10)	3,00±0,9	0,90±0,1	0,27±0,05	1,83±0,1	30,25±4,1	9,10±2,8	60,64±5,3
TP+AH (n=10)	7,81±1,5	2,42±0,2	0,56±0,3	4,83±0,5	33±2,1	7±1,4	60±1,9

Analysis of the relative quantity of leukocytes fraction in blood was shown maximal increasing of lymphocytes in patient's blood with TP+AH, but the relative level of middle sizes cells (sum of monocytes, basophiles and eosinophils fraction) and granulocytes was maximal in blood of patients with AH. However authentic distinction between data of its groups was not observed.

Platelets parameters in observed groups was done on table 2.

Table 2. Platelets indicators in blood of patients with tubulopathy, essential arterial hypertension and tubulopathy associated with AH.

Patient groups	PLT $\cdot 10^9$/л	MPV fl	PCT %	PDW
Reference data	100-300	7-11	0,108-0,282	15-17
TP (n=23)	86,91±8,51	8,95±0,1	0,07±0,007	16,35±0,35
AH (n=10)	58,67±2,35	9,47±0,2	0,06±0,002	16,60±0,5
TP+AH (n=10)	171,44±13,10	8,86±0,1	0,15±0,01	16,01±0,9

In blood of patients with TP and patients with AH decreasing both absolute and relative platelets quantity are observed. Thus, in blood of patients with TP associated with AH, these parameters are same with normal data. The given fact can be explained as infringement of a parity of platelets rate formation and destruction and change of it's membranes characteristics that can lead to change of cell electric characteristics and consequently to bring an error in measurement. MPV was fixed maximally in blood of patients with AH (9,47±0,2 fl). PDW data as factor of trombocytes heterogeneity was fixed maximally in this group also. Authentic character of differences has been revealed only between data of second group and two others. Differences between groups TP and TP+AH were minimum and did not carry authentic character. Thus, differences of volume parametres and heterogeneity of platelets in different patients groups are revealed. For study of relationship of investigated data the pair correlation analysis with definition of size and importance of correlation has been carried out.

Results of this analysis was shown on the table 3 to patients with TP.

Due to these data, we have found out a linear dependence between quantity of leukocytes and granulocytes relative content and inverse relationship between quantity of leukocytes and lymphocytes relative content. Thus between the lymphocytes relative content and the granulocytes relative content the

inverse correlation (with 0,99 coefficient) also has been revealed (at p<0,05).The quantity of middle sizes cells has not given significant correlations among indicators of leukocytes, but average correlation (r = 0,46) between the relative level of middle sizes cell and width-wise of platelets distribution on volume has been revealed. Such of this relationship demands search of mechanisms of middle sizes cells influence (monocytes, basophiles and eosinophyles fraction) on platelets volume parameters.

Table 3. Pirson coefficient of pair correlation for leukocytes and platelets at blood of patients with TP

Parameters	WBC	Lymph %	Mid %	Gran %	PLT	MPV	PCT	PDW
WBC		-0,48		0,46				
Lymph %	-0,48			-0,99				
Mid %								0,46
Gran %	0,46	-0,99						
PLT							0,99	-0,62
MPV								0,67
PCT					0,99			-0,57
PDW			0,46		-0,62	0,67	-0,57	

It is important to notice that the fact of dynamic interference of cellular elements is found out at tubulopathy. Obviously, tubulointerstitial defeats are mediated through physical and chemical mechanisms also and creating new conditions for regulation of aggregate blood condition.

Correlations between platelets characteristics in patients with TP have been more expressed. Revealed direct dependence between platelets quantity and plateletcytocrite and between platelets quantity and PDW are inverse relationship (r =-0,62). Also correlations between PDW data and MPV data and PCT (r = 0,67 and -0,57, accordingly) have been established.

Results of the correlation analysis of leukocytes and platelets data in hemograms of patients with AH are presented in table 4. Analyses of correlation coefficient of leukocytes and platelets indicators in patients with AH has shown reverse correlation (r =-0,89) between relative lymphocytes and granulocytes levels. In other pairs of leukocytes indicators the significant correlations was not observed.

Table 4. Pirson coefficient of pair correlation for leukocytes and platelets in blood of patients with AH

Parameters	WBC	Lymph %	Mid %	Gran %	PLT	MPV	PCT	PDW
WBC								
Lymph %				-0,89				
Mid %								
Gran %		-0,89						
PLT						-0,96	1,00	-0,91
MPV					-0,96		-0,94	
PCT					1,00	-0,94		-0,90
PDW					-0,91		-0,90	

Correlations between platelets indicators at patients with AH were as expressed, as well as in patients with TP. Strict dependence between PLT and PCT indicators (r =

1,00 is noted at p <0,05) and strong correlation binds between PDW with PLT and PCT indicators (r =-0,91 and-0,90 accordingly) was marked. Also inverse relationship between platelets volume and PLT and PCT data (r =-0,96 and-0,94 accordingly) is revealed.

So, by results of the analysis of correlation data of leukocytes and platelets at patients TP and patients with AH, the strong relationship between platelets fraction was established. In first group presumable dependence between the middle sizes cells relative level and platelets heterogeneity is revealed.

Results of the correlation between leukocytes and platelets indicators in hemogram of patients with combination TP and AH are presented in table 5.

Table 5. Pirson coefficient of pair correlation for leukocytes and platelets in hemogram of patients with combination TP and AH

Parameters	WBC	Lymph %	Mid %	Gran %	PLT	MPV	PCT	PDW
WBC								
Lymph %			-0,89	-1,00				
Mid %		-0,89						
Gran %		-1,00						
PLT							0,99	
MPV								
PCT					0,99			
PDW								

Analysis of correlation coefficient between leukocytes and platelets in third group of patients has shown practically a total absence of correlations between platelets indicators. The significant coefficient has been revealed only between PLT and PCT data since the absolute platelets quantity is entered into the calculation of plateletcytocrite. In fraction of leukocytes strict inverse relationship (r =-1,00) between the relative lymphocytes and granulocytes levels and strong inverse relationship (r =-0,89) between relative lymphocyte level and middle sizes cell has been revealed also.

So, study has shown that tubulopathy with AH combination are characterized by disorders in leukocytes and platelets relationship. Thus hemogram indicators defined in clinic, was not overlook a control data. It is possible to assume that development and progression of arterial hypertensia associated with TP, can be caused by considerable influence of mechanisms of interstitial defeats of kidneys on dynamics of leukocytes and platelets parameters. It might be as to reflect changes of active cycles of cells as to define a number of essential changes in life cycle of blood cellular elements. Obviously, it may have matter for biologically active substances production which its causing a change of vascular and tissue reactions, and finally it important for arterial hypertension progression.

TREATMENT OF DISTAL OCCLUSION IN ADULT PATIENTS WITH DISTAL OCCLUSION, DEPENDING ON THE STRUCTURE OF TEMPORAL-MANDIBULAR JOINTS

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In order to improve the effectiveness of the treatment of adult patients with distal occlusion surveyed maxillofacial region in 227 patients aged 20 to 55 years with the use of clinical, laboratory, X-ray and graphic methods of research. Studies have identified three options for the structure of temporal-mandibular joint, there are two degrees of displacement head lower jaw joint, a criterion for selection of integrated treatment of adult patients with distal occlusion.
Key words: temporal-mandibular joint, distal occlusion

Relevance of the study

Tooth-jaw anomalies and deformities found among people of different ages. In doing so, they compounded the facial skeletal deformities, disrupting the aesthetic proportions. In most cases, tooth-jaw anomalies and distortions presented to the distal occlusion, accompanied by a pathology of temporomandibular mandibular joints and masticatory muscles [1, 3, 7, 8, 9, 10].

Purpose of the study

To improve the effectiveness of the treatment of adult patients with distal occlusion, depending on the structure and topography of temporal-mandibular joints.

Material and methods

A survey of 227 patients aged 20 to 55 years in the orthodontic and orthopedic treatment for the treatment of distal occlusion. In 180 patients with distal occlusion of combined defects of tooth rows. The distribution of patients into groups was carried out depending on the version of the structure of temporal-mandibular joint. The first group consisted of patients whose head is the lower jaw more mandibular pit (n = 72). The second group included patients whose parameters are consistent with the head lower jaw mandibular pit parameters (n = 94). The third group were included patients whose head is less than the lower jaw mandibular pit (n = 47). Diagnosis, planning and determination of the rational method of treatment is based on the results of the clinical laboratory, X-ray and graphic methods for the study. The degree of muscular-articular dysfunction defined clinical dysfunction index M. Helkimo on its own scheme. The study of functional occlusion performed with the use of polureguliruemogo articulator of Bio-Art Equipamentos Odontologicos Ltda (Brazil), model 4000 with a professional front arc. A methodology NH Khamitova defined index okklyuzogrammy. Anatomic-topographic structure of temporal-mandibular joint was evaluated by means of lateral tomography carried out on a universal X-ray installation "Orthophos 3" firm "Siemens". Investigation of mandibular function temporomandibular joints, masticatory muscles and occlusal identifying violations carried out by means of funktsiografii M. Kleinrok - VA Hvatovoy based on vnutrirotovoy recording lower jaw movements using funktsiografa. Data obtained from research, process variation-statistical method for the IBM PC / AT «Pentium-IV» on Windows 2000 using the software package Statistica 6 (Statsoft-Rassia, 1999) and Microsofr Exsel Windows, 2000. The criterion of reliability of differences evaluated by the Student table.

Results of the study and discussion

The study found that across the width of mandibular hole course there are three versions of its forms: 1 - narrow (11,55 ± 0,17 mm), 2 - average width (14,15 ± 0,05 mm) and 3 - extensive (15,88 ± 0,07 mm). At a depth of mandibular hole course have been allocated 1 - small (6,74 ± 0,08 mm), 2 - the average depth (10,43 ± 0,08 mm) and 3 - deep (12,85 ± 0,11 mm). Depending on the height of articular tubercles are: 1 - flat (6,74

± 0,08 mm), 2 - Moderate (10,43 ± 0,08 mm) and 3 - well-expressed (12,85 ± 0,11 mm) tubercles. According to the width of the head lower jaw were identified: 1 - small (7,45 ± 0,06 mm), 2 - average width (9,37 ± 0,06 mm) and 3 - large (11,65 ± 0,13 mm) . Clinical and laboratory methods of examination of patients revealed various violations of the masticatory muscles and temporomandibular mandibular joints: the limitation of opening the mouth, limiting the lateral movements of the lower jaw, with the restriction of the lower jaw protrusion, asymmetry of movements in the lower jaw, mouth opening, pain in the temporomandibular joint during mandibular movements of the lower jaw, pain in the masticatory muscles in the lower jaw movements, pain with palpation temporomandibular mandibular joint, pain with palpation chewing muscles, the asymmetry of those pathological articular noise. The symptoms of muscular-articular dysfunction identified in 97.3% of patients the first group. Patients two and three groups of these symptoms less frequently in 10.1% and 17.0% respectively. Patients first group of signs of moderate and severe degree of muscular-articular dysfunction found in 43.1% and 23.6% of cases, respectively. The subjects' second and third groups of symptoms of moderate and severe degree of dysfunction are identified less frequently (at 4.9%, and 15, 2% and 10.8% and 13.8% respectively). Premature occlusal contacts identified in the study groups with almost equal frequency (the first group - in 83.4%, the second - in 82,9%, the third - to 80.3%). In the lower jaw movement laterotruzionnom «Klykov Maintenance» breached in the first group to 80.6% of cases. In patients the second and third groups of the violation is detected less frequently in 6.1% and 15.2% respectively. Index okklyuzogramm was among the first group of patients - 34,91 ± 3,49, the second group - 41,31 ± 1,69, a third group - 38,50 ± 3,50.

In patients studied in groups depending on the structure of temporal-mandibular joint has two degrees of displacement head lower jaw retrad in mandibular yamke. In the first group was determined by the central position of the head of the lower jaw mandibular yamke. In the second group might offset the lower jaw, head retrad up to 2.0 mm (first degree). In a third group might offset the lower jaw, head retrad up to 4.0 mm (second degree). Vnutrirotovaya motion mandibular fractures using funktsiografa revealed a violation of the corner of Gothic and Gothic arch in patients of all groups. Gothic corner marked by asymmetry, violations of the straightness and length of sides. The top of a gothic angle do not coincide with the mid-sagittal line of the metal plate. Musculo-articular breach accompanied by the decrease in value of the Gothic corner in the first group of up to 85,04 ± 2,73 0, second - up to 89,84 ± 4,42 0, and the third - up to 89,37 ± 3,39.

Gothic arch in all groups was characterized by shortening of one or two sides, the asymmetry and curvature of the lateral movements, the asymmetry of the occlusal field. Point of habitual occlusion was located to one side of the mid-sagittal line of the metal plate. Front okklyuzinnoe movement was characterized by curvature of the lower jaw and did not coincide with the mid-sagittal line of the metal plate. Treatment of adult patients being researched plan based upon the degree of muscular-articular dysfunction. When light degrees immediately started to orthodontic or orthopedic treatment, with moderate and severe degree of pain syndrome first address medical and physiotherapy treatment, and then coordinated the work of restoring masticatory muscles.

To determine the optimum spatial position the lower jaw, the normalization of the topographic relationship of temporal-mandibular joints, restore «klykov reference» produced occlusal tire. In the planning of orthodontic and orthopedic treatment guided version of the structure of temporal-mandibular joint and the head of the lower jaw in the mandibular yamke.

In the first group of patients with a large head of the lower jaw and the mean mandibular yamke, medium head and a small lower jaw mandibular yamke treatment plan without taking into account the movement of the lower jaw and held zuboalveolyarnuyu compensation proteticheskoe primary pathology and treatment, without normalization of the lower jaw.

In patients the second and third groups, with the rear position and a small amount of head lower jaw with all forms of mandibular pit, with an average size head lower jaw with the middle and wider mandibular yamke, with a large head the size of the lower jaw with wide mandibular yamke orthodontic and orthopedic treatment plan with Given the movement of the lower jaw kperedi. To normalize the shape of dental arches used mechanical devices acts as the nomination of the lower jaw were carried out with the help of functional orthodontics guide. Deflection head lower jaw kperedi to the posterior slope of articular tubercles preserving joint gap in the forward department not less than 2.0 mm was determined at the stage of constructive occlusion, under the supervision of Tomograms. Further correction of the situation had the lower jaw relative to the top, taking into account the normalization of occlusal-articulatory relationships dental series, the functional status of masticatory muscles and the topography of temporomandibular mandibular joints. The result of the restoration of occlusal violations is the normalization of relations in the dental series of static and dynamic occlusion, with the creation of « Klykov »reference for the working party and the lack of superkontaktov. The main criterion for determining a displacement of the lower jaw was head of the lower jaw in the mandibular yamke. After the definition of constructive occlusion, under the supervision of Tomograms temporomandibular mandibular joint, we have sought the head of the lower jaw in the central or forward (at the base of talus articular tubercles) divisions mandibular pit. Signs of recovery of functional status of masticatory muscles is the coherence of the results funktsiografii.

Orthopedic treatment was performed in two stages. In the first phase produced temporary proteticheskie construction with restoring «klykov» reference, which helped patients to adapt to new conditions of operation of maxillofacial region. The main criterion was the improvement of device functional state of masticatory muscles on the data funktsiografiii. In the second stage made permanent orthopedic design.

Clinical survey conducted after the treatment, allowing to diagnose signs of musculo-articular dysfunction in 59.7% of patients the first group. The second and third groups of symptoms of dysfunction are identified less frequently in 18.2% and 20.4% respectively. In 40.3% of patients first, second 58.5% of patients and 60.7% of patients groups, the third sign of muscular-articular dysfunction is not set . In addition, as a result of the treatment of patients surveyed groups decreased the number of observation with symptoms of moderate and severe degree of muscular-articular dysfunction.

Index okklyuzogrammy as a result of the treatment increased in patients with a first group of 34,91 ± 3,49 to 63,84 ± 1,10 P <0,01), in patients with a second group of 41,31 ± 1,69 to 69.55 ± 1,05 (P <0.001) and patients with a third group of 38,50 ± 3,50 to 71,29 ± 1,90 (P <0.05). «Klykov Maintenance» detected in 58.3% of patients first, second 79.8% of patients and 85.2% of patients the third group, that more of the indicator measured before treatment to 38.9%, 54.3% and 50.8% observations, respectively.

As a result of the treatment there was an increase in the value «Gothic angle» to funktsiogrammah in the first group of 85,04 ± 2,73 0 to 98,37 ± 1,82 0 (P <0.001), second - in 89,84 ± 4 42 0 to 103,47 ± 3,28 0 (P <0.05) and in the third - from 89,37 ± 3,39 0 to 104,86 ± 2,48 0 (P <0.001), reflecting restoration activities coordinated masticatory muscles.

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THE STRUCTURAL BASES OF ACTIVE LYMPH FLOW IN HUMAN FOETUS THORACIC DUCT

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The thoracic duct consist of the row of lymphangions with muscle cuff between distal and proximal valves. The valves occur during the first half of the prenatal development of thoracic duct in human. During the second half of the development their maturation is underway – the enlargement of muscle cells together with the increase in their quantity leads to formation of the multi-layered muscle cuff of the duct lymphangions and with decreasing of the valves number.
Keywords: thoracic duct, valves, muscle cells, muscle cuff, lymphangion

Condition of the problem

The structural basis for lymph flow has been a subject of numerous studies, but mostly performed on mature humans and different mammals [1-8]. Valves divide lymphatic vessels to the lymphangions which have been defined as a intervalvar segment including muscle cuff between distal and proximal valves [4]. Muscle cuff contains the main part of lymphangion muscle cells and functions as a pump [3], connects with both valves of its lymphangion, intrinsic and extrinsic, by means of muscle bundles [4,5]. The prenatal development of human lymphatic systems did not attract enough attention of the lymphatic researchers due to the understandable difficulties to work with human tissues. Usually readers are referred to the “classical” studies [9-11] mostly focused on the problem of the lymphatic origin from veins or mesenchyme but without detailed morphological analysis of such development. According to O.F.Kampmeier [10] initially valves in the thoracic duct could be found in human embryos ~30 mm length, and they are determined as small thickenings of the duct endothelium. The formation of muscle layers in the thoracic duct wall begins during the middle of the prenatal month 5.

Material and methods

The work was carried out on 400 both sexes human embryoes and foetuses of 4-36 weeks old without pathology. Material was fixed in 10% solution of neutral formalin. Part of material was stained in paraffin with following production of serial longitudinal and transverse sections of 5-10 mkm in thickness. Sections were stained by hematoxylin and eosin, picrofuxine, azane, silver nitrate, orseinum. Thoracic ducts´ total preparations from some foetuses of 11-36 weeks were stained by gallocyanin.

Results

The paired thoracic duct could be determined in human embryos of 14 mm length (the beginning of week 7): during the formation of the paired jugular lymphatic sacs the thoracic subcardinal veins are excluded from blood circulation together with several other veins from the system of precardinal and postcardinal veins (**Fig. 1**). At this time the thoracic duct is localized between the thoracic postcardinal (azygos) vein and thoracic aorta at the levels of Th2-Th8 and it enters the bottom part of the jugular lymphatic sac. The connection site between the thoracic duct and jugular sac has duplication of the wall (initial valvar formation) and could be already determined in embryos 10-12 mm long (weeks 5.5-6). The thoracic duct finally exhibits lack of any connections with venous circulation other than its cranial part at the end of embryonic week 7 and possesses initially only tiny endothelial cell-containing wall which is much thinner than walls of veins surrounding it. First valves in the thoracic duct could be found at the end of embryonic week 8 (embryos 27-28 mm long): one valve is located in upstream diaphragmal part of the thoracic duct and its cysterna, another valve – in cranial downstream part of the duct near esophagus (**Fig. 2**). These valves with short cusps are still functionally incompetent – they are not able to close

completely the thoracic duct lumen and therefore to prevent the reversed lymph flow in the duct.

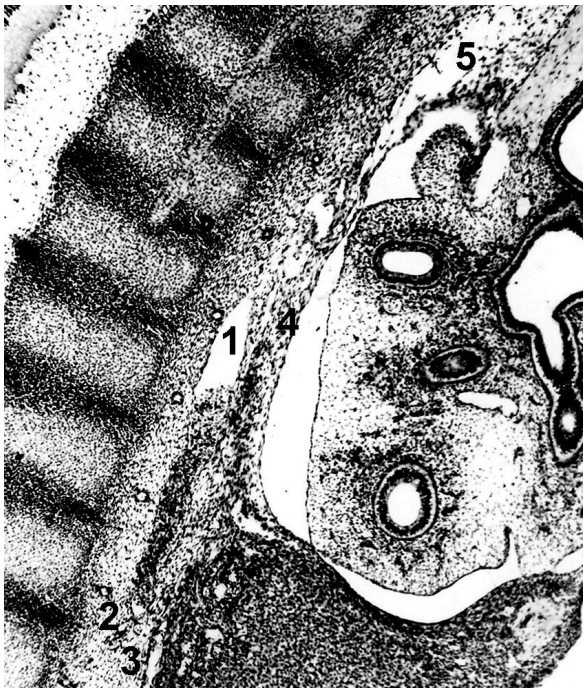


Fig. 1. Human embryo 14 mm of length (beginning of week 7), saggital section: 1 – postcardinal (azygos) vein; 2 – supracardinal (ascending lumbar) vein; 3 – superior mesocardinal vein; 4 – thoracic subcardinal vein / thoracic duct; 5 – jugular lymphatic sac. Hematoxylin / eosin staining. Light microscopy, magnification – 50X.

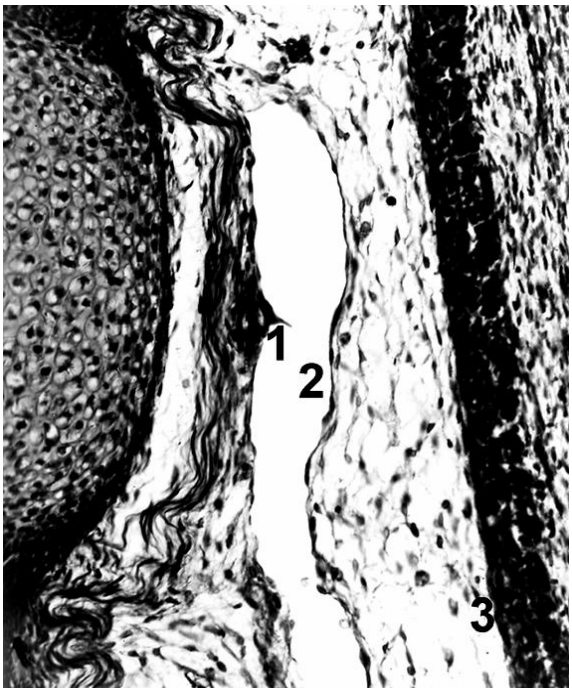


Fig. 2. Human embryo 28 mm of length (week 8), saggital section: 1 – thoracic duct valve; 2 – endothelial layer of the thoracic duct; 3 – esophagus. Hematoxylin / eosin staining. Light microscopy, magnification – 400X.

During the embryonic month 3 the thickening of the thoracic duct can be observed – the connective tissue forms adventitial layer of the duct and enters into thoracic duct's valves, which could be clearly divided into thick basement and tiny endothelial cusp (**Fig. 3**). The length of the valve cusps progressively increases, their tips contact together and elongate in downstream direction forming the valve sinuses (spaces between the thoracic duct wall and valve cusps). Therefore at this age of embryonic development the intervalvular segments of the thoracic duct could be already determined. During the month 4 the thickness of the adventitial layer significantly increases and it could be divided on two layers: the thin subendothelial layer, which is full of thin reticular fibers, and the thicker outer layer, which is rich by blood capillaries, thick reticular and collagen fibers. The muscle cells are mostly located in between of subendothelial and outer adventitial layer of the duct and could be determined as earlier as in the ending of month 3 or beginning of month 4 (**Fig. 4 A**). The number of valves increases but varies individually from 10 to 16. Valve cusps are getting longer and thicker with more curved shape, valve sinuses are also getting deeper although from outside of duct the borders between adjacent lymphangions are not well defined, so the thoracic duct is mostly cylindrical by its shape. During month 5 the layer of myocytes is still interrupted, and mostly single myocytes or small groups of them could be determined in the thoracic duct wall (**Fig. 4B**). Together with thin elastic fibers the myocytes form a thin medium layer of

the duct. Thick outer layer of the duct consists of axially oriented bundles of thick collagen fibers and elastic fibers. The number of valves varies between 25 and 35/ duct. However the shape of the majority of lymphangions remains cylindrical, only few of them in cervical and upper thoracic parts of the duct are getting elliptical shape. On the border between such lymphangions the thoracic duct is much narrower. In foetuses of months 6-7 the increase in number and enlargement of myocytes is continued, the short myocytes bundles of almost axial orientation could be found in the subendothelial and outer layers of the duct. In foetuses of months 8-9 muscle cell layers may be clearly separated for three

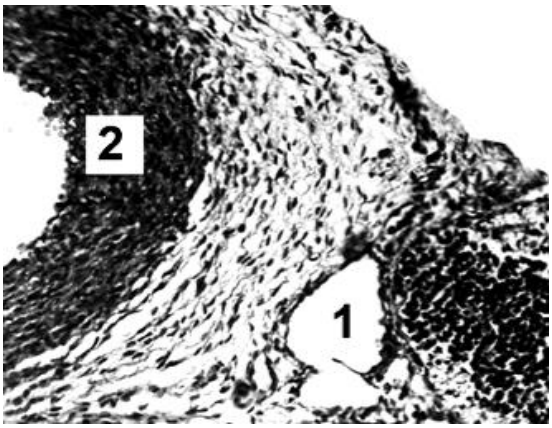
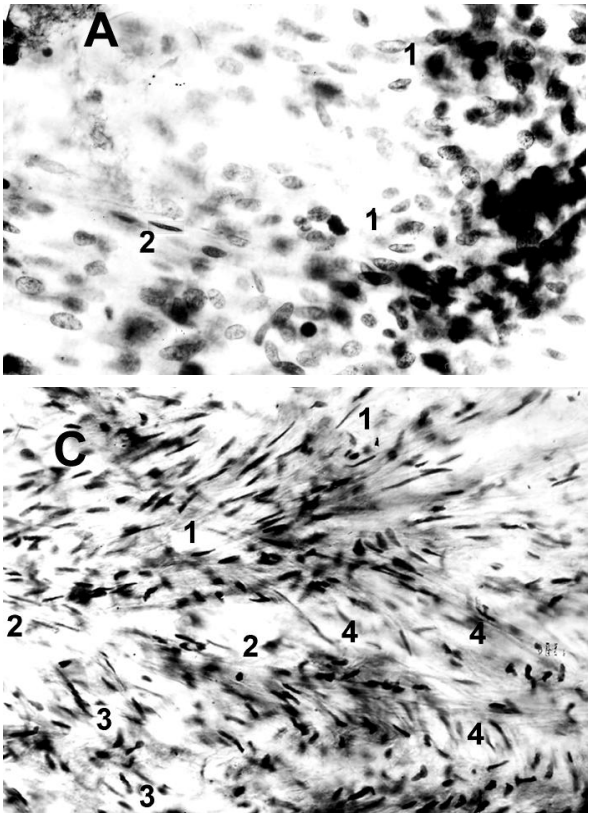


Fig. 3. Human foetus 61 mm of length (week 10.5), cross section: 1 – thoracic duct valve; 2 – aorta. Hematoxylin/eosin staining. Light microscopy, magnification – 120X



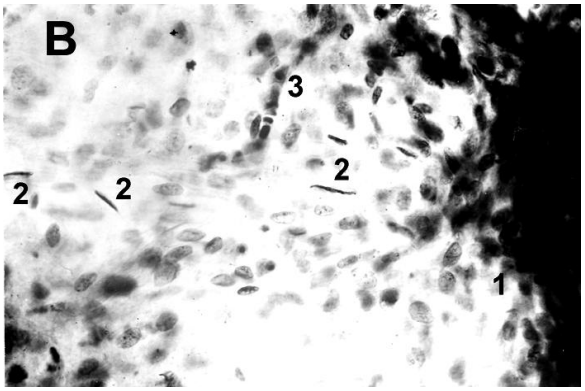


Fig. 4. Thoracic duct in human foetuses of week 11.5 (A); 20 (B) and 33 (C), total preparations. A and B:1 – valve; 2 – myocytes; 3 – blood capillary. C: 1, 2, 3, 4 – myocytes bundles in muscle cuff of lymphangion. Gallocyanin staining. Light microscopy, magnification: A, B – 400X; B – 250X

layers in a muscle cuff of the duct. Thin subendothelial layer contains the thin elastic fibers and few myocytes. Medium layer consists of majority of the ducts' myocytes with mostly circular orientation (**Fig. 4C**). Muscle bundles together with elastic and collagen fibers can cross together and form up to two layers of bundles. The thickest outer layer of the duct consists of numerous bundles of the different fibers, in between of which are subaxially and axially oriented bundles of myocytes (1-2 rows of cells) and blood capillaries are located. The number of the thoracic duct valves at the foetal age of the 8-9 mo diminishes to ~20/ duct. In valvular parts of the thoracic duct its wall is thicker and mus-

cle cell layers are not as well organized as described above for muscle cuffs parts of the duct. Myocyte-to-myocyte contacts could be determined in valvular areas, promoting the muscle cell contacts between adjacent lymphangions. Lymphangions which are typically elliptical by shape could be determined along all of the thoracic duct.**Conclusion**

The structural basis of the active lymph transport in the thoracic duct could be found already during the first half of the prenatal development in humans. The first valves with short cusps are appeared in embryonic period, the first muscle cells – in early foetus period with the increasing of valves number and their cusps length. The development of the competent valves and intervalver segments in thoracic duct occurs at the same time creating the ground for effective undirectional net lymph flow. At the end of the first half of the prenatal development primitive muscle cuff is formed already in the thoracic duct lymphangions which number is maximum. During the second half of the development the maturation of these basic elements of lymphatic pumping is underway – the enlargement of muscle cells together with increases in their quantity leads to formation of the multi-layered muscle cuff in the thoracic duct lymphangions with more and more thick muscle net in the cuff middle layer and with decreases of the number of the valves. Prenatal maturation of the thoracic duct leads to the changes in its shape. As closer to the birth, as more muscle cells could be found in the walls of the thoracic duct, and as more the shape of lymphangions changes from simplified cylindrical to elliptical, forming the narrowest parts of the thoracic duct near their valve basements and widest parts – close to the intraluminal edges of the valve cusps.

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REGENERATION OF LARCH AFTER CLEAR-CUTTING

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The article describes the types of larch forests and their growing conditions, which are often subject to principal clear-cutting in the Middle Angara region. The authors present the results of their research on the natural forest regeneration at the harvest sites. It proves, that larch preservation as prevalent species requires additional forest planting and other forestry measures.

Larch trees account for about 30-40% of all wooded territories in the Middle Angara region. Larch can grow in different conditions; its presence in the forest contributes to the trunk and crown formation and improves the soil quality [1]. There is a big demand for larch on the world market.

We have studied the felling types and the process of natural forest regeneration after clear-cutting with the Russian and foreign harvesting equipment, preserving the young growth in commercial forests of the Middle Angara region.

The experimental data was collected by the method of ground observation of the felling sites on the constant and temporary test territories dominated by dark coniferous and broadleaf forests. To measure natural regeneration under a shelterwood and at the forest harvest sites, we used the common plot estimate methods. Forest regeneration was evaluated basing on the inventory data of the young growth under a shelterwood on the discount areas. Besides, condition of field layer was evaluated by means of measuring the frequency and projective cover degree of shrub-grass and moss-lichen vegetation.

Larch forests are mostly mixed forests, which include 9 units of broadleaf trees. Mixed larch woods grow in conditions B_2, B_3, C_2.

Currently the following forests are of a commercial interest:

- green-moss larch forests (sorrel-green-moss, pine-green-moss, herb-green-moss), herb larch forests.

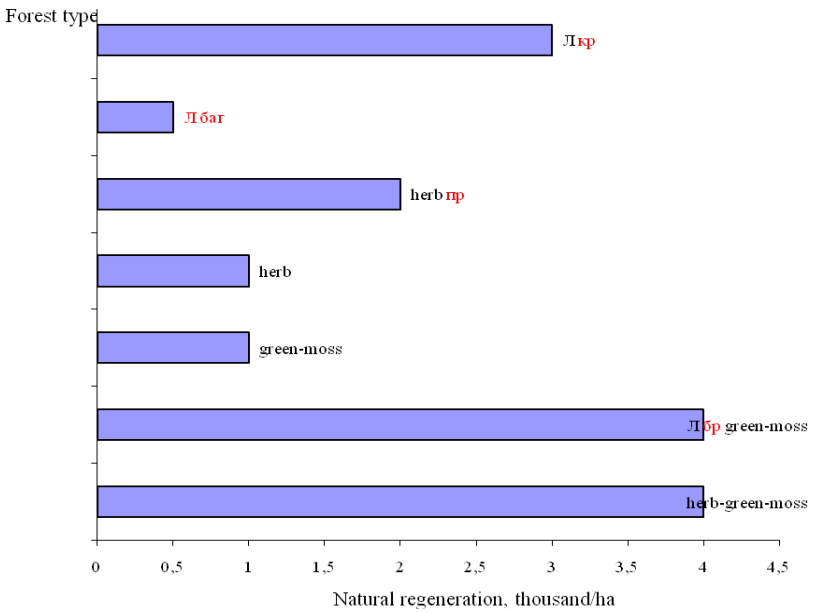

Figure 1. Relation between average amount of natural regeneration under a shelterwood per 1 ha for different types of forests

Among the felled forests prevail herb and green-moss woods.

Fig. 1 shows the relation between the felled woods of different types and the volume of the natural larch regeneration in percent to the total regeneration of commercial wood.

Our observations showed, that the amount of young growth of larch is relatively low (1,0-4,0 thousand/ha), which proves an unsatisfactory larch regeneration under a shelterwood.

Table 1 offers a taxational characteristics of larch forests on the test territories.

Table 1. Taxational characteristics of larch forests

Forest type	Growth class	Density	Reserve per 1 ha, m^3	Young growth, thousand/ha	Species prevailing in natural regeneration	Underwood (projective cover, %)
Green-moss larch forest	3	0,6-0,8	220-290	till 3	П,Е,К	20-35
Herb larch forest	3	0,6-0,7	230-290	till 1	П,Е,К	20-25
Лкр	3	0,6	200-230	till 3	С	25-30

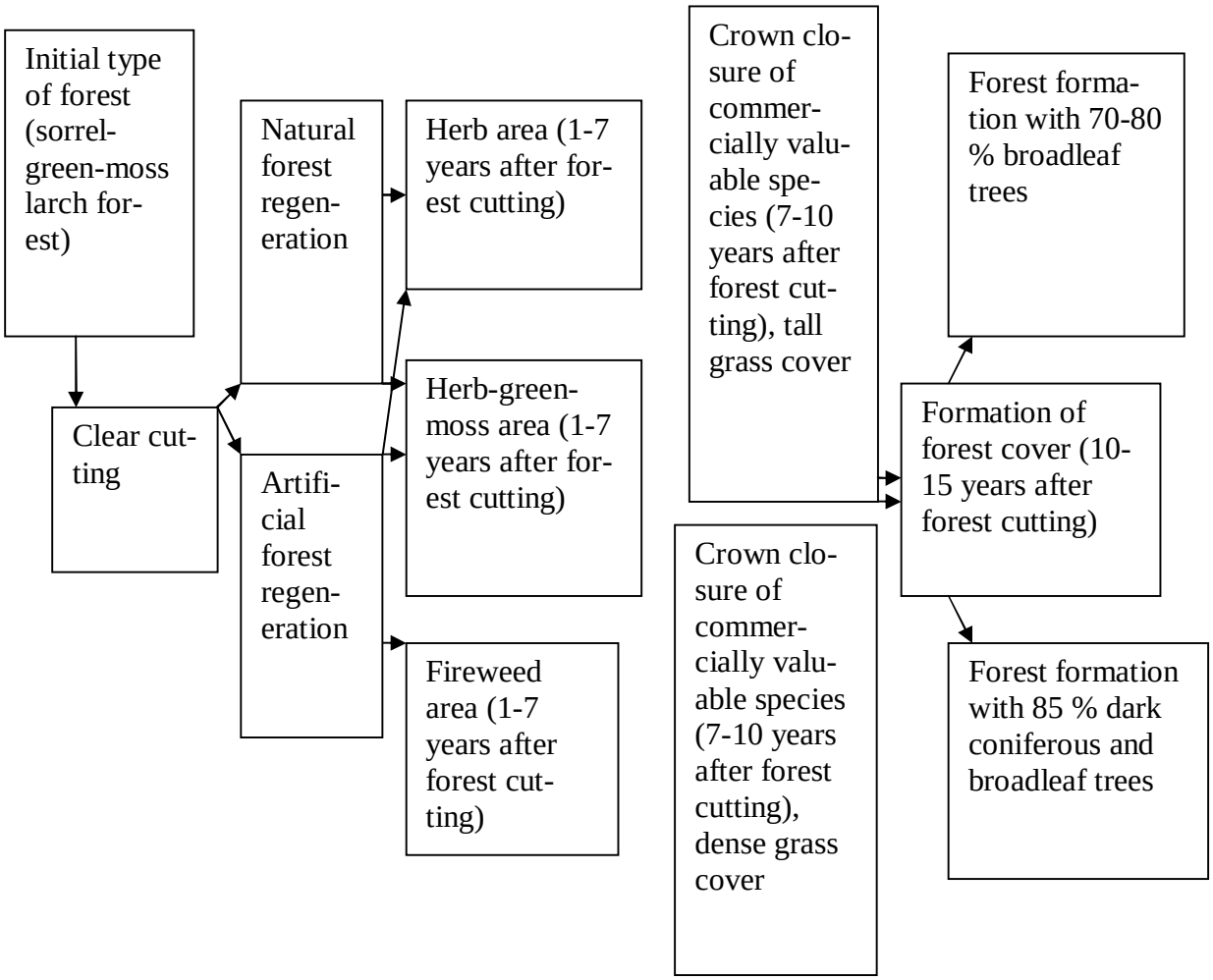

Figure 2. Structure of forest formation after principal felling in sorrel-green-moss larch forests

After the forest cutting, the majority of the territories become herb and herb-green-moss areas. If a forest fire spreads to the felling site, then fireweed establishes in a burned area (fig. 2).

Under a shelterwood in a green-moss larch forest, forms mainly dark coniferous young growth in amount of 2,5-6,8 thousand/ha. The principal clear-cutting causes changes in the forest type.

Principal felling of herb larch forests triggers reed grass growth (fig. 3).

In 67% of the examined territories, the young growth under a shelterwood of a herb larch forest reaches 1,5-1,8 thousand/ha. Principal clear-cutting destroys 65-75% of the initial young growth. The cleared areas get strongly overgrown with grass, making it necessary to plant new forests. The forest regeneration includes changes in the species range.

The conducted research let us conclude the following:

1. Natural regeneration under a shelterwood in a larch forest is not strong enough and accounts for 1,0-4,0 thousand/ha, the young growth is represented mostly by dark coniferous species.

2. Clear-cuttings destroys up to 65-75% of the initial young growth.

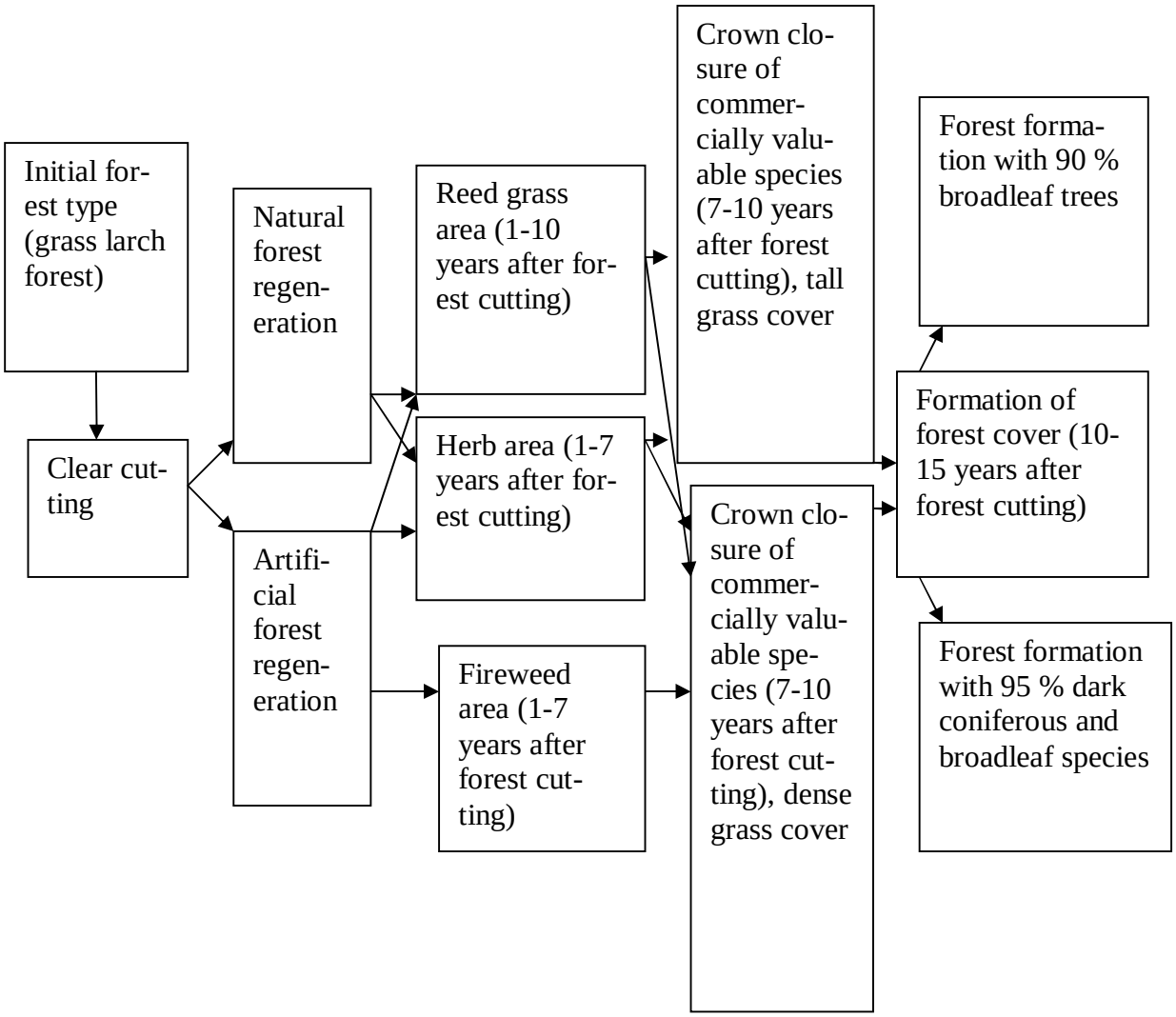

Figure 3. Forest formation after principal cutting of herb larch forest.

3. Natural regeneration is always accompanied with the species changes and does not provide a sufficient regeneration of valuable coniferous species, as often the broadleaf stands establish.

4. The most appropriate method is planting forests, which let reduce the time of the forest grow and help preserve coniferous species. The existing methods of the natural forest regeneration and forest planting (mostly pine trees) causes concerns about whether larch remains to be a prevalent species on the territory of Middle Angara.

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Materials of Conferences

THE FIELD OF PUBLIC HEALTH PLACE AND ROLE IN THE SOCIAL REPRODUCTION SYSTEM

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The demographic situation, having emerged in Russia just in the XXI-st century beginning, has revealed the character of its social and economic policy. The economic and political shocks at the close of the XX century have become, especially, for Russia the real catastrophe and disaster in the field of the human population. The Russian's human losses for the last 20 years are being commensurated with the USSR losses during the Second World War. In this connection, the challenge investigation on the field of public health place and role in the social reproduction system is being taken on the special theoretical and practical significance.

It is presented to us, that the emerged negative and demographic situation is being conditioned, in particular, by the quite insufficient scientific and theoretical comprehension of the field of the public health place and role in the social reproduction. Meanwhile, the public health – is the most complex field just in the production relations system, which, as all the other non – production – related sphere fields, indirectly of the labor resources, is constantly being influenced upon the production expansion rates; the increase of the labor productivity; the generated production cost saving, and, in the end, upon the rates of the Gross Domestic Product (GDP) growth rates.

At the same time, the public health is that specific non – production – related sphere field[1], as the public health not only «save labor», having lowered the temporal disability for the work, but it is being improved the labor resources qualitative structure. In addition to that, the public health is being increased the labor resources quantitative structure, having lowered the disablement and the mortality of the employable population, having lowered the children's mortality and their disablement, and also having increased the economically – active longevity.

It should be said, having noted the specific and the special public health role just in the social reproduction system, that this kind of field itself is being depended upon the economy development level. That is, the practical medicine services quantity and quality are being conditioned by the labor, the material, and the financial resources the public health field provision. In other words, the rise in the health standard level and the broadening reproduction provision is quite impossible to be carried out just without the corresponding public health field financing. At the same time, the public health resources efficient use challenge that is, very sharply, being laid before us, under the limited financial possibilities conditions. We shall note – the resources efficient use just for the public health field is not quite «the economy» for the population health. The efficiency in the public health is being meant the higher qualitative and the quantitative indications forms of the medically – health – improving activity.

The definition and the progressive forms and the modes of operation development the public health field and the medical science, owing to which it is quite possible to improve the demographic situation in the country, that is to achieve the real results in the disablement lowering and the premature mortality, to provide the healthy population extended reproduction, to lower the children disablement and the morality is the main target of our investigation.

The «population health level» category is the multiple – factor one. Correspondingly, the population health normal level provision, as well as, the demographic situation improvement is quite possible only at the system approach.

But, in our opinion, it should be developed a number of the first – priority programs, under the conditions, when our state is not quite able to provide the «Healthy Nation» program realization, by the objective reasons. These programs are the following:

1. The «Healthy Generation» Program;
2. The «Premature Disablement Lowering and the Mortality» Program.

The «Healthy Generation» Program is being occupied the specific and the special place just in the public health system: firstly, the healthy generation – is the healthy nation's basis; secondly, the adolescent generation quantitative and qualitative structure is being characterized the production – related and the non – production – related spheres efficiency of the social production. Correspondingly, it is necessary to develop a number of directions interdepartmental program's model for the healthy generation provision challenge solution. They are the following:

— the public health;
— the medical psychology;
— medicine sociology;
— the education;
— the law – enforcement authorities and the others.

Moreover, we shall note, that cannot be the first – priority directions just in the «Healthy Generation» program. In our mind, it is, as very much important the normal and the balanced feeding, well as very much significant that, how the light is being fallen on

[1] The service «… of a doctor…maintains the health that is he preserves the source of all the values – the working force itself…»// K. Marx and F. Engels Philosophy – The Complete Works, vol. 26, part I, p. 149.

the child's working table; what kind of the square is found to be for the school desk; and, at last, how much the pupil «is sagging» under the school rucksack's weight. All these above – mentioned things are very much significant. It is also very much important, that the child, having fallen into the hungry syncope, would not be subjected by some physical exercises (for all that physical activity significance), and, at last, it is necessary to provide the obligatory hot plate nourishment in the schools and the others.

The «Premature Disablement Lowering and the Mortality» Program is the demographic policy backbone. [In its report «Russia in the Face of the Demographic Challenges» – 2009 – the U.N.O. points out the long – term strategy necessity of the demographic situation further improvement. It was, especially, that strategy, which has been provided the arrangements on the population health improvement, and also that method of the deaths quantity reduction and so on, and so forth.] In this connection, it should be developed a number of the first – priority directions within the framework of this kind of Program, with due regard for the Russian Federation (RF) population health statistical data. For example, «The Blood Circulation System Diseases (BCSD) on the cases' number are being occupied the 1–st place in the population total mortality rate structure and also the 2–nd place among the persons of the employable population».[Chechenin G.E. and et. al. – "The Life and Labor Potentials Losses by Reason of the Blood Circulation System Diseases of the Adult Population". «The Russian Federation Public Health». – №1 – 2009, p. 35.] The malignant tumors morbidity rate is being left at the, sufficiently, high level. Thus, this index has been made up for the 100, 000 people the following figures:

in 1995 year:
RF (the Russian Federation) – 1,271,5;
SFD (the Southern Federal District) – 1,364,2;
RNO – A (the Republic of the North Ossetia – Alania) – 966,1;

in 2006:
RF (the Russian Federation) – 1,734,1;
SFD (the Southern Federal District) – 1,673,5;
RNO – A (the Republic of the North Ossetia – Alania) – 1,519,2.

[RNO – A (the Republic of the North Ossetia – Alania) Public Health. "The RNO – A Statistic Collection". Vladikavkaz, 2008, p. 92.]

Having spoken on the first – priority directions, with due regard for the population health statistical data, the note should be taken on the persons quantity distribution at the age of 18 and older, firstly, having recognized by the disabled persons, by the reasons of the disablement in 2006 (persons) [RNO – A (the Republic of the North Ossetia – Alania) Public Health. "The Statistic Collection". Vladikavkaz, 2008, p. 86.]:

The blood circulation system diseases (BCSD) – 754,673;
The malignant tumors – 191,236;
The musculoskeletal apparatus system diseases – 118,045;
The endocrine system diseases – 49,638;
The mental disorders – 48,329;
The tuberculosis (T.B.C.) – 34,852.

We shall note that the population mortality statistical data by the main classes, practically, is being corresponded with the disablement ones. Thus, the dead persons number in 2006 for the 100, 000 people has been made up: from the blood circulation system diseases (BCSD) – 864,7; from the tumors – 200,9. [Ibid., p. 86.]

It should be done, with due regard for the medical and the socially – economic significance of the preservation and the maintenance strategic programs at the high level of the public health:

— to improve the public health field management;

— to use the reliable and the objective population public health statistical data, that is to get rid of from the «cleaned» statistics;

— to develop the scientifically – grounded needs' and requirements' predictive estimates of the public health field in the resources;

— the medical science, together with the fundamentally – scientific investigations, will have to pay its attention upon their applied character, that is not to be limited by the health statistical data, but, at the same time, to try to research and to divulge the pathologies' reasons;

— to revise the public health field financing principles, as the current practice (e.g. the Russian Federation (RF) population health status – is being characterized, as the catastrophic one, even at the U.N. level) has already been shown the whole insolvency of

the public health field financial policy (e.g. I should not want to be agreed with Mr. A. Potapov[1]);

— to return all the state medical and the prophylactic institutions (e.g. the hospitals, the polyclinics, the sanatoria, the rest homes, the boarding houses, the children health – improving institutions) to the people;

— to return all the preschool education institutions to the children (and also to their parents);

— to return the gratuitous sporting schools, and the athletic complexes to the children, and so on, and so forth.

After all, we shall not work the vitally important for us challenge out – the healthy population extended reproduction provision challenge – without the cardinal changing of the financially – organizational system just in the public health field and the medical science, which has been emerged for the last 15–20 years, without the sufficient programs financing of the further population health improvement.

The work is submitted to the Scientific International Conference "Scientific Research of Higher School on Priority Orientations of Science and Technology", Jule 11-25, 2009. Came to the editorial office on 11.05.2009.

THE LYMPHATIC SYSTEM SEGMENTAL ORGANIZATION

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The lymphatic system is being gathered the «excessive» tissue fluid in the lymph form just from the organs. The lymphatic channel walls structure is being complicated during its length: the lymph capillaries (LC) endothelium, the valves are being appeared in the lymph post – capillaries (LPC), the myocytes – in the lymphatic vessels (LV), and the lymphoid tissue – in the lymph nodes (LN). The lymphangions contractions – e.g. the LV valvate segments are being served the lymph flow main motive power, according to E..Horstmann (1951, 1959) and H..Mislin (1961, 1983). The distal valve and the proximal muscular cuff are being entered in to their structure. The valves cusps are not contained the myocytes, and they are being moved passively, by the lymph flow gradient. But the lymphangions with one valve are not being functioned (Webb R., 1933). And so, I have suggested to consider the lymphangion, as the intervalvular segment with the myocytes just in the walls: the muscular network from the muscular segment cuff is being spread over both its valves, e.g., as the inlet one, well as the outlet one, – the single structurally – functional system..The intervalvular segment is being appeared to be the lymphatic system universal structure.

The human's and the animals' lymphatic channel whole mounts have been stained by the gaullocyanine by Einarson, the histological sections – by the picrofuchsine, by the orcein, by the azan by Geidengaine, by the benzidine on the myoglobinperoxidase; they have been impregnated by the silver nitrate; they have been treated by the reagent with the antibodies to the myocytes α – actin. The rat's LC, LPC, LV electron microscopy has been conducted.

The LV valves are being contained the smooth myocytes. The valve's muscle is being continued into the cusps just from its basis, by means of the muscular bundles it is being connected with the muscular cuffs of the adjacent lymphangions and with the other valves. Such muscular connections are being permitted the contractions coordination of the lymphangion's various parts and the various lymphangions. The valve's muscle is being served not only its tensor, but it is also able to change its cusps' position, and, thus, to regulate, actively, the lymph flow just between the lymphangions. The valves are being divided the lymphatic channel into the intervalvular segments, which are quite various by their structure. Their variable movements are being defined by the surrounding tissues: 1) the tissue fluid is being filtered into the LC and LPC lumen – the lymphopoiesis, the primary lympho – motive force (e.g. the tissue pump piston); 2) The tissues' mechanical pressure on the LC, LPC and LV walls (e.g. the tissue pump external cuff); 3) the reverse lymph flow, having appeared at the lymphopoiesis energy insufficiency, is being closed the valves; the lymph is being accumulated, and it is being stretched out the walls' intervalvular segment, that it is resulted in the myocytes membranes deformation and the depolarization – so, the LV contractive activity mechanism is being switched on in such a way.. The valve is being belonged to the both adjacent lymphangions, it is being united together their walls, but it is being divided their cavities at the closing (e.g. the compartmentalization). The adjacent lymphangions are being contracted, frequently, in a separate way, at the critical lymph portion entering in them, but they are able to be contracted together: the supra–valvular myocytes bundles are being expressed just in the large LV, they, in their turn, directly, are being connected the adjacent lymphangions muscular cliffs, having passed the valves, – this is the short and the direct way of the muscular contraction wave spreading on the LV length. The valvate segment is the semi – open system with the infinitely large capacity, therefore, it is not able, independently, to be contracted and to provide the efficient lymph transport. So, the valvate segment is being stopped the reverse lymph flow, that it is preceded, as the biomicroscopy has been shown, the intervalvular segment contraction launching just in the field of the valvate sinus.

[1] «It is extremely difficult to reform the emerged public health financing system» – Potapov A.E. – «The Russian Federation Public Health». – №5 – 2008, p.3.

The LN ones have the complex (e.g. with the lymphoid tissue in the walls), or the lymphoid lymphangions structure, which, simultaneously, are being regulated the lymph volume and its composition. The LN capsule muscular network (e.g. the nodal lymphangion muscular cuff) is being connected with the LV lymphangions and the border valves with them, by means of the muscular bundles in the continuous lymphatic channel composition.. The LPC valves are very thin, and they have a form of the cells' small thickening in the LPC of the first order. The LPC one is being consisted in the intervalvular segments without the myocytes presence just in the walls. The movable interendothelial contacts in the LC walls have been organized, as the intramural mini – valves. They are, constantly, being regulated the tissue fluid filtration just in the LC cavity – e.g. its outflow from the tissue channels into the lymphatic channel. The endothelium intramural valves are being found in the opening of the LC segments, and the LPC real valves – at the outlet just from the LC (network). The surrounding them tissues, including – the muscular ones, are being played the cuff role for the LC and the LPC intervalvular segments.

Conclusion

The lymphatic channel intervalvular segments with the different structure are being organized the lymph partial movement just from the organs to the veins, under the lymph flow proper energy deficiency conditions. The lymph flows channels are being taken their place only under the extravasal factors influence in the non – muscular sections (e.g. the tissue fluid flow pressure and the surrounding tissues), the LV and the LN contractive activity mechanism is being switched on, at their energy insufficiency just in the muscular sections.

The work was submitted to international scientific conference «Present-day problems of science and education», Russia (Moscow), May, 13-15, 2009. Came to the editorial office 08.04.2009.

STRUCTURE OF THE BLOOD-TISSUE METABOLISM

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Substances move from metabolic microvessels to the tissue channels and back, through the endothelium in their areas of microvasculature. I suggest that this microvascular-tissue complex should be called a "domain of hemo-tissue metabolism". Transport vessels unite the domains into a common system. Domain configuration is determined by the structure of a vascularized area. In the mesentery between two mesothelium layers is a loose connective tissue, veined with a network of different microvessels. A hollow organ can be presented as a sheet rolled in a pipe; muscular layers divide it into membranes with a multilayer microvasculature, and microcirculatory channels of external layers overlap the transport vessels, going from the inner layers. Formation of folds, villi, crypts, acinuses and lobules leads to an adequate deformation of the domain. They have a network structure: thin fascicles of connective tissue fibers and capillaries form loops of a microvascular-fiber network. Inside the loops, is a dense network of thinner connective tissue fibers and tissue channels. They unite blood and lymphatic microvessels as "functional anastomoses": connective tissue fibers and hydrophilic amorphous substance act as an external cuff, restricting the tissue channels from widening and directing the substance current into the microvessels with a different wall permeability.

The work was submitted to international scientific conference «Medical, social and economic problems of population health preservation», Turkey, May 20-27, 2009. Came to the editorial office on 10.09.2009.

LYMPHATIC AND LYMPHOID SYSTEMS

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While immunity is in the spotlight, lymphatic vessels are being regarded as appendage of the lymphoid system. In the international anatomic terminology (New-York, 1998), there is no such term as «lymphatic system». Section «Cardio-vascular system» describes lymphatic ducts and trunks, mentions lymph nodes, but their detailed description is given in section «Lymphoid system». In my opinion, lymphoid and lymphatic systems are interconnected in the peripheral parts and are specialized areas of a common cardiovascular system. The core of the lymphatic system are lymphatic vessels that transport the tissue fluid and large-grain particles, which did not get into blood channels. In the lymphoid system, the central position occupy blood vessels that provide lymphocyte circulation. Lymphocytes gather in the area invaded by antigens and along their pathway in the organism. Primary lymphatic tracts, capillaries and postcapillaries are characterized by higher wall permeability. That is why antigens penetrate into their openings, lymphoid nodes and patches form around the source (tissue channels) and roots of the lymphatic channel before and after human's birth, and lymph nodes – around lymphatic vessels with endothelial walls outside the organs, at a 3-5 month fetus.

The work was submitted to international scientific conference «Medical, social and economic problems of population health preservation», Turkey, May 20-27, 2009. Came to the editorial office on 10.09.2009.

SKELETON OF THE MICROCIRCULATION

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Structure of connective tissue or skeleton of microcirculation is presented by rings of dense connective tissue around the main microvessels and their large branches. From the rings of the outline network branch the trabecules with terminal arterioles and collecting venules, towards the network of the metabolic microvessels. They branch, thin and disperse into loose connective tissue in alveoles, surrounded by capillaries. The alveoles of the metabolic network are filled with dense network of thin and differently directed fibers of connective tissue and hydrophilic amorphous substance; they form the walls of the tissue channels. Skeleton of microcirculation, besides its supporting function, can also act as an external cuff for the metabolic microvessels and tissue channels: limit the «spreading» of the tissue fluid from the alveoles of the metabolic network and direct its current from the tissue channels into the metabolic microvessels with different wall permeability. Apparently, the microcirculation has a modeling effect on stroma's fibro-architectonics in its area, till the inclusion of the differentiating connective tissue into the vessel wall. Histo- and morphogenesis of the microcirculatory soft skeleton at different levels of its organization resembles a transition of the bone tissue from fibrous to lamellar, spongy and compact.

The work was submitted to international scientific conference «Fundamental research», Croatia, July 25 – August 1, 2009. Came to the editorial office on 10.09.2009.

DEVELOPMENT OF THE THYMUS AND SPLEEN

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Lymphatic channels and lymphoid structures cooperate with each other to provide hemostasis in the body. This is indetermined by their set up in close association with veins. Lymphatic channels differentiate as a collateral part of the venous bed excluded from the blood flow. Spleen and thymus lie off the transport conduits that carry lymph, as well as the red bone marrow. Unlike the other lymphoid structures, they do not participate in lymph drainage from other organs; and in the process of evolution and ontogenesis, they form together with the predecessors of the lymph vessels – venous sinuses. Lymphatic «instability» of thymus, spleen and the red bone marrow is their typical feature from the moment of their formation, when mesenchymal cells cluster around venous sinuses, where the blood flow slows down and the blood gets a better contact with the perivasal tissue. The rest lymphoid structures originate in association with lymphatic sacs or vessels. Their forerunners are the merging lymphatic clefts, which appear from the pockets, separated from the primary veins. Lymphocytes begin to colonize a lymphoid organ after peripheral lymph collectors have been formed – intercleft membranes collapse, and decay products of other structures (antigens) get inside.

The work was submitted to international scientific conference «Medical, social and economic problems of population health preservation», Turkey, May 20-27, 2009. Came to the editorial office on 10.09.2009.

THE VASCULAR BED DEVELOPMENT PHYSIOLOGY

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The vascular bed development is begun just from the endothelial primordia proliferation and also the embryo protocapillary network formation. Its irregular growth and the differentiation, including the magistralization and the reduction are taken their place by the increasing pressures gradient, in connection with the organs' growth and the histogenesis: 1) the centrifugal magistralization (e.g. just from the heart to the organs) by the shortest way; 2) the arteries in their development are outgrown the veins; 3) the great vessels are divided just into the branches to the multiple organs and their parts; 4) the anastomoses (but to be more specific – the magistralization) formation among the branches of one and the various magistrals. The vessels development is, practically, defined by the blood flow and the homotissue metabolism correlation. The metabolites transmural diffusion currents are exerted their «washing» effect upon the endothelium and also the subendothelial layer of the connecting paratenons, they disjoin the cells' and the molecules' contacts, that is inhibited the collagenous fibers morphogenesis, this is stimulated the capillaries growth and the neoplasms. The diffusion is, rapidly, become extinct just in the thickening and callous vessel's wall, the blood pressure mechanical constituent just on the wall is kept in its thickness. The metabolic currents are considered by me, as the growth inductor and the microvessels branchings, the hemodynamic factor – as their magistralization inductor. The lymphatic capillaries, «having non – functioned» the heart, which is the main blood flow motor, and the arterial bed, are kept the «embryonic» structure (e.g. the thin endothelium just without the basilar membrane), in contrast to the blood capillaries.

The work was submitted to international scientific conference «Medical, social and economic problems of population health preservation», Turkey, May 20-27, 2009. Came to the editorial office on 09.2009.

BIOTECHNICAL SYSTEM OF CAR GAME TRAINING BASED ON USE OF A MULTIPARAMETRICAL FEEDBACK AND SUBSENSITIVITY LIGHT SIGNALS OF CONTROL

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Research urgency

Development of modern hardware promoted creation of the unique medical-rehabilitation technology allowing more effectively to be trained ways of self-control. It is a question of computer game biomanagement. The computer game training apparatus includes some the game plots having obvious or latent competitive character. The competition course is regulated by dynamics of the registered physiological parametre: it can be a pulse rate, skin temperature, dermo-galvanic reaction. Win competition the patient can in the event that will learn to operate the physiological function in a situation of virtual competitive stress. The colourful game plots created with use of modern multimedia means, raise motivation training, promote more effective fastening of skills of self-control. In the course of game training the person gets invaluable ability to resist to stress and diseases, studies in a new fashion to react to conflict situations, to reduce excessive internal pressure when the raised working capacity, strong-willed effort, attention mobilisation is required. Working out of structure of biooperated game training for creation of the independent hardware module in which for management of influence use a multiparametrical biological feedback, concerns the actual problems essentially expanding efficiency of treatment by means of computer game technologies of rehabilitation of various diseases of the person.

The work purpose - management optimisation by the virtual game training, directed on overcoming of competitive stress and ability to operate the functional condition by means of the scenarios including visible background and fixing image, and also discrete subsensitivity light signals.

Object of research are neurodynamics brain processes, electrophysiological processes of cardiovascular and respiratory system.

As subject of research information processes serve at recognition of functioning of cardiovascular, respiratory system, and also during carrying out of game biooperated training in real clinical conditions.

Material and methods of researches

In biotechnical system of game training the information presentation through an optical communication channel by means of colour impulses is provided. According to a frequency range of electroencephalogrammes, concerning to highly plastic to types, in which alpha rhythm share of essentially more share of a teta-rhythm. The similar structure of light impulses can provide transformation of pattern EEG and, hence, updating of a functional condition of the person [1,7].

We for these purposes had been developed models in a kind the coded colour patterns.

Let's consider an example of change of intensity of light influence at the expense of the directed manipulations with duration of an impulse and a pause at the frequencies corresponding teta and an alpha to a rhythm in the form of a spindle EEG. Only realisation of parametres colourstimulation, having the big coefficient of filling of a colour signal causes sensations of blinking of light.

It is known, that the functional kernel of pattern EEG is made by mutual relations an alpha and teta the rhythms forming 4 basic of type: teta (lf) + alpha (hf); teta (lf) + alpha (lf); teta (hf) + alpha (hf); teta (hf) + alpha (lf), where “lf” is Low frequency and “hf” is high frequency.

Noted types at healthy faces are highly steady against various influences and functional loadings and have correlation communications with that or other psychological profile of the person [2], and also with size pulsation arterial pressure [3]. Therefore, according to the psychological profile, each model of the formula of colour influence should have four formulas of influence of frequencies reflecting combination teta - and an activity alpha.

The real algorithm realising all forms of a combination a teta-alpha of rhythms, is presented in table 1.

Strengthening of parasympathetic influences promotes realisation of a condition of a relaxation of the patient.

One of ways of strengthening cholinergic regulation mechanisms is resonant breath with the period ten seconds.

Features of mechanisms of management of a rhythm the hearts caused by change of respiratory function of the patient, consist that breath with frequency 5-6 in a minute causes the greatest variations of pulse.

It is caused by the maximum stimulation of a wandering nerve as a result of action respiratory arhythmia heart (RAH) [3,4,6].

In the literature such breath name metronome the similar breath, or more often, as resonant because transfer function of change heart rate at breath has the expressed functional resonance (FR) on frequency about 0,1 Hz.

Table 1. Algorithm of realisation of model of alpha spindles in light patterns of θα-rhythms in formulas relaxation colourstimulation

Formula	Formula parametres	Realisation time, s
F –1 $\theta_{hf}\ \alpha_{hf}$	{[(θ 7 hf • 35 + α12,5 hf •25)]*4} *10	15,00 *6 =60 s Transition to F–2
F–2 $\theta_{lf}\ \alpha_{hf}$	[(θ 6 lf • 17 + α10,0 hf •40)]	15,00 *4 =60 s Transition to F–3
F –3 $\theta_{hf}\ \alpha_{lf}$	[(θ 7 hf • 22 + α9,0 нч •89)]	15,00 *4 =60 s Transition to F–4
F –4 $\theta_{lf}\ \alpha_{lf}$	[(θ 4 lf • 16 + α9,0 lf •82)]	15,00 *8 =120 s Transition to F–1
Total time Σ t s	-	300,00 s
Total time of a session	Repetition of formulas F–1; F–2;F–3; F–4.	2 times=10minutes 3 times=15 minutes 4 times 20 minutes 5 times=25 minutes 6 times = 30 minutes

Table 2. Model an alpha of spindles in a light pattern δθα at low frequency of an alpha rhythm of 8 Hz

Structure of a respiratory cycle (Phase)	Parametres of model					
	Rhythm EEG	Hz	Impulse	Pause	Quantity of tics	Time, s
INSPITATION	δ	2	0,30	0,20	1	0,500
	θ	4	0,23	0,02	6	1,500
	α	8	0,085	0,04	6	0,750
	α	8	0,095	0,03	6	0,750
	α	8	0,105	0,02	6	0,750
	α	8	0,095	0,03	6	0,750
Total time of the inspiration						5,00
EXPIRATION	δ	2	0,30	0,20	1	0,500
	θ	4	0,23	0,02	6	1,50
	α	8	0,065	0,06	6	0,750
	α	8	0,075	0,05	6	0,750
	α	8	0, 095	0,03	6	0,750
	α	8	0,085	0,04	6	0,750
Total time of the expiration						5,00

As is known in a pattern EEG the healthy person in shape δθα a pattern kernel is highly likelihood communication of θα-rhythms [2,5].

Programs of bioadaptive regulation are usually directed on correction of a functional condition of persons having the raised emotional instability, irritability, irascibility.

In this case strengthening an alpha of activity and its communications with teta and delta components is required. Let's consider models of light spindles which can be shipped in rhythms of a respiratory cycle in a kind metronome the similar breath or resonant breath.

It is visible from the presented data in table 2 the formula of light influence makes invariable a rhythm frequency of 8 Hz, organised in the form of spindles with changing force of influence on a breath and on an exhalation.

The light pattern is presented by the impulses corresponding to parametres δθα EEG.

Delta-teta rhythms are linked with an alpha-a spindle from 25 impulses on a breath and 25 impulses on an exhalation. Time of realisation of the formula makes 10 seconds.

The algorithm of realisation of formulas of influence in the tabular form is presented in table 3.

Hence, transformation neurodynamics activity of the brain, directed on strengthening of its excitability and strengthening of activation of the patient can be provided in addition by share strengthening beta-activity in structure EEG.

Table 3. Algorithm of realisation of model an alpha of spindles in light patterns βα rhythms in formulas activating colourstimulation

Formula	Formula parametres	Realisation time
F –5 $\beta_{lf}\ \alpha_{hf}$	[(β 17 lf • 85 + α10,0 hf •107)]	15,00 *6 =60 s Transition to F–6
F–6 $\beta_{lf}\ \alpha_{hf}$	[(β 16 lf • 78 + α11,0 hf •95)]	15,00 *4 =60 s Transition to F–7
F–7 $\beta_{lf}\ \alpha_{hf}$	[(β 15 lf • 61 + α12,5 hf •118)]	15,00 *4 =60 s Transition to F–8
F–8 $\beta_{lf}\ \alpha_{hf}$	[(β 14 lf • 70 + α13,0 hf •112)]	15,00 *8 =120 s Transition to F–5
Total time Σ t c	-	300,00 s
Total time of a session	Repetition of formulas F–1; F–2; F–3; F–4.	2 times =10 min 3 times =15 min 4 times 20 minutes 5 times=25 minutes 6 times = 30 minutes

Conclusions

The present research is executed according to plans of the problem commission on chronobiology and chronomedecine the Russian Academy of Medical Science, and also with one of basic scientific directions Belgorod state university»: «Working out of universal methodological receptions chronodiagnostics and biocontrol on the basis of biocyclic models and algorithms with use of parametres of a biological feedback», and also at support of the analytical departmental target program «Development of scientific potential of the higher school (2009-2010)» under the project: DSP.2.2.3.3/4307. Program realisation has allowed to receive following conclusions:

1. The determined models of subsensitive signals of a relaxation and activation of the patient in system of biooperated game training are created.

2 The algorithm of management by depth of modulation of a bearing light signal by means of change of its porosity synchronously with frequency of beats heart and breath of the patient, managements of arterial inflow differing by an orientation, or venous outflow is developed.

3. Optimisation of management by intensity of game influence is carried out by means of special algorithm of immersing of formulas of influence in a respiratory cycle.

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The work was submitted to international scientific conference «Basic and applied research. Education, economics and law», Italy (Rome, Florence), September, 6-13, 2009. Came to the editorial office on 20.07.2009.

DEVELOPMENT OF VOCATIONAL EDUCATION IN CENTRAL KAZAKHSTAN IN THE 1950S–1960S OF THE 20TH CENTURY

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The article examines the role of vocational education in training of qualified workers for the needs of the national economy in Central Kazakhstan in the 50s-60s of the 20th century. The author mentions a legal framework of the issue, focusing on the management and financing of the vocational education in Kazakhstan during that time. According to archive documents and historical sources, the number of vocational schools and their students grew in Central Kazakhstan. In addition, the author observes the main tendencies and conditions of the development and modernization of the vocational education in Kazakhstan.

Global economic, political and cultural integration is characterized by specialization, global migration of financial, human and industrial resources, standardization of economic and technological processes. Under these circumstances accelerated modernization in Kazakhstan, especially the manufacturing industry development and diversification of economy, are vitally important for the safety of the Kazakh society and independence of our young state. However, such interdependent goals as a fast transfer of our country into the top 50 competitive states of the world, strengthening Kazakhstan's position as a full member and entry of domestic products with high share of added value on the international market [1], are impossible to achieve without a principal optimization of human resources. This includes a considerable growth of human capital in our country, which, according to the head of the State University – Higher School of Economy, prof. E.G. Yasin, is the only real resource of the post-soviet states today and in the nearest future [2].

Human capital, which includes individual and collective a) educational and professional level, b) ability to search, learn and produce information, c) positive motivation and working ethics, d) efficiency of working population and etc., is a strategic resource. It determines the effectiveness of other resources' usage and the success of the total accelerated modernization of the national economy. It does not make any sense to let an employee work with complex equipment and control systems, if he is not qualified enough, careless at work, physically or psychologically not able to fulfill complicated and non-standard tasks in the full-of-information working environment. Understanding the fact, that the state, business and the Kazakh society in general need to pay attention to this vital issue, president of Kazakhstan, N.A. Nazarbaev has set a goal of create a system of modern education and professional retraining, lay the basis of «smart economy», use new technologies, ideas and approaches to development of innovative economy [3]. «Educational system should stop functioning separately from economy and society. It should provide the country with intellectual resources ... We need to develop regional training and retraining programs taking into account the demands of the regional and national labor markets» [4, p.4].

In this respect, a special attention is being paid to vocational education, which aims at training qualified workers for different industries. The first vocational school was established in Karaganda in the beginning of the 30s of the last century to satisfy the demand for qualified specialists. In the 50s, the system of the state labor reserves was focusing on training workers for specific industries such as transport, construction, agriculture, as well as improving the level of professional and general knowledge of students.

Vocational school № 2, Balkhash, Central Kazakhstan, which was established in 1941, played an important role in training

workers during this time. As of 1 January, 1950, 203 students studied here, including 33 Kazakhs [5, p.113]. During its history, the school graduated over 5000 miners, metallurgists, turners and other workers [6, p.145]. In 1960, the school took the 1st place at the socialist competition among the educational institutions of the Republic.

During the time of the 5th five-year plan, schools for working youth took a considerable place in the educational system of the mining city. For example, in school year 1953–1954, there were 19 schools for working youth in Karaganda, and compared with 1946 the number of students increased more than 7 times. 20 evening schools in Karaganda numbered 4651 students in academic year 1958–1959; in academic year 1959–1960, 25 schools for working youth numbered about 5000 people [7, p.124], in academic year 1961–1962 there were 28 schools with 7456 students, and in academic year 1964–1965 the number of such educational institutions reached 34 (11012 students) [8, p.77].

From year to year, the number of evening schools grew across the Karaganda region. For example, in 1953, there were 30 schools for working youth in the region, which numbered 5195 students, and in 1958, 38 evening schools counted 7946 students [9, p.51-52].

It should be mentioned, that the quantitative growth of the educational offers for working youth was not even. As of 8 October, 1964, according to the Central Governmental Statistic Department of the Kazakh SSR, the number of students in city and rural evening schools slightly fell in the Karaganda region: 22846 people at the beginning of the academic year compared to 18601 at the end [10, p.59-60]. Nevertheless, evening schools solved the tasks they were aiming at. Many of them helped young working people to get a secondary education along with a profession. For example, school for working youth № 9 trained mining electrical fitters, chemical laboratory specialists, drivers.

In academic year 1954–55, especially in big industrial cities, the schools were becoming mor technical oriented. At this time, much more young people with secondary school certificates worked in the production. They were later trained to mining engineers directly on site. For example, in 1958, production facility «Karaganda Coal» trained 377 specialists ; in 1959 — 379 specialists, including 86 electric locomotive operators, 128 electrical fitters, 25 coal plough-machine drivers, 55 motor mechanics and yarder engineers, 43 mine lighters, 66 winding enginemen and etc. [9, p.51-52]

By the end of 1959, there were 33 vocational schools in the Karaganda region numbering 9480 people. Since their establishment till 1959, they trained more than 80000 qualified miners for the needs of the regional coal industry [9, p.58-59]. They also trained staff for construction and agriculture.

In July 1959, the state system of labor resources was transformed into the system of vocational education, which took over schools of factory training in 1960.

According to the law of “Further development of the national education in the USSR” issued 24 December, 1958, city, rural and evening vocational schools were established and accepted young people who had completed minimum eight years of school. Higher educational level let provide workers with better knowledge of modern technologies.

Two types of educational institutions were developed during this reform — city vocational school (CVS) with the duration of study 1–3 years and rural vocational school (RVS) with the duration of study 1–2 years. Besides, evening vocational schools were opened, where already working young people could upgrade their skills.

16 February, 1960 the Council of Ministers of Kazakhstan has issued resolutions «Improvement of education of working youth» and «Measures for improvement of living conditions of teachers in rural areas».

The number of learning working youth has also increased thanks to resolution of the Council of Ministers of Kazakhstan «Reorganization of secondary schools into secondary specialized schools with vocational training» issued on 31 August, 1960.

In 1961, in order to improve the work of specialized secondary schools, the Ministry of higher and vocational education of the Kazakh SSR established 13 main vocational schools. The Karaganda Mining School was also listed among the main specialized secondary schools [11, p.58].

An important role in further development of higher and vocational education played the resolution of the Central Committee of the Communist Party and the Council of Ministers of the Kazakh SSR № 615, issued 1 August, 1963 «Implementation of the Resolution, issued 9 May, 1963 by the Central Committee of the Communist Party and the Council of Ministers of the Kazakh SSR, № 533 «Measures for further development of higher and vocational education and improvement of young specialists training». This document proposed to gradually increase the number of specialists with higher and vocational education, in order to meet the labor demand in the national industries. It was planned to increase the number of middle-level specialists rapidly. The system of vocational education in Karaganda solved this task with mixed success. For example, the CVS №107 numbered 280 students in the 2nd quarter of 1965 [12, p.59], and in the 4th quarter of the same year, the number of student increased till 302 [12, p.59]. In the 1st quarter of 1969, the school numbered 650 students [12, з.37], in the 4th quarter of the same year there were only 544 students [12, p.32]. In 1969, the number of students also reduced at RVS № 12: in the 1st quarter - 234 people, in the 3rd quarter — 158 people [13, p.72].

Due to the fast growing national economy it was necessary to teach enough professionals for the industry and agriculture as soon as possible. As of 1 January, 1967, more than 4500 vocational schools trained over 1,5 million of people, among them 48 vocational schools in the Karaganda region, including 36 city and 12 rural ones [14, p.81, 85]. At the same time 2 technical vocational schools for 520 students and a building school for 420 students were established in the region. It was planned to graduate 7987 people, in fact 8150 (102 %) young professionals received a full vocational education. Besides, according to agreements with state farms, evening courses at the schools attended 817 tractor operators, maintenance persons, drivers and other specialists.

In academic year 1969–1970, there were five vocational schools in the Karaganda region: three of them provided a 4-year education (CVSs № № 1, 2, 3) and two offered 3-year study programs (SVSs № № 15, 138). They numbered 2324 students and 219 teachers and on-the-job trainers [15, p.2, 5].

To sum up, in Central Kazakhstan, as well as the country in general, vocation education played an important role in providing the national economy with qualified workers in the 50s-60s of the 20th century.

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Materials of Conferences

OVERSYSTEM AND SYSTEM CHALLENGES FOR KAZAKHSTAN EDUCATION IN THE LIGHT OF KEY TENDENCIES OF THE WORLD EDUCATIONAL SYSTEM'S DEVELOPMENT

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Within the conditions of globalization and formation of post-industrial society, advance development of human resources is the basis for sustainable development and competitive ability. That is why education is a strategic priority in the most countries of the world. The Sorbonne Declaration states: "Europe is not only euro, banks and economics; it must become a Europe of knowledge". Different long-term educational models are being developed in order to assure the priority of educational sphere. For instance, in Russia the project "Russian education – 2020. Educational model for economics based on knowledge" is elaborated.

In Kazakhstan significant work was accomplished to assess and adapt the important priorities of the country to the relevant trends of education development in the world. World trends are considered through the prism of tasks to be solved within the long-term Development Strategy of the republic "Kazakhstan - 2030", the Strategy of Industrial and Innovational Development of the Republic of Kazakhstan for 2003-2015, other fundamental strategic documents concerning integration of the country into the community of most civilized countries of the world.

Generally, the set of oversystem challenges to be considered when elaborating the long-term Strategy of Reformation and Development of Kazakhstan Education System, was determined. (See Project of Long-term Program of Kazakhstan Education System Development for 2020). That is:

- prevalence of economics based on knowledge and science-intensive technologies;
- raising requirements to the quality of education service, raising requirements to broad competences and fundamental knowledge, skills and practice;
- trends of extending the terms of world school education with introduction of profile education (12-year school education);
- extensive use of information and communicative technologies in every-day practice;
- increase of competition on internal and external labor markets;
- globalization, and resulted internationalization of education.

The work aimed at specification of these challenges is in process at present.

The long-term reference points of republican education policy that form the base of Educational Model of Kazakhstan – 2020 were elaborated with account of the analysis of the current state of the Kazakhstan education system, oversystem challenges and system problems.

The Project of Long-term Program of Kazakhstan Education Development till 2020, elaborated in accordance with this Model, includes the basic characteristics to be attained by the education system within the course of Program implementation.

Pre-school education:

100% of children will study in children's pre-school organizations of different types and property categories according to flexible educational programs.

This will result in high level of preparation of every child to school (city child as well as a child from a remote village), formation of important starting intellectual potential and good health, thus providing successful development during the whole life.

Secondary education:

By 2020, all the schools will work according to programs of 12-year education. The content of education will assure the attainment of national ideas expressed in basic competences of students. The school graduates will:

1. Understand the scientific worldview, have skills of research and creative activities;
2. Be able to relate their possibilities with the real prospect of planning and arranging activities, be responsible for his decisions, deeds and life;
3. Be patriots of their motherland – the Republic of Kazakhstan, display civil activity, understand the political system, give weighed assessment of social events;
4. Socialize on Kazakh, language of international communication, and foreign language; be motivated to communicate on their native language;
5. Be able to use new information and communicative technologies, including the purposes of self-identification and professional growth;
6. Be able to acquire social skills, undertake social roles in family, society and cooperation with other people;
7. Make use of knowledge for supporting ecological balance, take care of environment;
8. Understand and appreciate the culture of their people and cultural variety of the world; be devoted to ideas of spiritual harmony and tolerance;
9. Have skills of healthy life-style and leisure arrangement.

The following conditions will contribute to attainment of these goals:

- five-day regime in one shift;

- subject classes, meeting contemporary requirements;
- unified information-educational portal of the country, and access from each school;
- every schoolchild has a computer;
- balanced hot meals for every schoolchild.

This will help to minimize the level disease among schoolchildren.

High level of education quality will be attained due to:

- elimination of overstudy through reducing the number of compulsory subjects and introduction of integrated courses;
- increase of schoolchildren's independent work, use of project-research and information-communicative technologies while teaching, preparation and presentation of projects by groups of students;
- logical completion of studying school subjects and introduction of pre-profile preparation in the basic school;
- choice of individual educational path in secondary school, possibilities of studying under international educational programs;
- education according to two academic directions – natural and mathematic and social and humanitarian;
- personalization of education – by 2020 every student will have a registration number (portfolio) that allows monitoring the academic level during the whole course.

The education quality will be proved by high results of students displayed in international comparative researches TIMMS, PISA, and PERLS, etcetera.

Technical and professional education:

Technical and professional education will correspond to development of industrial technologies.

By 2020 every citizen of the Republic of Kazakhstan will have an opportunity of getting professional education at the required level. Everyone will have access to constantly updated module programs of professional qualifications in order to adapt efficiently to the labor market requests. Not only colleges and professional lyceums will provide education and retraining of human resources, but learning centers of companies that create and use high technologies, centers of qualifications development, which will complement professional lyceums.

Demand for graduates of technical and professional educational institutions will reduce the level of unemployment. The potential of graduates of technical and professional education for further professional education will heighten.

A modern system of certification, assessment and acknowledgement of skills and qualifications of technical and professional education graduates, will be introduced in order to train the specialists for innovative economics; it will be independent of educational institutions. Employers will actively participate in determining the content of educational programs and qualification requirements to graduates of educational institutions of technical and professional education.

Higher and post-graduate education

The system of higher education and post-graduate education will adequately react to accelerated processes of globalization and unification owing to updated technical base, increased role of information technologies and rationalization of educational and methodological base according to world trends. Work in his field will be conducted in close cooperation with employers, including heads of joint ventures.

The majority of learning programs will be implemented in English. Modern laboratories for researches at breakthrough projects of scientific and technical development, are projected, they will contribute to innovative development of education system. Efficient methods and forms of teaching will be implemented, highly qualified specialists will be involved.

By 2020, the majority of higher education institutions have to pass international accreditation (institutional and specialized) and participate in international academic rating of universities.

The integration of education and science will be attained – innovative structures, scientific laboratories, technical parks, business- incubators, and centers will be created. Higher education institutions will become the research centers of science. Scientific and teaching resources of highest qualification will be prepared according to prior scientific and technical directions in Master's and Doctor's departments of innovative higher education institutions and scientific organizations, as well as through sending the students of "Bolashak" scholarship to foreign higher education institutions for learning purposes.

The work is submitted to Scientific Conference "The Problems of International Integration of Educational Standards", England (London) – France (Paris), April, 20-28, 2009. Came to the Editor's Office on 02.03.2009.

CHARACTERISTIC OF INNOVATION EDUCATIONAL MODEL FROM THE POINT OF VIEW OF EDUCATIONAL SERVICES CONSUMERS

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Today the development of innovation educational model is one of the tendencies in modern high school progress. The article highlights the analysis of some peculiarities and distinguishing features of this innovation model. The present day needs in this model are described from the point of view of educational services consumers.

Recently such terms as innovation education, innovation universities, innovation educational programs become more and more popular. Innovation education supposes teaching in the process of new knowledge creation. It happens at the expense of integration of basic science, education process and manufacturing.

The decrease of traditional universities competitive ability and low integration of science and manufacturing testifies about the necessity of absolutely new universities formation. Unfortunately, today traditional education as a system of knowledge acquisition drops behind from the real needs of modern science and manufacturing.

During the recent times not only the public but also the government pays much attention to the problems of innovation education. It happens because of the realization of one of the first-priority national projects "EDUCATION" (1).

Many researchers suppose that the training of specialists must occur in the network of competence approach. Some researchers think the building of the formation mechanism of graduates' professional competences is the basic methodological task of universities and colleges (2).

Today there are some educational models. They are traditional, rationalistic, humanistic and none-institutional. The comparative analysis of them has shown that a traditional model and a rationalistic one don't focus on the personality of a pupil as a subject of any educational process. It means the lack of the vector aimed at the development of value-sense, informational competences and also the competences of personal self-development.

As for humanistic educational model, it should be noticed that some of its varieties admit the priority of development over the teaching and focus on a personality. So, a humanistic model can be defined as an integrated one.

Each of these models has as advantages, so disadvantages. That's why it is reasonable to suppose that now-a-days an absolutely new advanced model is being formed. First of all, it includes the positive features of traditional and humanistic models. It is an innovation model of education (IME).

It's no matter to consider IME without consumers of educational services because exactly they make great demands of the organization of teaching process. And these demands are revealed in educational needs. In our opinion, these needs must be realized in the level of graduate's competence as much as possible and, of course, with a glance of modern society.

If, in general, the need in education can be set by aims and strategy of its acquisition, so educational needs within the bounds of a new IME can be defined as tactical because they support the process of a decision- making. Thus, defining educational needs in IME we can denote the basic list of them which separate this model from others:

- Need in social availability of higher education;
- Need in life-long education "through the whole life";
- Need in education with individual plan according wishes of a student himself;
- Need in economic accessibility of getting education;
- Need in accessibility of communicative interaction with a teacher the same as the use of information technologies;
- Need in the quality of getting educational services irrespective of pupil's location;
- Need in control over the results of teaching irrespective of pupil's location;
- Need in updating of education content according to the demands of innovative economics;

Need in constant perfection of educational material.

It should be noted that the nature of educational needs in the concrete historical conditions depends upon the complex of sociocultural factors. And, finally, it is defined by a man's place and value in the society. In the modern information society an educational need is the condition of man's self-actualization and self-development. In turn this answers to the system-functional approach of a new educational system building.

So, in absolutely new educational model needs in education can appear if:

Educational needs are brought up to date and there is no opportunity to satisfy them in the existing educational models;

There are obstacles for teaching which can be removed in IME. Such as interactivity, openness, flexibility, relatively low cost;

There is complaint to the conditions of getting education which can be satisfied in IME as it allows to use new forms and training aids.

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The work is submitted to Scientific Conference "Priorities for Science, Technology and Innovation», Egypt (Sharm el-Sheikh), November, 20-27, 2009. Came to the Editor's Office on 20.10.2009.

THE MANAGERS' EDUCATION VOCATIONAL TRAINING PERFECTION WAYS UNDER THE KNOWLEDGE COMMUNITY DEVELOPMENT CONDITIONS

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Under the XXI –th century global challenges present – day conditions, the whole Humanity survival has been connected with the sustainable development single model on the basis of the social intellect and the educational community correlation. The man's qualities, the educational systems qualities in the society, and the social intellect qualities the priority development law is being become the leading one in the humanity sustainable development new model. The education is being become the reproduction first string and mechanism of the social intellect new quality, and it is being defined the future society formation – as «the knowledge society».

The UNESCO in its last policy documents has recognized the highest priority to the education quality policy and to the «knowledge societies» conception development. It has, moreover, been emphasized, that their construction will have to be considered among the most significant means of the peaceful and the just world community, including the large – scale rising generation familiarization with the science and the knowledge.

The education **decentralization, democratization and humanization** has been one of the main directions of the Kazakhstan educational policy for the last years. This process is inseparably being connected with the management democratization – e.g. by the academic freedom and powers extension of the educational organization. Not only the educational administration bodies of the central and the regional levels, but also the local educational administration bodies, including the educational organizations themselves are bearing their responsibility for the educational quality at the educational systems decentralization and democratization.

The education humanization, the main idea of which – this is the educational and the upbringing creation system on the national and the cultural basis, with due regard for the universal values, which are quite capable to the self – development, in accordance with the personality and the society demands. All these principles realization is needed the transition from the «rigid» educational structures to the content variability, the educational forms and methods, with due regard for the national and cultural country's traditions just in the educational school's process. This is meant that the personality with her or his interests, necessities and possibilities will have to be raised in the center of the educational and instructional process.

Now, it is getting more and more evident necessity of the cohort formation of the managers new generation, under the deep qualitative shifts in the educational development conditions. Really, the developing school is constantly being needed just in the principled and fundamental other type of the chief – the efficient manager, and who is capable not only to be at the head of a school, but also, who is able to upgrade it at the qualitative new level.

First of all, the «manager» notion is associated with the new type of the manager, one of the distinctive features of whom is **the basic occupational management education presence.** The educational institutions management – this is not simply the experience, which everyone is able to gain, but this is the scientific knowledge field, whom it is necessary to become proficient, and this is also the art, having demanded the natural inclinations of the peculiar talent, and also the leadership qualities.

Until recently, the educational institutions managers have received their management education only in the improvement of the occupational skill system through the extension courses for the improving their qualification organization.

Meanwhile, the managers' education vocational training model has been developed in the framework of the Higher School, which is being served the efficient management activity basis in many developed countries throughout the world, such as Great Britain, Germany, France, Australia, Canada, Sweden and the others.

The world theory and the management practice analysis is being testified on, that one from the classical management leading differences from our domestic management theory is being consisted in the manager destination comprehension, as the figure, having defined the people joint activity, and the joint venture final success in the organization main goals achievement, and also its vocational education necessity. The management peculiarity, as the scientific, well as the practical basis of the management contemporary conception is being consisted in, that the integrated expression of the market economical management principles, the human factor, the professionalism, the special management education, the up – to – date information technologies, the crisis management, and the strategic approach are being found in it. The competent manager makes the crisis phenomena much softer, and promotes the stabilization, and serves the competitive recovery, and, consciously, has his influence upon the technologies renovation, and also motivates the further innovations in many foreign countries.

Also, the development necessity of the managers' multi – leveled education vocational training model has already been ripened in the Republic of Kazakhstan. The Kazakhstan educational system has been becoming more and more data – intensive high – capacity, power – intensive, and science – intensive, as in the whole world. It has been resulted in, that the thousands of the educational and instructional institutions more and more are being needed not only in the

directors and the chiefs, but also in the managers of the middle and top – down managers, in the analysis and the planning departments. All the attempts to deal successfully all the challenges only, owing to the teachers' labor intensification, owing to the demands rise for the analytical, the designing, and the report and accounts activity, and the necessary documentation are being resulted in the occupational and the personality degradation, and the teacher's occupational prestige decline. The young people outflow from the educational sphere is regarded, as the bright indicator of this phenomenon: by the statistics data, the teacher's average age of the Republic of Kazakhstan is steadily being risen (e.g. it is grown old), and it, moreover, is made up fifty years.

The development necessity of the managers' multi – leveled non – stop education vocational training scientifically – grounded and national model in the framework of the Higher School system, in the world experience context, and the national priorities of the XXI –th century has already been become the especially actual challenge under these conditions. The «Managers' Education Training in the Higher School, as the Kazakhstan's Educational System Modernization Factor on the Way of the Knowledge Society» Project has been developed in the Kazakh National University for this challenge solution. This Project has been directed at the reformation assistance of the Kazakhstan education by means of the competent specialists and experts training in the educational policy field, having possessed the challenge vision methodology, the educational development transformation and prognostication, and they are quite capable to the high – level social responsibility, and also to the creative activity.

In Kazakhstan, the current Project has been become, as the Mega Program's part: **«The National Idea – as the Kazakhstan's Development Basis»,** which has been directed in the democratically open society, the socially and political, and also the sovereign Kazakhstan's cultural development in the world development context formation, with the advice and the consent of the Ministry of Education and Science.

This Project realization has been carrying out in three main stages. The Data Bank on the managers' education training practice development just in the leading Institutes of the Higher Education of Europe, Australia, and the USA has already been accumulated *at the first, preparatory stage of the* Project. It is universally recognized, the English and American management training preparation model, which has already been receiving its further development and also in Kazakhstan, is regarded, as the most advanced one, at present. The two stage of the educational process of the main (e.g. management) education, the continuity of study, the training programs flexibility and the practical direction are its distinctive peculiarities and the special features. It has been included the undergraduate studies – the four years (e.g. 48 months) specialists and experts training on the management specialties, and the graduate program on the corresponding specialty. At present, such kind of education has been receiving its further development, in general, by the «Master of the Business Administration» and the «Master of the Public Administration» by the specialty (e.g. MBA and MPA), in Kazakhstan. The programs insufficient volume by the management training preparation for the educational system, having had, at present, has been realizing just in the separate Universities (e.g. The Kazakh National University after Al – Faraby, The Kazakh National Pedagogical University after Abaya, The Eastern – Kazakhstan State University after S. Amanzholov, The Karagandinsky State University after E.A. Buketov). However, all these above – mentioned Institutions have been concentrating, in general, the teachers' education training.

The new environment is being demanded the covering wide sphere of the specialized fields: the management, the marketing, the finances, the accounting and the auditing, and also the responsible decisions making practice just from the managers of all learning curves and the skill levels. The «Training Challenges and the Education Managers' Occupational Skills Improvement» round table has been organized by the Project's authors with the participation of the representatives of the Ministry of Education and Science, the Academy of Administration at the President of the Republic of Kazakhstan, and also the officials a number of the educational system departments – the Institutes of the Higher Education, the comprehensive schools, and the occupational schools, having taken into consideration the pressing need in the non – stop training occupational education special programs development and the further introduction and also the managers' education retraining. The non – Governmental organizations officials have also taken their part in the «round table» work: «The Open School», «The Development and the Training for the XXI – st Century», «The Institute of the Higher Education Lecturer», the programs director on the education of the «Soros – Kazakhstan» Fund. The «round table» participants have also worked out the suggestions and the guidelines, which have also been taken into consideration at the Conception development and the educational and subject programs formation of the contemporary managers' education training.

In the second stage, in general, the managers' education multi – leveled non – stop training Conception Project has been developed, and it has been published for the purpose of the discussions and the suggestions introduction into the Kazakhstan Higher School Messenger. Further, just before the whole of the educational process in the Kazakh National University after Al – Faraby, the MA course educational program and the academic curriculum in the direction of «The Management in the Educational Sphere» have already been worked out, the training process structure has been elaborated, in accordance with the assigned

tasks, some methodological seminars with the participation of the University lecturers for the program «final concentration» have already been carried out. The senior staffs, including the specialists and the experts, and also the University departments' scientists and scholars have taken their part in the program working out: the pedagogy one, the psychology one, the sociology one, the management one, the economic theory one, and the civil law one. The academic curriculum has been formulated, with due regard for the program participants potential requirements, and also the managers' education training foreign experience.

The training and subject schedule of the «Management in the Educational Sphere» educational program for the 2007/2008 academic year has included in itself: the required studies, and the free electives.

The Required Studies:

The Strategic Management in the Education;

The Educational Politics: the Analysis Practice;

The Educational Legal Foundations in Kazakhstan;

The Educational Economy;

The Management Psychology. The Leadership in the Education;

The Management Modern Theories by the Educational Systems;

The Quality Management System in the Education.

The Free Electives:

The Management Actual Challenges in the Education;

The Educational Sociology;

The Educational Reforms Comparative Analysis;

The Management by the Changes;

The Designing in the Educational Sphere;

The Expertise and the Auditing in the Educational Sphere.

This program has been accredited by the Ministry of Education and Science of the Republic of Kazakhstan, as the Master's degree occupational training program on the «Management in the Educational Sphere» program. Thus, all the graduating seniors by the program finish are being received the Kazakhstan State Diploma with the promotion to the rank of the «Manager of the Education» academic degree. As the specialists, well as the experts from the Central Asia are quite able to receive the Kazakhstan State Master's degree Diploma – by the getting in the Ministry of Education and Science of the PK nostrificational document for their own Diplomas on the Higher Education.

The methodological facilities tasks of the training process in the MA course by the planned program have already been conducted in this Project stage. The Project authors, having defined the content main parameters and the training process quality criteria, have set lecturers the preparation format for the given courses, as **the teaching and methodological complex (TMC).** At present, the TMCs have been prepared, practically, by all the delivered courses. Many from the TMC have been included in themselves the necessary chrestomathies or the reading books by the course; the specific part of the TMC has already been revised and supplemented by the authors' textbooks and manuals, guides and educational supplies of the scientists and scholars. For all this, all the TMCs, as the required course, have «the basic complete set», having included the vocational training program in itself, the short lectures summary, the manipulative material for the seminar studies, the paper works model list (e.g. the library – research papers, essays and the others), and also the bibliography by the whole course.

Besides, to the training process beginning and in the subsequent period, the work on the preparation for the publication for the purposes of the teaching several collections, the content of which are being made up the documents, which are quite accessible to the readers' wide circle (e.g. the experts' reports, including the foreign ones, and also the sociological investigations results, having conducted by the Institute of the Strategic Studies within the framework of the educational reforms monitoring in the country) has been done by us. The subscription has been made for the necessary Russian journals, and also for the "Education Complete" full – text database journals.

The managers' field, and also the leading specialists from the management, the economics, and the civil law spheres have been invited for the Master's program realization in the direction of «The Management in the Educational Sphere». So, the «Educational Politics» course has been conducted by the President of the Kazakh Academy of Education A.K. Kusainov, the «Educational Legal Foundations» course has been delivered by the Doctor of the Law (S.J.D.), the head of the Civil law Department of the Kazakh National University E. Amirkhanova, the «Educational Economics» course – by the Doctor of the Economics, Professor E. Sarbasova and the others. It has been included the seminar – training, which has been conducted the Programs Manager on Business and the International Education of the Pittsburg University (Kansas State, the USA), Professor Chung Li, in addition to the MA course academic curriculum. Besides, it has been organized and conducted the «Economics and Educational Management» seminar in conference with the United States Information Agency (USIA). This seminar has been conducted by Professor Steven Haineman from the University Vanderbilt, the USA. At this seminar, they have discussed the following challenges: "The Educational Programs, the Products and the Services International Market"; "The National Investment Strategies"; "The Investments Management Internal and External Parameters in the Education"; "The Non – Market and the Market Economies (ME): What Is the Difference in?" and many other challenges.

Thus, it has been summed up the final discussions results of the Project *at the third final stage of it.*

The program participants have repeatedly answered the specially developed form questions, that have been permitted for the organizers to estimate those or other training courses of studies, the educational and the methodological complete sets and the text – books, the manuals, and the educational supplies of the separate seminars – trainings the efficiency just in the course of the educational sessions and at the expiration of them. The program participants' assessments have permitted to suppose, that the program has been carried out the main tasks and the targets, having faced it, and, in general, the Project has been achieved its final end.

The Project Manager, the Doctor of Education, the Professor Z. Isaeva has taken her part in the Central and Asian «The New School: the Possibility Space» Theoretical and Practical Conference, which taken its place at the Issyk Kul, Kyrgyzstan, October, 10 – 12, 2006 with the Education Support Institute (Budapest), The Asian Development Bank, UNICEF, USAID (PICS) assistance. The Professor Z. Isaeva has conducted her monograph presentation «The Education Managers Preparation in the High School: the Kazakhstan Experience», in which it has been given the progress report analysis on the results obtained by the Project in the framework of this conference. This presentation has been roused the great interest at the specialists – experts attendants, who have highly evaluated the successes obtained, as the democratic transformations in the field of education. The productive analysis results exchange and the achievements evaluation has been permitted to lay down the ways for the subsequent reforms advancement in the educational system just in the Central – Asian region's countries. In Kazakhstan, the professor Z. Isaeva's monograph has been received the prize after I. Altynsarin, as one from the best papers on the fundamental researches in the humanitarian field of the sciences.

At present, the Project Managers are constantly doing their research activity on the teaching program development, they are constantly making their partners searching, as in the country, well as abroad, they are constantly establishing their contacts with the country's regions, and also they are constantly working on the funds development for the scientific and research program component development.

In the perspective, this investigation is being seen in the long – term international collaboration establishment and the partnership with the Universities, having had the similar additional education vocational programs, and also the MA program in the direction of the «Management in the Educational Sphere».

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The work is submitted to Scientific Conference "The Problems of International Integration of Educational Standards", England (London) – France (Paris), April, 20-28, 2009. Came to the Editor's Office on 08.04.2009.

INFLUENCE OF CONTINUING EDUCATIONAL ENVIRONMENT ON THE GENERAL FACTORS OF CHILD'S HEALTH

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"Educational environment" means specific, task-oriented conditions of interaction between a unique inner (subjective) world of the developing personality and a real (objective) world and other people. It is aimed at discovering and developing the unlimited child abilities.

It sounds banal to say, that one of the main tasks of school is to create the best conditions for child's development within the educational environment. At the same time, it should be mentioned, that school and all its structural elements are responsible for a safe personality development and its psychological health in conditions of a specific educational environment. That means, of course, that teachers need to participate in planning of the educational environment

and conducting different diagnostic steps and examinations, which cannot be the goal and the main direction of education. Physical and moral health of students is one of the problems, which solution should not depend on social and political situation. This problem has long occupied leading scientists, and to some extent was solved in the praxis. Current crucial time in the history of our country is not an exception. In modern Russia, the general public is being growingly concerned with what many scientists and experts find very important: despite all harsh economic and social problems, dramatically worsening health of school children should not be ignored as it threatens the country's future. One of the promising directions of public health improvement is currently a valeology movement. Despite the contradictory opinions, nobody doubts, that this humanistic idea tries to solve the questions, that are vitally important for each of us and the future of Russia. The current article focuses on the developing of methods for a human health evaluation, basing on the valeologic principles.

Developing the methods of student's health evaluation according to Kiriy V.N. and Voinova V.B., it should be taken into account, that it consists of two different stages – creation of an individual psychophysiologic profile and continuing control on the basis of the revealed individual psychophysiologic qualities. Firstly, the profile should include the data about parents (genetic, social, economic and health condition), which could have considerably influenced the health of fetus and child after his birth. Further information concerns the pregnancy and childbearing, child's development in the first months of life. At the same time, genetic analysis of the child should be carried out, which can be used for the future generations. As time goes, the profile should be updated with the personal physiologic, psychophysiologic and mental data; they should be latter specified during examinations and differentiated diagnostics. Theoretically, it is clear, that, on one hand, the data volume should be relatively big in order to provide enough information about a person. On the other hand, the information can never be complete, as it is impossible to acquire and use such a wide data range. That is why a minimal data range should be determined, which is sufficient for diagnostic, prognosis and correction tasks. The whole complex of these data, according to the above suggested approach, should be divided into two groups – individual physiologic and psychological qualities. The first group should include: anthropometric data; information on the main physiologic systems: locomotor, cardiovascular, immune, respiratory, digestive, urogenital, central nervous, sensory (visual, acoustic and others). The second group should include the information about the main mental processes (memory, attention, thinking) and personality (world view, attitudes to people, social growth and etc.). The first stage ends with the creation of the individual psychophysiologic profile is followed by the 2nd stage – use of physiologic and psychological information for a continuing student's health evaluation. The health condition is determined during the examinations; their frequency depends on the age, health condition, activities, personal motivation and etc, but not less than once a year. The examinations are to be conducted at the specialized valeologic offices at schools, as well as at valeology centers in the home area. When a child begins to perceive himself as a personality, which happens in the elementary school years, the examination can also include the following questions: role of health in the individual system of values, student's subjective opinion about his health condition and changes since the previous examination, somatic- и psychodiagnostics according to the above mentioned scheme. The results are then rated according to the age and gender standards (regional, professional or group norms, for example, norms of a school class) and presented on the following scale: с sufficient functional reserve – disturbed adaptation (with two intermediate states). It is important, that the valeologic diagnostics is flexible about the health ratings, as it combines a statistical approach with its limiting factors, which are applied to different social groups, and an individual approach, which considers specific personal parameters. Further complex health evaluation is conducted using the fuzzy-set theory, which let work with the qualitative (including linguistic) variables. The key step of this evaluation is to estimate the chances of a correction by means of an intersystem interaction, when some body's systems deviate from a normal functioning state. Final evaluation is presented as an integral qualitative rating (according to the above mentioned scale used for specific body's system evaluation), as well as in a detailed form. Before recommending a rehabilitation course or an additional examination in a clinic, person's financial abilities should be cleared up. After the rehabilitation or treatment course, an extra unscheduled examination is to be conducted, in order to evaluate the results and give further recommendations. Generally, analyzing the examination results, one should consider the norms (age, sex, profession and etc.); individual psychophysiological characteristics of the examined person (when creating a standardized individual psychophysiologic profile); individual dynamics of an age-specific integral health index (health quality) and condition of body's systems; earlier rehabilitation or treatment courses and their results.

The work was submitted to international scientific conference «Modern education. Problems and solutions», Thailand, December, 20-30, 2009. Came to the editorial office on 05.10.2009.

LANGUAGE PERSONALITY OF A TEACHER AS A FACT OF PROFESSIONAL CULTURE

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Language is a system of objective, socially fixed signs which coordinate the notion and typical sound, system of rules how to apply and combine them. That's why the perfect mature language personality may be considered an individual who possesses all these systems and is able to use these signs and rules in different communicative situations.

If the language is a means of communication, speech is a kind of communication, i.e. speech functionally "inserts" the language into the context of usage. The language manifests itself in speech and only through it performs its communicative function. Communication as an act of interaction of people is the most important mechanism of individual formation as a social, cultural personality. Being a social process, communication helps to form society in general, performing a living function in it.

Communication itself, because of its social psychological nature, is a complex, rich in content form of activity, because there are elements which really and potentially hamper the optimal level of functioning. The peculiarities of personality expression, the system of its relations, conditions and forms of communication, the level of language skills development and so on convert any communicative act into a difficult task, multifunctional activity. "To communicate fully, the person must possess the whole range of skills and abilities. He must, first, quickly and correctly orient himself under conditions of communication. He must, secondly, be able to plan his speech correctly. He must, then, find adequate means to express this content. At last he must be able to provide the reverse connection. If one of the links in the act is broken it will be ineffective" [1]. Thus, communication as a final aim of interaction between people presupposes that mature language personalities should take part in communication. Personalities, who are able to choose adequate language means to transfer their ideas and realize them in their speech taking into account definite communicative tasks and conditions. In modern linguistic research the level of language knowledge is described with the help of such notions as language competence, levels of language personality development, communicative culture and communicative competence, types of speech competence.

It is supposed that a high level of language competence is represented in works of linguists, post graduated students, researches of philology, primary school teachers, teachers of Russian and Literature – people who are professionally trained not only for practical usage of language in communicative acts but for the analysis of their own actions, reflection about the language of fiction. The high language competence coordinates with such types of speech culture as colloquial, literal and elite.

Professional culture of a teacher presupposes understanding of life and professional aims and senses, self-analysis and self estimation as a language personality, analysis and estimation of pedagogical situations. So, a teacher as a language personality plays an important role in subject-subject educational dialog "teacher – student". Formation of cultural environment in a student group depends on the level of teacher's communicative culture. So, teacher's communicative culture is an obligatory part of pedagogical process, means and conditions of realization of all functions and kinds of professional activity.

The basis of communicative culture of a primary school teacher consists of many components:

– competence in expression of his thoughts (in writing and speaking)
– speech expressiveness
– mimicry and gesture competence
– the ability to orient himself in information, select the best content for teaching and upbringing of students
– the ability to realize and regulate speech behavior (either his own one or his interlocutors') taking into account a concrete situation and aims
– the ability to improvise in order to influence the audience
– the ability to see and hear himself while communicating and estimate his own speech behavior critically
– the ability to understand the interlocutor's originality and select the most expressive intonation, exact words, correct grammatical and stylistical combinability for the most effective influence on the listeners and so on.

Conclusion

Teacher's professional culture includes understanding of life and professional aims and senses, self-analysis and self-estimation as a language personality, analysis and estimation of pedagogical situation. Formation of cultural environment in a student group depends on the level of teacher's communicative culture level, that's why language personality becomes a fact of professional culture.

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The work was submitted to international scientific conference «Basic and applied research. Education, economics and law», Italy (Rome, Florence), September, 6-13, 2009. Came to the editorial office on 17.08.2009.

THE INNOVATIVE APPROACH TO TEACHING MATERIAL CONTENTS FORMING

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In the 21 century and the new millennium educational problems have become priority all over the world. What should be taught? It is a question which has been an object of research for many generations of scientists in the educational sphere. One of the primary factors, allowing to prepare a graduate of a better quality, is the contents of education. Nowadays a huge volume of knowledge, collected by the mankind, does not allow to assert, that a person will sometime seize all of it in full even after a very long training period. According to this idea, at present one of the central problems is the problem of filling up the contents of educational training programs of all levels and steps, finding an optimal balance between the educational components at various levels.

As it follows from the works by V.A. Romenets, N.A. Selezneva, I.B. Morgunov, T.V. Nersesov (1990), A.V. Abramov (1999), N.I. Sannikova (2006), S.B. Igoshev (2008), etc. to optimize the system of a specialist's instruction is possible on the basis of mathematical methods usage. As the ground for mathematical models of education contents concepts serve the theory of sets, theories of matrixes, theories of graphs, the mathematical statistics and probability theory.

Applying mathematical methods to educational contents construction allows to present the content of a teaching material in the form of elementary educational units set for each discipline. Elementary educational unit (EEU) is understood as an educational unit which has a minimum volume of the information. In particular, one could call a EEU a concept, a definition, a statement, a term, a law, a principle, a rule, a keyword, etc.

Emphasizing EEU in a teaching material allows rationalizing the process of defining the intrasubject and intersubject relations. So, as a result of the analysis of the content of a teaching material of a theme «Physiological mechanisms of motor skills» using three textbooks for sports high schools: N.V.Zimkin (1975), J.M.Kots (1986), A.S.Solodkov, E.B.Sologub (2001), in the first source it has been found 136, in the second - 182, in the third - 126 EEU. In total in the three sources 444 EEU have been pointed out. As a result of their sorting there have been alphabetically allocated 346 non-repeated and 98 repeated EEU. The percent of teaching material coincidence has made 22 %.

In each textbook only 7 content-identical EEU (2 %) are found. In two textbooks there are only 84 content-identical EEU (24 %). The quantity of non-content-identical EEU of a considered theme makes 255 EEU (74 %).

It should be taken into consideration, that while selecting teaching material on one subject matter one could define the inclusion of an EEU by the degree of its repeatability in the educational literature. The more often one and the same EEU is found in different sources, the higher is its probability of being included into an obligatory material for studying.

As a result of the analysis of teaching material contents of the theme «Motor skill» on such disciplines as "The theory and the methodic of physical training technique" (by the textbook of Z.K.Holodov's, V.S.Kusnetchov, 2003); "Physical training and sports physiology" (by the textbooks: N.V.Zimkin, 1975; J.M.Kots, 1986; A.S.Solodkov, E.B.Sologub, 2001); "Biomechanics" (by textbook D.D.Donskoj, V.M.Zatsiorsky's, 1979) it is established, that in "The theory and the methodic of physical training technique" there have been named 109 EEU, in "Physical training and sports physiology" - 346, in "Biomechanics" - 352 EEU. In total in the three subject matters there have been pointed out 807 EEU. Hence, the number of the found EEU on the theme «Motor skill» in "Physiology of physical training and sports" and "Biomechanics" surpasses the number of EEU in "The theory and the methodic of the physical training technique" more than in 3 times.

As a result of sorting the found EEU alphabetically it is established, that knowledge from biomechanics in the textbook on the theory and the methodic of the physical training technique is not mentioned. In "The theory and the methodic of technique of physical training" 5 EEU are considered from the position of physiology of physical training and sports. However in their content these EEU do not coincide with "The physical training and sports physiology". On the whole the percent of teaching material coincidence between these disciplines has made 0,62 %. This fact to some extent can serve as an explanation of the reason why each subject nowadays is studied as an independent one, not connected with other subjects.

It is possible to consider, that if as a result of sorting one and the same EEU repeats in different subjects it is practical for studying first of all within the limits of the subject studying which students come across this EEU for the first time. And in the following subjects this EEU should be mentioned in the form of a reference, or as a short repetition.

EEU can be a basis for working out educational specifications for a theoretical knowledge estimation. As EEU covers the minimum volume of the information, an elementary educational unit by definition can be appropriately valued as one (EEU=1). One EEU is equaled to one point. The maximum quantity of points on a theme is regulated by the quantity of EEU in it. The quantity of EEU is the basis for working out the educational specifications of a discipline.

Educational specifications are developed on the basis of the estimation theory.

So, in the subject "Biomechanics of Sports" there have been allocated 1357 EEU. Using a proportional scale, namely percentile rating scale, the educational specifications of "Biomechanics of sports" have been developed. Result 1085-1357 EEU corresponded to the mark "Excellent", 556-1084 EEU – "Good", 149-555 EEU – "Satisfactory", less than 148 points – "Unsatisfactory". By the sum of the points it is possible to define a rating of the student in a group, in a year-course, among all the years.

Depending on the used rating grade scale (progressing, regressing, sigma-like or other scales) it is possible to stimulate the students work – those who are either unsatisfactory, or good, or satisfactory.

At the same time the developed educational specifications are now approximate and serve only as reference points to show some higher results in a following semestre as not all themes of subject matters are structured, and, hence, the quantity of EEU in each theme at present is not known. On the other hand, absence of due educational specifications interferes with the search of more effective techniques of training on each theme, on a subject as a whole, it interferes with the process of the educational process individualization.

Thus, an effective direction in solving the problems of volume and content comparability of teaching material, training results comparability is the use of the developed technology for teaching material structuring on the basis of mathematical methods. Moreover, using this approach allows to solve questions of intersubject, intrasubject relations more adequately, promotes rational distribution of the teaching material contents on different educational levels.

The work was submitted to II international scientific conference «Problems and experiences with the implementation of Bologna», Budva, Montenegro, June 17-24, 2009. Came to the editorial office on 08.05.2009.

PERSONALITY INFLUENCE ON OBJECTIFICATION OF SOCIAL GROUPS

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Human personality can develop only in a collective, which is one of the most important patterns of upbringing. The existing scientific concepts and theories of collectives and the role of individuals within them, as well as the collective influence on the individual's development are currently regarded by pedagogics as contradictory, unstable and conditional.

One of the most important conditions of personality influence on group objectification is, that upbringing cannot be limited by teacher's personal influence on every student. It must be supported by the diverse influence of the collective, which provides freedom and security to an individual, as well as bears positive morals and accumulates moral and artistic values in all there richness. That is why it is necessary to build a solid educational team and wisely use it for an all-round personality development. Without such collective, highly effective upbringing is hardly to be expected.

The main hallmarks of collectives are their well organized, stable and effective relations and responsibility sharing among the students. Frankpledge and indiscriminate forgiveness, often based on personal likes and dislikes, are regarded as an antipode of the collective and collectivism.

Sharing common goals and activities, group members build some interdependent relations of subordination, maintaining at the same time equal status and responsibility of all its members. This shows the main principles of the collective: common objectives and their gradual development as a condition of a constant onward progress; regular participation in different social activities; well-organized common activities. Not less important are good traditions and exciting perspectives; mutual support, trust and requirements; criticism and self-criticism, discipline and others.

Collective is a group of people, whose life and activities are motivated by positive social goals. It is effective in its self-administration and has well-organized and interdependent interpersonal relations; it aims at a common success, rich moral relations and interests, providing freedom and protection for every personality.

Creation of such collective requires time. Due to that fact, one can distinguish three stages of the collective development. A criterion of the development is the group's attitude to the educational requirements.

Each collective is, on one hand, an organization, on the other hand, a psychological group with individual influences. This let apply the regularities of a group behavior to collectives, turning them into living organisms.

Reality makes essential corrections to this model. A solid school collective originates, when the gender differences are taken into account. Gender is regarded in psychology as a social biological characteristics, which people use to define the notions «man» and «woman». As sex is a biological category, social psychologists often refer to the biologically determined differences as to «sexual». Individual socialization, including this of a child, is closely connected with the gender differences. Limitations or difficulties during joining the collective by a child are often determined by whether it corresponds with the gender norms.

Individual peculiarities of an each particular child are obviously a priority. Bur it is also obvious, that the gender differences are also important for the development of a child collective: «Gender differences cause gender separation in relations between the children, assuming, that there is and should always remain a barrier between boys and girls. Parents and

teachers often contribute to the gender separation at school and at home». But there is also the following problem: trying to break the barrier between boys and girls and ease contacts with the opposite sex, young people begin to smoke, consume alcohol and drugs.

Today, more and more attention is being drawn to informal youth groups, in attempt to understand the reasons of their aggressive and nearly uncontrollable behavior. A teacher needs to invest a lot of efforts in order to create a child collective, while asocial groups originate and unite quickly, though not always spontaneous, often under control of organized criminality. What do these groups offer to the youth, what the school cannot give them? Among the reasons, experts and teenagers themselves often mention family problems, in the first place, followed by poor possibilities for leisure activities, disappointment in adult ideals, social injustice, bureaucratic and too formal work style of state, youth and social organizations.

Besides, young people find asocial groups attractive because of their freedom and unlimited activities, wish for confidential and personal communication, no tiring adult control. These social and psychological factors of attractiveness of informal asocial groups should be considered by teachers when building teenager and youth collectives.

It is well known, how important sensual and emotional perception of the collective by its members is. That is why it is essential to create collective subculture, and no element is minor here. Everything is important: life norms in form of «code of conduct», «laws», «pledges»; rituals, membership symbols such as uniform, pins and others. By the way, such system of attributes is extremely developed in the subculture of young criminals, which is nowadays trendy and being actively popularized by mass media.

Definitely, in every school class, there are children who are hardly influenced by the collective. The number of such children usually increases with their age. It has been traditionally accepted, that the collective has a positive influence on the children, who have a favorable status in the group. Of course, when a child has a rather high status, when the collective accepts him as a bright and interesting personality, respects his right to be independent and original, it provides a favorable climate for the child's development. But the results of our study let say, that the collective influence mostly depends on the individual psychological characteristics of a child. It is not an exception, when children without a high status in a collective, enjoy its positive influence. Collective is a kind of a minor group. Minor groups differ in size and relations between its members, individual structure, values, norms and rules, interpersonal relations, aims and activities. Quantitative structure of a group is called its size, personal structure – composition. The system of interpersonal communication or, in other words, exchange of information, form communication channels, moral and emotional background of interpersonal relations provide a psychological climate in the group. Common behavior rules, which all members are to follow, are called group norms. All mentioned characteristics are the main parameters of minor groups.

A special place among highly developed minor groups take the collectives. Psychology of a developed collective is characterized by the fact ,that its target and real activity is important for a great number of people, and not only for its members. Interpersonal relations in the collective are based on mutual trust, transparency, honesty, respect and etc. In order to be called a collective, a minor group should meet a number of strict requirements: successfully meet the goals, be of a high morals, provide good human relations, give its every member a chance for a personal development, be creative, i.e., as a group, offer people more than an the same number of individuals can give them, acting separately.

A psychologically developed minor group is a collective, when it positively influences on personality objectification and its differentiated system of functional and personal relations is based on high morals. Such relations can be called collective. Collectivism means, that the group members always care about its success and try to oppose everything that disintegrates and destroys the collective. Collectivism also means good traditions and security for its members. Collectivism feeling does not let the members remain indifferent, if collective interests are hurt. In such collective all important questions are solved together and possibly with a general consent.

To sum up, minor groups, which fully meet the above mentioned requirements of a collective, do not exist in the reality. The majority of the existing minor groups lay somewhere between poorly developed groups and highly developed collectives. Some of the social and psychological parameters let call these groups collectives, but others fail. The described model should be regarded as an ideal for every developing collective, rather than a reality of the minor groups. So, collective is a highly developed minor group of people, whose relations are based on positive moral norms and which works effectively, producing a superadditive effect.

The work was submitted to international scientific conference «Modern education. Problems and solutions», Thailand, December, 20-30, 2009. Came to the editorial office 02.09.2009.

SOME PROBLEMS IN TEACHING ENGLISH UNDER CONDITIONS OF MODERN LINGUO-DIDACTIC THEORY

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Common system of teaching foreign languages for the special purpose supposes the interconnection of in-classes and out-classes studies and students' self-education considering the speciality and individual interests.

Reading is one of the most important means of getting information. Practical result of reading is the situation when the student percepts reading as the process of getting necessary information and all the accompanying language and mechanical difficulties do not prevent this process. But reading even in native language takes place in different ways depending on the aim, complexity of the topic, difficulties of the language style, interest for the reader, individual peculiarities of perception, level of reading etc.

Minimal level for every kind of reading should be of two directions:

- the volume of language material (lexical and grammar) which would be enough for corresponding ability,
- minimal speed of operation with this material under keeping the quality of corresponding ability.

To achieve the tasks at present time it is necessary to point out what types of reading we must teach, their minimal levels, rational selection of the language material and the ways of realization of these tasks, because every type of reading due to its specificity needs its own special methods.

The basic principle of teaching is the text, i.e. journals, newspapers, advertisements, prospects, announcements, etc. All the texts should be used considering the aims, i.e. for perception, for translation, for composing summery, for compressing, for getting information, for abstracts etc. Every text must be informative, considering knowledge, interests and individuality of the students. That is why the texts have to be reviewed in accordance with the new achievements in the medical science. The task is following the investigations, new tends in medicine through the direct contact with the medical specialists.

At present it is impossible to solve the problems of teaching language without psychology. It is necessary to take into consideration individual characteristics, views, temperament, national peculiarities, attention, perception, memory and thinking.

To achieve definite level of knowledge it is necessary to perfect the system of control, i.e. current mark, intermediate mark, common mark and self- estimation.

All these approaches must be realized at the studies in the class because the student, as a rule, has no possibilities to work at the foreign languages systematically at home.

The work was submitted to international scientific conference «Prospects for the development of university science», Dagomys (Sochi), September 21-24, 2009. Came to the editorial office on 06.07.2009.

Short Report

THE PEDAGOGICALLY-ORGANIZING CONDITIONS IN THE PROFILE LEARNING AND THE PRE-PROFILE PUPILS TRAINING

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In Russia, the teaching profilization, practically, is not the innovation in the full meaning of this word. So, the historical experience of the occupational self – determination and the pupils' occupational orientation just in the Russian secondary school has already permitted to create the necessary premises and the corresponding prerequisites to the profile learning development in the contemporary educational space [1,5].

Having considered the profile teaching and the pre – profile training challenge under the network cooperation conditions, it should be given the special consideration to the **pedagogically – organizing conditions** realization system of the school profilization this model.

As it is generally known, the pedagogically – organizing conditions are the structural form of the pedagogical and the technological models, according to which the technology components or the models are being realized, and also their filling is being provided. So, the developed correspondence during the model or the technology investigation, the pedagogical experiment forming stage efficiency is being provided to the pedagogically – organizing conditions system, and it is also being permitted to single out the optimal criteria and the pedagogical phenomenon consideration levels, in the form of the investigational research object and the subject [2, 3, 4].

The pedagogically – organizing conditions introduction realization of the profile learning network cooperation model has been appealed for:

- to provide the pedagogically – organizing and the profile learning psychological maintenance in the network cooperation system;
- to improve the training and the retraining pedagogical personnel system for the working in the profile forms and grades and also in the post – secondary technical training institutions, having orientated for the network interaction with the comprehensive secondary schools, having introduced the profile learning;
- to define the profile learning information support forms and methods.

We shall consider the indicated the pedagogically – organizing conditions in a rather more detailed way.

I. The structurally – organizing maintenance of the school profilization process under the network cooperation conditions is being provided, in our opinion, for the following steps realization:

- The profile learning direction united center making in the comprehensive secondary school, which would be provided the interconnection and the unity of the action-oriented and the most activity characteristics of all the participants' cooperation process; this may be, for example, the coordination council on the profile learning direction in the educational institutions network; besides the internal normative documents, such kind of the council will be able to develop the comprehensive secondary school profilization map in the network cooperation system, the predictive indices and the profile learning model in the separately taken case, with the post-secondary technical training institutions potential involvement;
- the methodically – constructive meetings series conducting (e.g. the seminars, the trainings) with the schools, the post – secondary technical training institutions executive heads, and also with the teachers on the profile learning organization challenges;
- the comprehensive secondary school and the post – secondary technical training institutions the interaction forms determination.

The institutions, having carried out the teaching at the pre – profile stage (e.g. 7 – 9 – th forms and grades) will have to be provided the following:

- the conscious determination the further learning profile by the pupils;
- the future individual and the educational routes development by the pupils;

II. The Psychologically – informational maintenance of the profile learning development process in the network cooperation system, as the pedagogically – organizing condition is being supposed, in our opinion, the following sub – conditions presence:

- the diagnostic methods data bank creation for the pupils' occupational self – determination characteristics determination in the profile learning cooperative model system;
- the pupils' complex and the system diagnosis (e.g. the subject interests; the intellectual development level; the health level; the cognitive sphere and the personality characteristics; the occupational intentions motivation; the network cooperation institution educational possibilities level);
- the individual correctional work carrying out with the students by the diagnostics results;
- the pupils' satisfaction level learning, by the training in the profile forms and grades.

In the connection with this condition interpretation, as one from the basic and fundamental ones, we shall also analyze the profile formation stages con-

struction example, with due regard for the its organization network model.

III. The profile learning staffing in the network cooperation system, which is being assumed the following:

1. The teachers' data bank creation and the actualization, having worked in the profile forms and grades of the comprehensive secondary school and also in the post – secondary technical training institutions;

2. The joint methodologically – instructive seminars conduction (e.g. the conferences, the trainings) of the post – secondary technical training schools and the institutions teachers;

3. The through creative groups creation by the educational profiles from the post – secondary technical training schools and the institutions teachers; the teachers' creative reports organization, having worked in the post – secondary technical training schools and the institutions;

4. The network cooperation institutions teachers' system diagnostics;

5. The network cooperation institutions teachers' yearly project retraining conducting;

6. The network cooperation institutions teachers' constant self – educational work;

7. The profile forms and the grades teachers and the post – secondary technical training institutions workers portfolio creation.

IV. The Systematic monitoring and the control of the profile learning development process in the comprehensive secondary school is being pursued its object of the profile learning, as individual, well as the group results reflection – as from the side of the network cooperation participants, well as from the side of the students. Thus, the monitoring, as the pedagogically – organizing condition of the profile learning introduction is being suggested the following:

1. The profile forms and grades pupils' education quality study;

2. The profile subjects teaching, and also the elective courses, the subjects by the choice, the optional forms and grades with the discussion at the coordination council meetings state study;

3. The post – secondary technical training institutions activity efficiency study, having introduced in the network cooperation model;

4. The network cooperation participants' interaction efficiency study, by its activity results, in the plane of the pupils' occupational self – determination.

Finally, the network interaction model introduction pedagogically – organizing conditions in the profile learning, having singled out and having analyzed by us, have been underlain of the network interaction model development, which is being corresponded with the given conditions, and it, moreover, will be checked during the experimental work.

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CHARACTERISTICS OF VISUAL THINKING

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Visual thinking is a type of non-verbal thinking, and it has been extensively studied by psychologists in recent years. Psycologists believe that the main function of visual thinking is its ability to coordinate different meanings of images into a complete, visible picture. Visual thinking also helps us to ontologize the results of abstract verbal thinking so that an abstract essence becomes intellectually visible. Using it to examine and analyze various works can yield new insights and a more complete understanding in fields ranging from scientific to artistic.
Keywords: visual thinking, practical intellect, scientific thinking, artistic perceptions, structure of human cognition.

There is a traditional philosophical view, according to which human thinking exists only on the basis of linguistic material in forms of words and their combinations. This verbalistic approach is widely spread in philosophy till our days, it has a force of a prejudice in spite of the fact of existence of a developed branch of modem psychol-ogy named *""visual thinking"*. Many years ago Leo Vygotsky suggested a more broad notion of *thinking*, he described it as a mental process of operating upon representatives of external objects, i.e. upon signs and symbols of any nature. In his work "Thinking and Oration" (M., 1934) Vygotsky tried to prove that "verbal thinking does not cover neither all forms of thought, nor all forms of speech. There is a large part of thinking, which does not have direct attitude towards verbal thinking. Instrumental and technical thinking together with a whole realm of the so called *practical intellect* in general may be included into this realm of non verbal thinking[1]' (p. 95). A nonverbal kind of thinking is as real, as a verbal one. If many years ago practical intellect was psychologically described as a preliminary and primitive stage of thinking's development only, then today it is shown, that this kind of intellect has all properties of effective thinking in its literal fonn.Verbal and non-verbal thinkings do not exist separately but constitute two different cuts of any subjective reality - a cut still not verbalized and a cut verbalized already. A non-verbalized level of thinking can be verbalized in future. In the beginning of the 60-s M. Gazaniga and R. Sperry, American psycho-physiologists, investigated a functional asymmetry of a human head brain from a point of view of differences among verbal and non-verbal thinking. If to cut a bunion body, which unites two brain hemispheres, then two independent spheres of conscience emerge in the same brain. Intellectual processes by means of the left hemisphere are usually happen in a directly verbal form. The same processes but determined by the right hemisphere's activity are resulted often in rational images of ontologized spatial structures. Products of two brain hemispheres are combined by means of a bunion body into a whole knowledge of an object's class and sensual features of objects of this class.

Visual thinking is one of kinds of non-verbal thinking, it is studied by psychologists much better than other kinds of the last. Audial, tactil and snuff thinking are objects of a very active interest within psychology in recent years. Some years ago there still was a strong habit to subdivide culture into two principal parts. The first part was called *"intellectual culture of a scientist* and it was necessary associated with thinking as itself. The second subdivision of human culture was associated with professions to reflect upon values. Humanitarians, artists, composers of sound melodies and aromatic spirits were treated as possessors of sensual perceptions, feelings and impressions primarily. For instance, still now it is easy to notice in textbooks such usual general oppositions as *scientific thinking* and *artistic perceptions,* as if

a scientist is primarily a rational creature but an artist has nothing to do with a sphere of essences and he is able to build professionally only sets of sensual images; it is a wrong opinion. Good artists, writers, composers of symphonies of sounds or spirits are able to penetrate deeply into invisible structures of different kinds of reality not less than scientists; a symphony is like a theory of a serious object. To compose spirits accord-ingiy, for example, to a peculiar class of women is to cognize rationally some essential and hidden character of these women. It is wiser to find difference among episte-mofogical properties of a classical natural scientist and a typical artist namely in peculiarities of their rationalities, but not through a prism of an opposition *rational-sensual.*

If the scientific rationality is based on operating upon words and mathematical symbols, which represent external objects (butthis definition is not the whole truth), then rationality of an artist or engineer is based on iconical representatives of external or inner objects, i.e. on graphs, diagrams, spatial sign structures. For example, it is known that engineer's thinking usually consists of 60-80% of visual thinking and only 20-40% of it one can describe as verbal thinking. Within Ch. Pierce's classification of signs, an iconical kind of signs is seen as an effective instrument of valid thinking. Psychologists see the main function of visual thinking in its ability to coordinate different meanings of images into the whole visible picture. Rudolf Amheim, an American aesthetician and psychologist, writes that one can not pass any information to another person directly before the object of this information is not represented in a structurally clear form.

Visual thinking helps us to ontologize results of abstract-verbal thinking; by means of it an abstract essence becomes intellectually visible. It is necessary to stress, that visual thinking is a contentive product of synthesis of previous sensual experiences and abstract-verbal thinking; by means of it an abstract essence becomes intellectually visible. Visual thinking is a constructive product of synthesis of previous sensual experiences and abstractverbal activity. So a sensual component of an image of visual thinking is not just the same as some direct sense-data. This component is radically changed within a visual-rational image; it reflects those objective structure, which are not given in a direct perception. An image of visual thinking is able to foresee future events, to draw future worlds in forms of designer's projects.

Thus, within structure of human cognition, an image of visual thinking is a medium among abstract-logical thinking and a future practical activity. This image does compose the main content of an aim of practice. Often it is possible to crystallize in it the principle content of this or that achieved knowledge. Probably, it is an image of visual thinking, but not pure conceptual construction, which is a basic building element of scientific pictures of the world. When we are asking to imagine a modern picture of the world, which exists in science, we at once can remember associations of incandescent stars" balls and cool planets around them, atom's model of Reserford. pictures of electron's and ion's xchange among atoms and molecules, of chromo-some's chains of Watson and Krieck's model and so on. But usually we (if we are not narrow specialists in Physics, Chemistry, Biology) do not remember mathematical and conceptional sides of those scientific theories, within which the mentioned visual-rational images were born.

So, an image of visual thinking of a proper level of generality helps to transport main conclusions of different theories throughout science at whole and outside, it helps to popularize general scientific results in society. By means of it an invisible structure of atoms or genes becomes mentally visible for scientists and ordinary people. Visual thinking is a cognitive bridge between verbal thinking and external practical activity, between words and business. That is why it in very important to teach culture of visual thinking to begin from early childhood, to graft this culture in pupils, students, scien-

tists, engineers. It is a pity that our pedagogical system was (and still is) based on an illegible philosophical idea of cognitive process. According to this idea, formulated by sensualists (see V. Lenin's 'Philosophical copybooks') - a cognitive process has the following structure: from direct sensual contemplation of an object through abstract thinking to practice. Of course Lenin could not foresee that this sensualistic formula would be blindly copied in the Soviet pedagogical practice.

Visual thinking is a human activity, which results with new images, new visual forms. These forms make visible the meanings of abstract concepts. While mediating verbal thinking and practice, images of visual thinking are comparatively free in correspondence to objects of perception. They have an ability to reflect in themselves practically any categorial relations of reality - spatial, temporal, attributive, causal, teleological, existential and so on. But they reflect these relations not by means of word's expression, but through expression of them in spatial-temporal structures, in transformations and dynamics of sensual images. Epistemological function of visual thinking includes (beside the mentioned above property to be a bridge between verbal and practical activity) an ability to find information about structure-spatial and temporal characteristics of possible worlds by means of imaginative transformations of schematic pictures of objects and modes of acting upon these objects. Ontological function of visual thinking is an ability to ontofogize products of verbal thinking, to give them existential properties, a feeling of reality. This happens because of a sensual component of synthetic images of visual thinking. Of course such images may be not only true but false also, nevertheless there is a stamp of reality on them subjectively.

We mentioned some more functions of this kind of thinking before - prognostic, methodological and communicative. The last, communicative function is very impor-tant. When a verbal communication among people is not sufficient or even impossible, visual thinking gives an opportunity to transport information among subjects, for instance, in a graphical form. Especially it is effective in arts, engineer projects, de-sign. The existence of visual thinking falsifies some radical consequences of Sepire-Worf's theory of linguistic relativity - for instance, its thesis, that grammar itself forms human thoughts as a program of an individ's mental activity and as a means of analysis and synthesis of our impressions. It seems that vsual thinking is a necessary condition of finishing of a theory's construction. Due to its images of visible essences a scientist can interpret empirical data of partly or completely invisible objective and subjective processes. Pictures of theoretically investigated objects are built upon a conceptual system and accordingly to this system. By means of such pictures a scientist is able to correspond his theory to external reality, to check it or to materialize his ideas in artificial objects. From the point-of-view of a conceptional content of a theory, a theory is a knowledge of its abstract objects directly, but not a direct knowledge of external objective reality as itself. Epistemological functions of visual thinking help to transform theoretical knowledge about abstract objects into a kind of practical knowledge of non-theoretical objects.

A general theory of visual thinking is to be extrapolated on arts. A. Baumgarten, the father of Aesthetics, classically defined this branch of philosophy as a theory of sensual cognition. This definition is right in general if to understand *cognition* in its categorical meaning. Some philosophers described aesthetical cognition as the lowest level of human cognition, but some of them, on the contrary (Shelling, for example), have seen in Aesthetics the top of human knowledge. *Cognition* is cognition, it is aprocess of penetrating into roots, essences, nature of things. If to explain an aesthetical attitude towards a world not only as plain sensations and presentations (as sense-data), but as visual thinking, then an aesthetical image may be briefly denned as *Visi-ble Essence.*

Simply speaking, a world around us may be divided on two parts. One part is directly visible, it is a surface of phenomenons. We can see it. touch it, smell it, etc. But the second part is invisible.

Philosophers use to call it 'essence' of objects of our perceptions. If 'essence' is not known it seems to be dangerous and hostile towards a man. So it is necessary to understand 'essence', to express it via sensual images. We suppose that *aesthetical attitude* is nothing else but an expression of rationally cognized essences in structures of transformed perceptions and presentations, i.e. in forms of images of visual think-ing. Aesthetical attitude is universal, one can find it in every kind of human activity and knowledge - in everyday life, spheres of arts, science, technique. For instance, a mathematical graphic curve aesthetically expresses a definite equation, though such an expression happens to be some mode of aesthetical quality - beautiful or un-seemly, elevated or low, tragic or comical. Aesthetical attitude is a human ability to express essences ideally, i.e. via ontologized and sensual representatives of these essences. That is why, while aesthetically expressing some deep essences, men subjec-tively make them known and not so dangerous; such a kind of visual thinking is accompanied with a feeling of pleasure, admiration, relief, reliability and so on positive emotions.

Followers of Plato and Hegel do understand *essence* as something very different from a sphere of sensual phenomenons, which manifests itself towards a perceiving man indirectly; nevertheless a man is able to cognize essence. This philosophical po-sition determines a set of peculiar theories of arts and notions of realism in arts. Within them, realism is a true description of *essence* (not natural phenomenons of life) in terms of revised and transformed presentations. Essence is truly reflected in art works when ordinary presentations are changed due to a rational scheme, which a talented artist has found and hidden in his work. From this point of view, surrealism and similar artistic methods are true and realistic. Followers of Kant or other agnostical doctrines think that *essence* is out of our perceptual reflection, it can be artificially expressed in sensual forms only allegorically.

Religious arts (icons, church architecture, etc.) are clear examples of this mode of thinking. If one believes that a pure geometrical visual form only is good to express essence, but not accidental phenomenons' shapes, then cubism, suprematism and other artistic methods are corresponding to this conception. If another artist thinks (as nominalists), that essence or doe does not exist at all or it is manifested, directly and fully, in sensual phenomenons, then he believes in a kind of a surface realism, photo-graphical arts.' And so on. Another base for principal differences among conceptions of arts is a question of what definite sensual material is good to express essence -visual, audio, etc.? If you understand essence asa struggle of inner contradictions, you receive a special notion of a "good' art also. If essence is something else for you ('oneness', 'undividible, etc.), then you disagree with the previous point of view; accordingly, interpretations of aesthetical categories of harmony, taste, beauty and so on would be alternative.

The second idea - the idea of arts' importance for our social life — provides another angle of view on nature of arts. If one believes that a human being is a product of nature, then to know natural essences means to know man's essence. So, from this point of view, it is very important to express nature artistically for a benefit of society. On the contrary, if somebody thinks that a man is a mistake of nature or nature is principally unknown, then it is not important to express natural essences artistically, but better to make picture of social life. Knowledge of essence (natural or social) can teach or can't teach people - a basic alternative for artistic discussions also. We would not continue further on this topic; you see already the revealed logic of history of arts and historical dialogues among distinguished artists. It is very important to give freedom for all princi-

pal artistic tendencies. Only then arts, taken totally, are developing normally and effectively. Suppression of any principal artistic program leads to a disharmony in artistic creativity.

Materials of Conferences

CHILD'S COMMUNICATION AS A BASIC ELEMENT OF INTERPERSONAL RELATIONS IN MODERN SOCIETY

Abakarova E.G., Kalashnikova V.A.

Child's social environment, where he grows up and develops, is full of things that a preschool age child is eager and able to learn and understand. A child perceives himself as a representative of the humanity, learns people and relations between them, their activities, life style, material and natural world. Social life, being diverse and complex, contradictory and ambiguous, help a child develop his activity while he learns to understand the world. Teacher chooses material that let children establish and reveal cause-effect relations between the social occurrences and facts, find the common and differences, analyze and compare, be creative in learning. Analyzing the examples of different content, one can observe how children perceive it.

Society sees childhood only as a time of «preparation», i.e. it denies the value of childhood for a child. Meanwhile, continuous educational process, which links the preschool and school years, does not mean to estimate the present from the viewpoint of the future. Only if childhood is seen as a valuable lifetime, can children become adequate schoolchildren in the future, and develop personal traits that let them step across the limits of the childhood.

Demands of children and adults for developing their personal, non-utilitarian relations are being sacrificed to education. Due to this sacrifice, education loses its "human radical" and suffers from dehumanization. Child should live the world of art, enjoying all its diversity and richness. Nothing compares to art in its powerful effect on a child. Art is a unique mean of psychological development – emotions, creative thinking, artistic and creative skills. Preschool age is the time, when children develop aesthetic perception, attitude to culture and a need for art activities. That is why is it necessary to introduce art into a child's life, show him the world of music, fantasies, theater and dance. It is important to offer a child diverse possibilities to get acquainted with art, include it into everyday life, create conditions for child's art activities. Rich child's inner world bases on newly acquired knowledge, skills and activities that reveal him the horizons of new knowledge and activities, prompt him to speculate, set up hypotheses, activate demand for more knowledge. Learning the variety of a native language is one of the main conditions of personality formation and learning the values of a national culture; it is closely connected with mental, moral, aesthetic development, and is a priority issue in the speech development in preschool children. Furthering speech development in preschool children should include special communication situations (individual and in group), when a child can communicate freely. Such situations help enrich the vocabulary, learn the ways to express ideas, improve speech understanding. In special group plays child can choose linguistic means, make a personal «linguistic contribution» to solving a common task. In these activities children develop an ability to express their thoughts, intentions and emotions under condition of constantly changing situation.

The described conditions create a favorable climate for internationalism, which means communication between the children of different nationalities in the modern society, as well as learning the life of other nationalities. In child years, internationalism is formed through finding a common human ground in different national environments: the main direction here is to help a child understand the universal human values, which can be revealed through learning the own national culture – its dances, songs, tales, proverbs and sayings. Children should get an idea of a diversity of human languages and develop a positive attitude towards them. The process of formation of child's inner world involves the development of imagination and creativity, ability to act independently, child's demand for an active position in life. They become a part of the initial format of thinking and interpersonal relations. Well developed imagination let a child overcome stereotypes of their own behavior, roles, enable to build new game scenarios. Basing on imagination, children show the first signs of creative attitude to reality.

Creative process is a qualitative transformation from the already known to the unknown. Children are highly dynamic and flexible in search, which let them achieve individual results in their activities. Independence widens child's ability to conform his behavior with his own motives and those of the others. Particularly important here is not only to accept the existing rules, but also to set up new ones, be ready to accept the adult goals and set their own. All this develops a demand to be active, perceive and change the world, influence himself and the others. Children express their need to feel themselves as active personalities by desire to be different, act independent and in their own way, be important for other people.

To sum up, child develops his individuality and relations with adults, which are not aimed at some educational tasks or didactic goals; learns to communicate as a full-fledged partner. Development of child's personality and his emotional contacts with adults, as well as with other children requires a considerably new organization of a child's life in kindergarten, creation of conditions for free communication without instructions and child's emancipation. In the new century, every grown-up and child will understand the meaning of life. It should become inseparable from upbringing and education. Without under-

standing the meaning of life, the whole pedagogy risks to become groundless. Perhaps in the new century, science together with art, religion and philosophy will contribute to that a lot. Maybe, the will manage to do together what each of them did not manage to do alone in the past. The most important in education and upbringing of children in the new century, is to create conditions for communication on the basis of understanding of the meaning of life and place of a child in the modern society. Another important aspect of this concept is an idea about a more perfect human, creator of a new life. On this basis it will be possible to build a new system of upbringing and education, create different programs and methods.

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The work was submitted to international scientific conference «Modern education. Problems and solutions», Thailand – Cambodia, February 18-28, 2009. Came to the editorial office on 24.05.2009.

GENDER STEREOTYPES IN COMMUNICATION

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Nowadays the important role is played with processes of communication as means of formation of public consciousness as they allow people to communicate, understand each other, participate in joint activity, develop common sights, outlook. Courage and feminity and specific cultural characteristics which define social behavior of women and men, their mutual relations among them take place in each culture. It allocates essential space in ceremonies, folklore, mythological consciousness, «a naive picture of the world». Gender, in turn, concerns not simply to women or men, and to relations between them but to a way of social designing these attitudes, i.e. how the society "builds" human relations.

The analysis of researches in different areas of scientific knowledge testifies that gender stereotypes accumulate experience of generations concerning with women and men behavior, their character traits, moral qualities. A.V.Kirilina considers them, as «the special case of a stereotype concerning with knowledge of persons of a different sexes. In her opinion, they fix in language the representation about courage and feminity and the models of individuals' behavior connected with them»[1]. Gender stereotypes in communication are inseparable from an image of the woman or the man, and also the ideas of their applicability prevailing during this or that period. So, as the positive ideal dominated over pre-revolutionary Russia, it was an image of patriarchal mother, the mistress of interior, respectable Christian. During the Soviet period according to socialist ideas of active participation of women in a society the type of «working women and mothers», the active participant of communistic construction dominated. And when reorganization began, on the foreground the ideology of «natural applicability of the woman» again began to be put forward.

However, in the greater degree in language, patriarchal stereotypes which impose to person the certain picture of the world are fixed. Studying of language in the given direction is based on the hypothesis of Sapir-Warf: language is not only a product of a society, but also a means of thinking. Proceeding from this, the feministic linguistics reinterprets and tries to change language norms, considering the purpose of the researches «conscious normalization of language». So, for example, K.Operman, E.Veber, marking distinctions in the communications, recognize that initially women and men pursue the various purposes at dialogue. Girls, for example, feel necessity of confirmation of the personal qualities and "safety" of relations in conversation, young men, as a rule, do not require it. It implies, that the purpose of female dialogue is achievement of the coordination and minimization of distinctions whereas men prefer "independence" in conversation[2]. In turn, A.Linke describes specificity of the man's and female communications in completely other aspects. In opinion of the scientist, girls avoid the use of lexical means of expression of force and use weaker forms. A principal cause of divergences is various areas of life experience of men and women and a different professional lexicon[3].

Stereotypes of behavior of men and women are pawned since the earliest childhood, and it is no wonder, that they are rather proof though recently they were substantially leveled. It was accepted to carry out even color differentiation of clothes of babies - boys and girls earlier. For boys blue caps, and for girls - pink one - were bought.

The stated point of view is shared also by I.A.Sternin. The scientist on the basis of the experiments considers that education of men in a society is directed, first of all, on development of the certain man's qualities: force, tolerance, skill to hide the feelings to be quiet, not to cry, and other skills. Women during dialogue demand from men to show very opposite qualities: the woman wants, that the man was emotional, showed the feelings, was not competing, but cooperating, spends more time with the family[4]. It means that in sphere of dialogue, interests of women and men can appear opposite that will create ground for misunderstanding and even conflicts.

However, in conditions of modern culture of an industrial and postindustrial society, stereotypes in the

greater degree smooth out. But at the same time, they remain the fact of consciousness of native speakers and it should be taken into account.

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The work was submitted to to the International Scientific Conference «Higher professional education. Modern aspects of the international cooperation», Tel Aviv, May 1-7, 2009. Came to the editorial office on 27.05.2009.

THE FREE RADICAL OXIDATION ORGANISM STUDY IN THE LONG-TERM PERIOD AT THE GAMMA-IRRADIATION AND THE CEMENT DUST COMBINED EXPOSURE IN THE EXPERIMENT

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The final results on the free radical oxidation role at the ionizing radiation and the cement dust combined exposure just in the experiment have been obtained. The diene conjugates (DC) and the malonate dialdehyde (MDA) in the peripheral blood lymphocytes and the lymph nodes, RC in the spleen, the liver, the MDA in the thymus gland and the adrenal glands, the high level content have been revealed.
Keywords: the ionizing radiation, the pneumoconiosis, the free radical oxidation

The leucoses and the malignant tumors beginning are, more often, the delayed radiation actions. It also has been cleared out, that radiation effect upon the human health is able to be depended on the exposure duration: one and the same dose of the ionizing radiation, having received for the short period of time, is being caused the less radiation injuries, than the dose of the ionizing radiation, having received for the prolonged period [1]. The ionizing radiations exposure delayed consequences researches upon the population health are the most urgent and the most actual in Kazakhstan. It is being defined by the fact, that the considerable part of the Republic's territory, first of all, the Semipalatinsk, the Eastern – Kazakhstan, the Pavladar, and the Karaganda Regions have been subjected by the local radioactive deposits and by the local nuclear fallout, as a result of the nuclear tests operation at the Semipalatinsk Testing Area, and the residential population, having lived on all these above – mentioned territories, have also been subjected by, as the internal, well as the external radiations exposure [2]. The biological radiation effect is, usually, consisted in the further atoms' and molecules' ionization and the excitation just in the human organs and the tissues with the subsequent highly radioactive radicals and the peroxides, and also super oxides formation. So, the first 3 phases are, usually, being proceeded at the molecular level just for the negligibly small periods of time, and they are being caused the molecules' chemical changes just in the human organs and the tissues. Thus, all these changes are being transformed, and they are being converted into the subsequent abnormalities just in the cells, in the human organs, and also in the human organism, as a whole, during the 4 – th phase (e.g. the biological one). It goes without saying, the above – indicated processes are being taken their place at the every radiation dose exposure, and they are able to be conditioned not only by the exposure to the radiation, but and the many other non – radiation factors action [3]. In the basis of a number of the pathological states, including the exposure to the radiation, are being connected with the expressed processes initiative of the free radical oxidation [4]. Thus, at present, the non – specific adaptation just at the cellular and at the sub – cellular levels after the radiation damage the urgent system mechanisms have already been studied. For all this, the metabolic processes regulation violation just in the cells is able to be not only the consequence of it, but also, it is the most significant link of the radiation damage pathogenetic mechanisms [5]. The ionizing radiation exposure is being characterized by the CPO processes considerable activation. It has also been determined, that the ionizing radiation is being resulted in the free radicals concentration increase just in the various human organs and the tissues [6, 7]. The last years' investigations have been shown the CP processes important role in the occupational pathology. The workers' respiratory organs occupational pathology, having contacted with the cement dust, has been revealed, mainly,

in the form of the pneumoconioses [8, 9]. But still, there is not the quite enough clear presentation view on the free radical oxidation state changes, in spite of the experimental and the clinical investigations large number, that is being testified on the biological aspects study necessity of the adaptive process, in particular, the immunocompetent organs biochemistry. The ПОЛ is being restricted by the antioxidant protection, the frustration of which is able to be taken its place under the harmful factors and the noxious agents exposures [10].

Its role just in the animals' pathological process formation in the long – term period at the combined exposure is being presented for us much interesting, having taken consideration all this system significance in the further pathological process formation.

The Investigation's Main Purpose: The investigation in the experiment the free radical oxidation role just in the adrenal glands', and in the immunocompetent organs', and the cells' tissues in the long – term period at the gamma – irradiation and the cement dust combined exposure in the experiment.

The Material and the Investigation's Methods: The main experiments have already been made by us for the jointly set target and the assigned task solution at 40 non – pedigreed sexually mature males' albino rats with their 180±20 gr. weight, which, in their turn, have been subdivided into the 3 main groups: the I – st group – the intact ones (e.g. n=10), the II – nd group – the having primed ones by the cement dust (e.g. n=15), and the III – rd group – the having primed + the irradiated ones (e.g. n=15). Thus, the pneumoconiosis has been modeled at the animals just in the II – nd and in the III – rd groups by the E.N. Gorodenskaya methods, in the V.I. Parashina modification [11]. The III – rd group animals have been irradiated during 90 days and nights (e.g. 2,160 hours) just before the investigation at the «Teragam» Co^{60} radiotherapeutic installation. The lipids peroxidation state has been defined just in the various organs and the cells at all the animals. So, the lymphocytes have been singled out just from the peripheral blood, and the homogenates have been prepared just from the liver, the spleen, the thymus gland, the lymph nodes of the small intestine and the adrenal glands, which are needed for the necessary investigation. The diene conjugates (DC) and the malonate dialdehyde (MDA) content has been defined in them by the V.B. Gavrilov, M.E., M.E. Meshkorudnaya (e.g. 1983); S.G. Conyukhova and the other co – authors (1989) method. The investigation's obtained final results have been processed by the variation statistics generally accepted methods with the Student's tests computation.

Investigation's Results and Discussion

As the investigation have been shown, the DC concentration is being increased just in the peripheral blood lymphocytes from 0,29 ± 0,03 up to 1,02 ± 0,12 (e.g. $p<0,001$) and also in the thymus gland from 0,49 ± 0,04 up to 1,76 ± 0,27 (e.g. $p<0,01$) at the cement dust exposure. The DC concentration just in the peripheral blood lymphocytes has been, considerably, and almost in 2,5 times, exceeded the control values (e.g. $p<0,001$) at the animals after the dust and radiation exposure. It has also been registered the reliable lowering in 1,4 time, in comparison with the II – nd group. It has been registered the tendency to the further increase (e.g. $p>0,05$) in the thymus gland, in comparison with the control value. It has also been registered the further lowering in 3,4 times (e.g. $p<0,001$), in comparison with the II – nd group.

So, the animals' DC concentration level, reliably, has not been changed just in the adrenal glands after the dust content, but, at the same time, there is the tendency to the concentration increase from 1,19 ± 0,11 up to 1,45 ± 0,11 (e.g. $p>0,05$), but the considerable changes have not been observed just from the spleen's side, where the DC concentration content level has almost been corresponded to the control values. The DC concentration level just in the spleen has been increased from 1,28 ± 0,20 up to 1,85 ± 0,12, that is, almost in 1,5 time, in comparison with the I – st group index (e.g. $p<0,05$),

whereas the DC concentration level is being lowered from 1,19 ± 0,11 down to 0,57 ± 0,03 (e.g. p<0,001) just in the adrenal glands, at the animals of the III – rd group, having subjected to the combined exposure.

The ПОЛ primary products, as in the liver, well as in the lymph nodes investigation has been shown, that the diene conjugates (DC) content just in the liver has been increased from 0,69 ± 0,05 up to 1,18 ± 0,17 (e.g. p<0,05), and it has been increased from 0,35 ± 0,03 up to 1,09 ± 0,12 (e.g. p<0,001), that is, approximately, in 3 times, (e.g. p<0,001) just in the lymph nodes. The DC concentration level has been increased for 36,7% (e.g. p<0,05), as in the liver, and it has been increased for 55% (e.g. p<0,01), well as in the lymph nodes at the III – rd group animals.

Thus, the obtained final results have been testified on the fact that the free radical oxidation is, constantly, being activated at the dust and radiation and the dust factors exposure, and, it is quite possible, this is connected with the antioxidant enzymes activity lowering just in the studied organs majority.

As, it is quite known, the oxygen active forms excessive generation is lied on the basis of the lipids peroxidation activation. Having exceeded the antioxidant systems physiological capabilities, and having emerged just after the enzyme systems exhaustion, and also all these mechanisms combination, in the case of the radiation factor action, having been determined, on the one hand, by the organism radiosensitive cells massive destruction and the antioxidants loss, and on the other hand – the ПОЛ initiators active generation [12, 13].

The MDA concentration content level has been left at the control values level at the cement dust just in the thin intestine lymph nodes cells exposure, but, at the same time, it has also been observed some kind of the increase tendency just in the lymph nodes cells for 19% (e.g. p>0,05), and in the adrenal glands tissues – for 29% (e.g. p>0,05). The MDA concentration content level has been increased for 53,6% (e.g. p<0,001), and in the adrenal glands tissues – almost in 6,5 times (e.g. p<0,001) at the combined exposure just in the lymph nodes cells, in comparison with the II – nd group, the MDA concentration content level is being increased for 44,5% (e.g. p<0,01) just in the lymph nodes, and it is being increased for 80% (e.g. p<0,001) in the adrenal glands tissues.

The given index concentration content level reliable increase has been registered just in the peripheral blood lymphocytes from 0,072 ± 0,003 up to 0,081 ± 0,003 (e.g. p<0,05) in the II – nd group, up to 0,12 ± 0,01(e.g. p<0,01) in the III – rd group; in the liver tissues from 0,14 ± 0,01 up to 0,19 ± 0,01 (p<0,05) in the II – nd group, so the considerable changes have not been observed in the III – rd group, where the MDA concentration content level has almost been corresponded to the control values; it has been registered the MDA concentration increase content level from 0,031 ± 0,003 up to 0,047±0,004 (e.g. p<0,05) just in the thymus gland tissues in the II – nd group, and it has been increased up to 0,045 ± 0,003 (e.g. p<0,05) in the III – rd group. So, the considerable changes have not been observed by us from the side of the spleen, but, at the same time, the concentration content level index of the III –rd group has, reliably, been lowered, that is from 0,32 ± 0,03 down to 0,22 ± 0,01 (e.g. p<0,05).

The free radical oxidation primary products, having presented just, according to the standard, in the organism in the non – high concentrations, have the physiological effect, which is being consisted in the reversible hydrophilic – hydrophobic transformations of the membrane phospholipids fatty – acid residues and by the bio – membranes functional state change, the membrane – bound enzymes reversible inactivation, that it has been observed by us at the dust factor action just in the spleen's and the adrenal glands' tissues, at the combined exposure in the long – term period just in the spleen's and the adrenal glands' tissues. The free radical

oxidation secondary products have more damaging action that has already been registered just in the peripheral blood lymphocytes and in the lymph nodes', the adrenal glands', and thymus gland's tissues by us.

Conclusions

Thus, the obtained final data have been shown, that the DC and MDA concentration content level is being increased just in the peripheral blood lymphocytes and in the thin intestine, the thymus gland, and the liver lymph nodes cells at the rats at the combined gamma – irradiation and the cement dust exposure through 90 days and nights (e.g. 2,160 hours), which are being corresponded to the long – term consequence periods. So, it is quite possible, the secondary product normalization is being succeeded just in some tissues, owing to the temporal compensatory mechanisms. The investigations continuation, having devoted to the ionizing radiations long – term effects exposure study upon the public health and the arrangements carrying out on the consequences and the long – term effects exposure upon the population elimination are being presented by the most obvious urgency and the most vital actuality.

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CRITERIA AND FEATURES OF SCIENTIFIC CONTENT IN METHODS OF SCIENTIFIC METHODS' SYSTEM STRUCTURING (ON EXAMPLE OF LOGISTICS THEORY CONSRUCTION)

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The article dwells the criteria and features needed for constructing the theory of logistics as a system of a scientific knowledge.
Keywords: methodology, logistics, logistic axiomatic verbal formula, criteria of scientific content of an a priori knowledge, features of scientific content in a conception, «weak» and «strong» – the two versions of science

Differentiating the two definitions –the «method» and the «methodology», there is a need to underline, that their parallel and indeterminate from context meaning can cause a well-known conceptual misuse, which in its turn leads to a wrong theoretical conclusions and premises. The root of such misunderstanding can be found in a history of philosophy, where these two meanings used as identical. At the present time, when we see the doctrine of method is being differentiated itself – in separate, particular methods and approaches and methodological principles, - and they also must be analysed, we face the doctrine of a method reappraised. In this particular case we identify the *methodology* as a system of bases and methods of scientific cognition, and every single *methodological tool* (be it a method, an approach, a principle, any form and type of an analysis) – as a relatively independent part of a methodology – that is to say, as a totality of modern scientific methodological tools and techniques.

Evidently, both the entire system of methods and the content of knowledge along with functions, principles and tools, are the elements of a system of that or another conception or a theory, which itself is a synthetic knowledge with interdisciplinary nature. This discourse can be entirely applied to a logistics as a science [6, p. 16, 49-52; 11].

As every system of a scientific knowledge, the one of the logistics must meet the following criteria of methods' evaluation – the security factor; being of a scientific nature and impartial; simplicity, reliability and repeatability; the efficiency; the economisation and rationality; the exploitation. Applying these features to the logistics, they can be supplemented with the *logistic axiomatic verbal formula («axiomatic of transport logistic»)*, suggested by R.G. Leontyev [6, p.17-22, 49-54].

When we consider the criteria system for methods' evaluating, the logistics system of methods must answer the requirements fully and simultaneously. This condition is crucial, as the methods' evaluation criteria are the logical continuation and practical implementation of scientific nature feature of any theoretical knowledge. The criteria are:

1) *the validity of knowledge*, i.e. its correspondence to the cognized object – each scientific knowledge must be the one of the subject, as there cannot be a studying over nothing. The characteristic feature of the scientific knowledge is that not merely information about the validity of any phenomenon is given, but also there are bases exemplified (be it the result of an experiment, proving or logical consequence), which proves the truth of the content of the knowledge. That is why the feature of the scientific knowledge, that characterises its verity, must indicate the principle of its own reasonableness. Contrary, there is no need to give proof to the verity of other modifications of knowledge. Thus, the ground of every scientific conception and, consequently, of every science at all is the *principle (the law) of sufficient reason*: every true idea must be backed by the other ones, which verity has already been proved.

2) *the systemacy of knowledge*, that characterises various forms of knowledge and which is connected to knowledge's organisation - its unique trait. The systematic organisation forms the foundation of knowledge's content validity, as it implies a rigid inductive-deductive structure. The latter is based on the grounds of available experimental data, logical arguments, opinions, principles and conclusions.

3) *the intersubjectivity of knowledge*, i.e. general validity, its liability, generality of the verity of the scientific knowledge (in contrast with the varieties of the true knowledge). In this sense, the truth of a scientific knowledge is universal, impersonal and belongs to forms of knowledge that are based on acknowledgement of truth from objectively solid reasons. The criterion of the intersubjectivity is realised in the requirement of objectivity and repeatability of the scientific knowledge, i.e. the result carried out under the same circumstances from different researchers must be invariable. Form the other side, if the result is invariable for every researcher, it cannot be called the true scientific knowledge, since it doesn't have the features of objectivity and repeatability.

4) *the completeness of the theory* relative to a certain object domain. This criterion suggests that the theory would envelope all phenomena and processes from this certain object region. At the same time the systematic (the typological) approach is widely used. It helps to take a wider look on main aspects of the object of research (be it an effect of a process), studying it under the particular grounds of classification. The systematic (or typological approach) can also help to analyse all further levels of an object, fragmentised on classes, subgroups, levels, etc.

5) *the relative consistency of knowledge* (or of a theory) that implies that all ideas, principles, axioms and other structural elements of a certain theory or conception must be in accordance with each other. Although, after the works of Kurt Gödel were published, it became clear that the composite theoretical system would be incomplete from one hand (thus the statement of inability to entirely formalise the scientific knowledge comes). From the other hand, its consistency cannot be wholly proved within the scope of the given system - in other words, it can be nor proved, nor refuted [9, p. 510].

6) the application of following forms of *organisation of a scientific knowledge* for its display: a fact (a result or a phenomenon), a statement, a hypothesis (a «hypothetical knowledge»), a concept (its content, volume, the rules of dividing a concept, its logical forms, etc.), categories, an issue (as a «knowledge about ignorance»), principles, ideas, laws and paradigms (as an experience, as a model and as a conception and as a model of a problem definition), a theory and a meta-theory [1, p. 122-123, 142-143, 166-201, 230-236; 2, p. 417-419; 3-5; 8, p. 440-458, 489-491; 10, p. 270-283; 9].

In addition to the criteria of a scientific nature of a scientific knowledge there can be singled out common for every sector of a scientific knowledge (as well as for logistics) *features of a scientific character* of a conception. These are: accurately detached (but not closed) range of objects of knowledge and their forms; a presence of the object of knowledge as a totality of their relations, interaction and change; the content and problems of the topic; the criteria of the knowledge's validity; methods, tools and means of a research, aimed to solve the question using the established criteria and oriented on the object and topic of knowledge; initial empirical and theoretical basis; special theoretical skills as a deductive system, conceptions, principles, requirements, conditions, etc. (the ones of non-empirical nature); a professional conceptualization, i.e. the presence of special categories' meanings, terms and senses for solving the problems in a system of a professional research; correlation and consistency with other branches and spheres of scientific theoretical and a posteriori knowledge; the ability of using methods, tools and approaches for acquisition both theoretical and

empirical knowledge; the falsifiability (or testability) of a theory.

Certainly, the factors listed above can be distinguished by their gnosiological and methodological levels, by a degree of using the general-scientific and special-scientific methods, by a degree of formalisation, the intensity of using the methods of logical cognition, etc. On the one part, these are so called «strong» sciences, which generate a peculiar «gnosiological ideal» – these are mathematics, physics, chemistry and some others – their theories are constructed on a rigid deductive basis. On the other part, these are «weak» (in a gnosiological respect) sciences, (in particular humanities, social sciences as well as the economics) because of the extreme complexity of their object, imprecise predictability and high degree of stochasticity in their processes, high degree of dependence from a «subjective factor», variety of display and not always evident link between political, economic, social, demographic and other pursuits of individuals, large communities, governments and institutional structures of the latter's, etc.

The list of given above features, that are the criteria of a scientific nature of any conception can be called a «weak (narrow)» and a «strong (broad)» version of a science. Although we consider this statement to mean, that in this case only the current condition is displayed, in which a range of branches doesn't meet the requirements of «weak» or «broad» versions (i.e. of the «gnosiological ideal» of a science, that was formed under the specific economic and historical circumstances, and that determines the level of the theoretical progress of a science) [7, pg. 29].

We would also like to notice the fact, that the consideration of the disciplines that compose the group of the «weak» version of a science from the historical perspective, the tendencies of their progress and strengthen of the interdisciplinary scientific integration show the development (uneven, though) on the direction of its «gnosiological ideal». In this connection the most evident proof is the latest advance in the economics, sociology, history along with the applied areas of marketing, management, business administration, etc.

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SYNERGETIC ASPECT OF FORMING THE MANAGEMENT ORGANISATIONAL STRUCTURE IN A LARGE CONGENERIC TRANSPORT COMPANY

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The article gives proof to a necessity of problem statement of forming the management organisational structure in a large congeneric transport company. The basis for this is constituted of methods, procedures and tools of company planning and strategic management, that ensure the positive synergetic effect of its activity.
Keywords: system of in-house financial planning and strategic management, congeneric transport company, system and organisational structure of management of a transport company, synergetic effect

1. A correct evaluation of possible consequences in today's changes in economic and financial spheres is an indispensible condition not only for a further growth, - but as an immediate problem - for a survival of a company or organisation. At the same time, the most serious challenges the managers face, is to foresee the difficulty, and to search for solutions, that can tackle it not only with available, but also with potential means. In full measure these requirements can be applied to the topic of *forming the effective system of an in-house financial planning and strategic management in a large transport congeneric (eng. – congeneric) company* (hereinafter –system of congeneric company management – SCCM). In other words, the company, that is first of all oriented on developing the «congener», as well as the interrelated spheres (and branches) of its business, and that hence has a specific integrated structure and respective management system.

2. As a minimum, the designing of the effective SCCM requires the contingency approach to its projecting – the one, that would consider peculiarities of a particular organisation (or business), - mainly the indicators of its size, parameter of the integration, diversification and specialisation, the main features of the sphere(s) (or branch(es) and the specificity of the financial, economic and business activity.

The basic diagram of an organisational structure of the congeneric company is a symbiosis («a delicate interaction net») of traditional linear-functional and divisional-matrix structures. The first one consists of corporation-wide subdivisions as well as functional branches of corresponding subsidiaries. A divisional-matrix centre is constituted of oriented on a certain sort of business subsidiaries that are a part of a congeneric company, plus projects and programs, that are realised for the benefit of the whole company or for the achieving certain goals (directions and objects of an activity).

A distinctive feature (though, apparently in practice other variants are also possible – there are no enough data and evidence for that) of a SCCM is a fact, that for tacking a strategic decisions at a level of all the group [of companies] there set up a management company, which is not only a headquarters of a whole organisation, but the body, that sets the mainstream of company's development (goals and objectives), and ways of diminishing the emerging challenges (methods, tools, techniques, etc.). The management company is lead by a President or a chief executive with proper duties and authorities.

The main sectors of a business in a congeneric company (closely interwoven with each other – or so-called «congener» spheres of a business) are lead by deputies director general, who are directors of the subsidiaries at the same time. The organisational structure of the subsidiaries is built to provide the deputies director general potentials to manage and develop the certain sort of business. For that purpose the subsidiary has its own administrative apparatus, and the organisation and func-

tions of it are formed by specificities and goals of the particular subsidiaries' businesses. At the same time, to secure the coordination of all kind of business activities and whole corporate work (including managing the different branches of the business within one congeneric company, financial planning, investment, projects and programmes carrying out, etc.) the subsidiaries' administrative apparatus must thoroughly cooperate with corporative-wide branches.

Thereby, the organisational structure of the SCCM is a compound net of inter- and inner-structural intercourse of its subsystems and elements on basis of a congeneric company's main charter, its headquarters and subsidiaries, as well as regulations, instructions, orders and similar normative documents, that secure the organisational integrity, manageability and financial-economic activity of a company in whole as well as its branch offices. Along with it, there are traditional mechanisms of a linear-functional management structure together with elements of programme-targeted, matrix and divisional slanted approaches to business operation realised – simultaneously, symmetrically and sequentially.

The company, which can be cited as an example of a congeneric organisation, is, on our opinion, FESCO Transport Group. The processes of formation of specific, with distinct features of the congeneric companies, structures and systems of company planning is in progress in FESCO, with the latest events on world financial and shipping markets are taking into account.

3. The most significant criterion of a congeneric company activity, oriented on aggregating various types (spheres) of business, is an attainment of synthetic, *synergetic effect* from its business activity. Therefore possible (and often can be planned) is the situation, when that or another type of business of a congeneric company (for example, one of its subsidiary) is unprofitable and disadvantageous, but can contribute into a positive systematic effect for the whole company. To our mind, it (but, perhaps, not only it) reveals the synergism or – to put in different way - the synergetic effect of congeneric company functioning. In its turn, and we cannot doubt this fact,- this situation inevitably influences the choice of methods, techniques and tools, organisational forms of in-house financial planning and strategic management, as well as requirements of inter- and inner-functional intercommunication in SCCM's organisational structure. These special features along with complexity and newness of problems largely shape the requirements for the criteria and indicators (and, surely to a certain limits), and also vector the search for solutions and methods of formation of an effective organisational structure for a congeneric company, and its management system in particular.

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Materials of Conferences

THE TRANSISTOR CHOPPER BLOCK SCHEMATIC DIAGRAM OPTIMIZATION WITH THE TRANSFORMER LOADING

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The transistor choppers are being widely used in the various electrical installations. In those cases, when the transformer is the inverter loading, the double – step transducers with the bridge circuit, or the circuit with the midpoint in the transformer primary winding (e.g. «the neutral circuit») is quite inefficient, as the constant component appearance is inevitably just in the inverter alternating current (AC) diagonal, that it is being resulted in the transformer usage contamination, and also the air clearance in the core necessity. The constant component is absent in the half – bridge inverters, having presented by themselves the half – bridge from both transistors, having shunted by two bypassed diodes and two tandem – connected capacitors [1, 2]. The control, that is the output parameters regulation (e.g. the current, voltage) in the known inverters of such type, is carried out by the pulse – width modulation method just from the standard control systems. The external characteristics consideration at the various control pulses on – off time ratios has been shown, that it is necessary to have, approximately, the three – fold supply by the voltage for the linear hardening characteristic receiving in the closed by voltage loop control system (e.g. in the range of 0 – $I_{dном}$), or to increase the capacity of the capacitors. In the both cases, the overall dimensions and the installation's rated capacity are being increased, and also the losses in the transistors are being increased. All these shortcomings removal and defects elimination have been suggested the decisions, which have been stated in [3]. The new block schematic diagram of the half – bridge transistor has been presented in the Fig. 1, and it is contained the half – bridge just from the transistors 1, 2, having shunted by the both bypass diodes 3, 4, the both capacitors 5, 6, having formed, as a whole, with the transistors 1, 2 the bridge, having connected by the direct current (DC) diagonal to the $U_п$ power supply. So, the primary winding 7 of the impedance matching transformer is being included in the alternating current (AC) diagonal, and its secondary winding 8 through the diode bridge 9 is being connected to the direct current (DC) loading 10 of the actively – inductive character. The smoothing choke 11 and the current sensor 12 are being connected, sequentially, with the loading 10, but the half – period average voltage sensor 13 – in parallel on the loading. The control system 14 is being connected with the transistors 1 and 2 driving points by its outputs, and it is closed by the load current and by the load voltage by its output signals, correspondingly, just from the current sensor 12 and the half – period average voltage sensor 13. The R – C chain, having consisted in, serially, connected the capacitor 16 and the both resisters 17 and 18 to the corresponding pulses generator terminals 15, having had the control system component part 14. The diode bridge alternating current (AC) diagonal 19 is being connected in, in parallel, the resistor 18, and its direct current (DC) diagonal is being shunted in the direction, which is being carried the current, by the transistor 20. To the transistor driving point 20 through the logical switch 21 the comparison element output 22 is being connected to, on the first input of which the standard voltage $U_{1э}$ is being connected to, which is quite proportional to the given rectified load voltage, and on the second input it is being connected to the sensor voltage from the transducer output of the half – period average voltage 13 by the degenerative feedback principle, which is quite proportional to the factual load voltage, the logical switch driving point 21 is being connected to the comparator output 23, on the first input of which the standard current signal $U_{2э}$ is being connected to, which is quite proportional to the critical current (e.g. $I_{кр}$) of the non – linear part conversion of the half – bridge transistor inverter external characteristic, and on the second input from the current sensor transducer output 12 is being given by the negative feedback loop signal principle, which is quite proportional to the factual load current.

This device is being functioned in the following way. Let the power supply $U_п$ is being turned on, the corresponding reference voltages values $U_{1э}$ и $U_{2э}$ have been defined, that is the device's mode of operation has been specified, for example, with the maximum value on the load voltage and the load current within the limits of $0 < I_d < I_{max}$. Let us suppose also, that the current I_d is not being changed during the inter – switching interval, and the matching transformer has the «ideal» rectangular hysteresis loop, because of the inductance presence in the loading 10. In this mode of operation, at $I_d \leq I_{кр}$ the current sensor output signal standard 12 is less, or it is quite equal to the $U_{2э}$ signal, therefore, the enabling signal at the comparator output 23 is absent, and the logical switch 21 is being locked. And, correspondingly, the transistor 20 has been shunted, that is the pulse generator 15 is just being functioned with the constant frequency, but the load current and the load voltage regulation is being conducted by the pulse – width method. At $I_d = I_{кр}$ the voltage is still equal to, approximately, $U_п/2$. The external characteristic (e.g. with no account taken of the pulse – width modulator functioning, and at the voltage supply complete absence) is quite the linear and the rigid one.

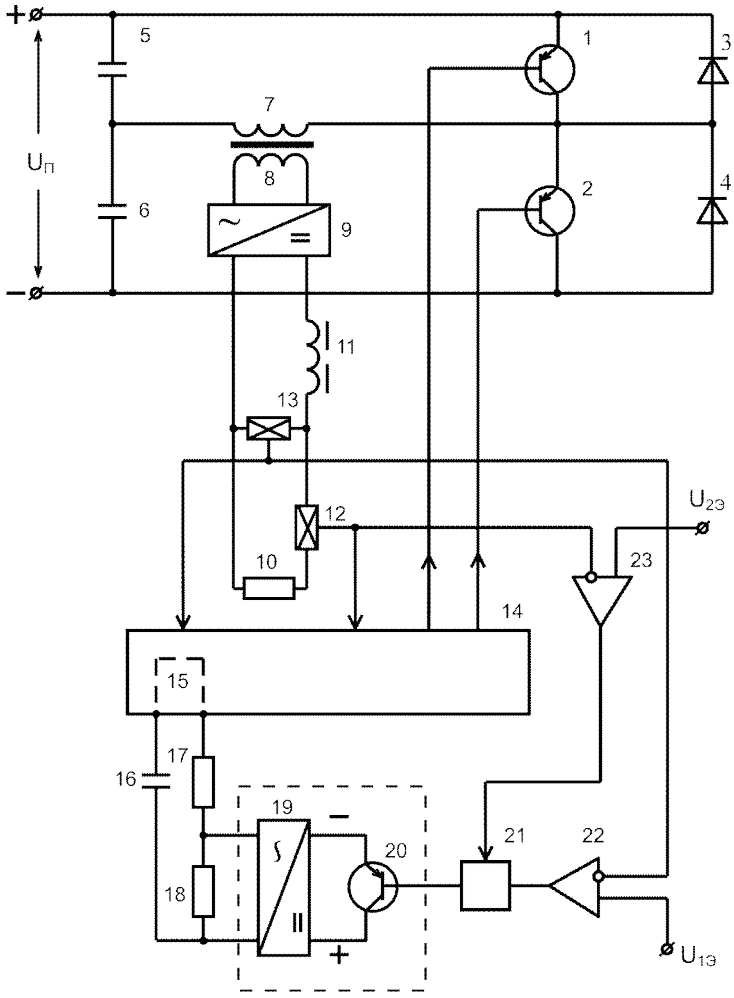

Fig. 1

At $I_d > I_{кр}$, the signal from the current sensor 12 is being become more, than $U_{2э}$, the switch 21 is being unlocked, and it is being gated the signal through just from the comparison element output 22, the capacitors 5, 6 are being discharged for the less time and, moreover, the trigger voltage is being appeared at the transistor input 20, at the signal fade – down just from the half – period average voltage sensor 13. As the transistor 20 is being shunted the resistor 18 in the aggregate with the diode bridge 19, the R-C chain resistance is being descended, the time constant is being declined, and the impulses oscillator frequency 15 is being risen. The external characteristic (e.g. at the voltage supply complete absence) is being increased its inclination in somewhat, but it is being left quite near to the linear one and, moreover, it is being left the, sufficiently, hardening one, therefore, (10-15)% voltage supply of the $U_п$ power source is quite sufficiently just for the absolutely hardening external characteristic receiving, whereas it is usually needed about 300 % supply just in the known circuits.

Thus, the suggested block schematic diagram is being permitted to provide the linearity and the necessary external characteristics rigidity of the half-bridge transistor inverter without any voltage supply increase, or the capacity rise of the capacitors, and also to reduce the switching losses just in the transistors.

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The work was submitted to international scientific conference «Priorities for Science, Technology and Innovation», Egypt (Sharm el-Sheikh), November, 20-27, 2008. Came to the editorial office on 07.04.2009.

THE GALVANIC PRODUCTIONS WASTE WATERS AND SLUDGES PROCESSING WITH THE HEAVY METALS IONS EXTRACTION

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The galvanic sludges utilization challenge is, in general, one of the most actual and the most urgent ecological challenges of the industrial enterprises, having had just in its galvanic processes' technological repeat cycle. They are being presented by themselves the blended saline, the hydroxides, the carbonates, the heavy metals sulphides, having formed during the sewage cleaning.

The heavy metals are being occupied the first place by the stress – factors scale (e.g. the Courteu – Dubinin indices), having characterized the pollutant's danger. The heavy metals ions are quite able to be accumulated just in the human organism and also to be brought on the most serious damages in his vital functions activity, having entered in the human organism together with the water and the food products. The metals ions are negatively being made their influence upon the organoleptic water characteristics.

As a result of the heavy metals ions toxicity, their disposal is not quite being allowed at the solid domestic waste refuse dumps, and the enterprises are being made to be stored them at their own territory, at the same time, having formed, ipso facto, the secondary pollution sources of the environment.

Besides, only up to 50% the colored metals ions quantity, having taken their part just in the galvanic process, are being left the electrolyte solution and, at the same time, are being accumulated on the details. The rest ones are being left just in the baths, in the electrolyte, or in the form of the laid – down the sludge on its bottom. In this connection, the valuable components extraction just from the galvanic production waste products must make up the considerable profit.

The heavy metals ions leaching, by means of the sulphuric acid is the one of the galvanic sludges processing directions.

The paper's authors have already developed the manufacturing scheme of the galvanic production waste products deactivation, by means of the simultaneous extraction the heavy metals ions just from the sludges and the waste sewage.

The galvanic workshop sludge, having contained mg/kg, has been served the investigations object:

Zn – 46625; Ni – 1433; Cu – 12750; Fe – 20100; Ca – 115500; the sand, the magnesium carbonates, the sodium carbonates – 767811 and the waste water of the same workshop, having contained the same and identical components. The waste water hydrogen index has been made up pH=2,5.

The main aim of these investigations has been consisted in the deleterious effect lowering upon the galvanic production environmental toxic waste, in the form of the sludges and having been formed waste sewage, owing to the heavy metals – such as Zn, Ni, Cu, Fe final extraction just from them.

It has been developed the manufacturing scheme, having included the galvanic sludge blending with the special additions, having contained the chloride – or the sulphate – the ions, in the ratio Cl^- or (SO_4^{2-}) : $\sum Me^{n+}$= not less 1:1, the received mixture mechano – chemical activation, by means of the following grinding just in the ball grinder of the dry grinding up to 0,5 – 5 mkm size, the following thermal treatment just in the muffle furnace, having the 550 – 600 ^{0}C temperature, the received sinter leaching of the proper galvanic production waste water at pH ≤ 3, the solution separation just from the settled sludge, by means of the filtration, and the metals extraction just from the received solution, by means of the electro – flotation at the increased pH = 8 – 10 for the assigned object achievement.

The sludge mechano-chemical activation with the chloride – or the sulphate – the ions is being intensified the following the water – soluble many – metallic bonding formation at the heating up to the 550 – 600 ^{0}C temperature, in the form of the chlorides and the sulphates. So, the hypothetical chemism of the sulphides, the hydroxides, and the metals carbonates transition proceeding processes just into the water – soluble sulphates and the chlorides has been presented by the following scheme:

For the sulphides:

$$MeS + 2NaCl + 2O_2 \rightarrow MeCl_2 + Na_2SO_4$$
$$MeS + CaSO_4 \cdot 2H_2O + O_2 \rightarrow MeO + CaO + 2SO_2 + 2H_2O$$
$$2MeO + 2SO_2 + O_2 \rightarrow 2MeSO_4$$

For the hydroxides:

$$Me(OH)_2 + 2NaCl \rightarrow MeO + Na_2O + 2HCl$$
$$MeO + 2HCl \rightarrow MeCl_2 + H_2O$$
$$Me(OH)_2 + CaSO_4 \cdot 2H_2O \rightarrow MeO + CaO + SO_2 + 4H_2O$$
$$2MeO + 2SO_2 + O_2 \rightarrow 2MeSO_4$$

For the carbonates:

$$MeCO_3 + 2NaCl + 0{,}5O_2 \rightarrow MeO + Na_2O + CO_2 + Cl_2$$
$$2MeO + 2Cl_2 \rightarrow 2MeCl_2 + O_2$$

$$MeCO_3 + CaSO_4 \cdot 2H_2O \rightarrow MeO + CaO + SO_3 + CO_2 + 2H_2O$$
$$MeO + SO_3 \rightarrow MeSO_4$$

The metals ions are being transformed into the aqueous solution, at the leaching by the acid sewage water of the similar composition proper production, ipso facto, having increased the analogous metals concentration, having contained just in the waste water.

At the leaching, having formed the Na_2O and CaO oxides at the burning, are being transformed into the hydroxides, having, slightly, lowered the leaching solution acidity, that is able to be promoted to the iron saline reverse transformation just into the hydroxides, as the iron hydration process is being taken its place, having $pH \geq 3$. Therefore, it is necessary the solution acidity correction just in the leaching process.

So, the leaching is being increased with the following temperature rise, and, in this connection, it is efficiently this process to be carried out at the 40 – 50^0C temperature during in the range of 4 – 6 hours.

The solution has been separated just from the settled sludge by the filtering, and it has been placed into the electro – flotation chamber with it's the 1 l. volume. The flotation process has already been made at the 50 ma/cm^2 current density during at the increased pH = 8 – 10. Thus, the pH solution rise has been made, by means of the caustic soda. The PAV of the anionic type – the sodium alkyl – benzol – sulfonate (e.g. sulfonole), in the quantity of 5 mg/l and the potassium xanthate, in the quantity of 3 mg per 100 mg the metals ions just in the solution has been used, as the foaming agent and the collector at the flotation metals extraction.

The electro – flotation metals ions extraction method use just from the solutions has been conditioned by its efficiency. Having changed the process electrical parameters, it is quite possible to provide the air bubbles optimum dispersion, and, at the same time, not having destroyed the foam layer. In addition to the electrode processes, these volumetric chemical reactions are being proceeded just in the electro – flotation device, which are being resulted in the such phenomena, as the Nature changing and the floto – concentrate solubility, the settled sludge dissolution or the following its formation, the complexing agents destruction, that is being promoted to the process quality rise.

So, the received froth concentrate has been dried out and, it has been subjected to the following burning at the 600^0C temperature with the final receiving metallic powder.

Thus, the suggested simultaneous waste sewage waters and the galvanic production sludges deactivation technology will be permitted to lower the toxic pollutants and the substances influence upon the environment and also to receive the valuable production, in the form of the metallic powder, which is quite able to be used just in the industrial targets.

The work is submitted to Scientific Conference "The Problems of International Integration of Educational Standards", England (London) – France (Paris), April 20-28, 2009. Came to the Editor's Office on 25.08.2009.

LANDSLIDE COMPLEXES IN LANDSCAPES OF THE DAGESTAN REPUBLIC AND THEIR ENVIRONMENTAL OPTIMIZATION

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The article analyzes, how landslides influence on landscapes, regards the questions of the landscape changes under the influence of landslides, structure and elements of landslide complexes in landscapes, classification of landslide complexes in landscapes, criteria of landslide landscapes, environmental optimization of landslide landscapes under condition of environmental monitoring.
Keywords: landslide, landslide process, landslide landscape, landslide complexes in landscapes, landslide region, environmental optimization of landslide landscapes

The question of the landslide-affected landscapes is an important part of environmental studies on landslides. Terrain and hydrology of landslide regions let regard a landslide landscape as a special ecosystem, as the landslip areas receive, with due time, vegetative ground cover and turn from a geomorphological structure into a natural complex. Of course, landslides have a different influence on various elements of landscapes. Firstly, the landslide forms a morphological sculpture. Terrain-forming role of landslides is the most strong in the area of accumulation, where block slides move as the water stream cuts the lower part of slopes and activates smaller landslides, mostly in the stream channel of valley [1], also causing cave-ins in some areas. In streambeds of Dagestan's small and big rivers, one can observe erosions of alluvial-proluvial deposits and original channels of mountain streams. Outburst of lakes, formed by landslides, as well as break of side alluvial cones, blocking the valley are also reported. Water streams activate block landslides, ancient landslide deposits, mud avalanches in tongue parts of modern landslides, small landslides in areas close to river channel and occasionally cave-ins. Sometimes, ancient landslide masses move recurrently along the channel. Landslides influence the flora considerably: they either destroy it on their way or damage it significantly. Landslide surfaces get covered with specific vegetation.

Landslides do not only affect some elements of a landscape, but also form specific natural territories. In our opinion [3], it is necessary to develop a stability theory of mountain slopes. Therefore, besides considering separate elements of landslide structures, it is essential to study the structure of natural complexes and their environment.

The structure is closely connected with the functioning, which runs under the influence of geosystems of a higher order. Earlier, we have [3] defined three types of landslide slope development: 1) pre-landslide; 2) landslide; 3) post-landslide, which describe the direction and changes of the slope stability. Each phase of the slope development is characterized by specific features of functioning.

According to susceptibility to landslides, Dagestan's landscapes could be divided into interfluvial and valley-fluvial. Landscape morphological structure, functioning and dynamics change differently under the influence of soil slips [2, 3]. For example, the soil slips in interfluvial areas change the local morphological structure of landscapes, in connection with ground water draining and formation of hydromorphic landscapes.

Especially strong transformations, caused by soil slips, down to disturbances in the morphological structure of an original landscape and its substitution with a new one, happen on steep slopes of river valleys. The process can be clearly observed in the valleys of the Samur, Kurakh, Akhtychay, Usukhchay and Gulgerichay rivers. Slope landscapes of river valleys get a new development dynamics (Fig. 1).

Figure 1. Landslide, which fell from the Akhalchi range and dammed the valley of the Mochokhtolar River, inducing the formation of the Mokhochsky Lake (Khunsakhsky region).

Landslides play a relatively small landscape-forming role on accumulative terraces, as they happen rarely there. According to D.A. Lilienberg [5] and I.N. Safronov [6], morphological structure of landscapes changes a lot on terrace cusps, divided by ravines in areas of river or water reservoir abrasion.

Landslide landscapes can form in alluvial plains under the following conditions: presence of clays, covering alluvial plain depth; wash; excessive water saturation of alluvial plains with their drift soils and herb meadows. Dynamic landscape transformations can be seen in flood plain cusps, where landslides are active [7], though weak and water-logged. They are characterized by a simple landscape structure.

It is important to mention the role of landslides in formation of ravine structures in the Southern Dagestan and, in particular, their landscape structures, functioning and dynamics. There is no doubt, that landslides play an extremely important role in formation of slope ravine landscapes. According to the observations in the Shur-dere area (interfluvial area between Gulgerichay and Korchagsu), the structure of the erosive relief and landscape in general has changed under the influence of landslides. Many parts of avines are destroyed, substituted by butte landforms, which are typical for the morphological structure of ravine ecosystems.

Landslides in Dagestan are influenced by zonal and regional natural factors. Landslide zonal distribution means their dependence on the seasons of the year and climate

zones. When the conditions differ from the normal ones in this zone, it creates favorable prerequisites for a landslide process.

Regional differentiation of landslide landscapes is complex and diverse, and depends on multiple reasons, first of all, history of territorial development in the neogene quaternary period, including modern time [4]. This let follow up the contouring of the lithogene base of the regional landslide systems.

In areas with homogenous geological structure, landslides usually have common morphology and formation scheme. Such landslides belong to the same category or a limited number of regional types. In our opinion [2], regional landslide peculiarities should be analyzed within the boundaries of physical geographical areas in the republic, as they have more or less similar physical and geographical conditions. Borderlines of the physical geographical areas in Dagestan can be taken as limits of landslide regions. **Landslide region** is a historically formed and genetically common territory, characterized by specific natural conditions and human activities, which determine the intensiveness and direction of the andslide development, current relief and morphological structure of the landscape [3].

This approach should also be action-oriented and provide the basis for anti-landslide measures, in accordance with the regional environment.

There are many landslide classifications, developed by geologists, hydrogeologists and geomorphologists, but there is no classification of landslide systems in landscapes. Basing on causes of landslides, we [3] can define the following genetic types of *landslide areas* in Dagestan*:* а) seismogenic; б) hydrogeologenic; в) hydrogenic; г) climatogenic; д) biogenic; е) polygenic (mixed).

Every genetic type of landslide system includes the kind of landslide area, which differs in vegetative and soil cover, which is the most dynamic and is necessary for the landscape environmental approach to landslide studies. At the same time, it is important to consider the successive character of landslide vegetation.

Two types of landslide landscapes can be distinguished in Dagestan*:* natural and anthropogenic. The latter can be divided into two further classes*:* natural-anthropogenic and anthropogenic as such. Both categories of the landslide ecosystems have an anthropogenic genesis, but they differ in duration of anthropogenic effects. A landscape of anthropogenic origin, where human interference continue, form the group of anthropogenic landscapes. A landscape, which experienced human influence only in the past and develops further naturally, belongs to the natural-anthropogenic group. But, if a landslide was an object of technical anti-landslide measures, it turns into a natural-technical system and should be considered as an anthropogenic one.

The diversity of natural-anthropogenic landslide areas and their expansion mechanisms is determined by the kind of human activities in the landslide risk areas.

We offer a classification of the natural landslide areas in Dagestan, which can be also used to distinguish genetic types of natural-anthropogenic landslide systems in landscapes, with the difference, that instead of the natural landslide causes, one regards human activities, for example, earthquakes – vibration, wash – slope cutting and etc. As a result, we can define the following genetic types of natural-anthropogenic landslide complexes in landscapes:

a) natural-anthropogenic landslide complexes in landscapes, caused by slope cutting during road building, linear erosion due to sewage waters and reservoir abrasion;

b) natural-anthropogenic landslide complexes in landscapes, caused by blasting operations in mines, vibration, seismic effects in reservoir areas;

c) natural-anthropogenic landslide complexes in landscapes, caused by ground water activities due to input of sewage waters;

d) natural-anthropogenic landslide complexes in landscapes, caused by extreme

water saturation of soil as a result of human activities;

e) natural-anthropogenic landslide complexes in landscapes, caused by human influence on biochemical processes in soil, which activate microorganism activity, affecting the mineral composition and rock fineness;

f) polygenic (mixed).

Despite of the different origin, development schemes of natural and natural-anthropogenic landslides are very similar, especially at the mature phase of development.

Environmental optimization of landslide landscapes depends on their formation factor and low quality degree of acultured landscapes, and requires a complex and differentiated approach.

Environmental optimization of landslide landscapes in the republic should, in our opinion [3], go in three directions: regional, typological and paradynamic (paragenetic), under condition of environmental monitoring [8].

Regional environmental optimization of landslide systems in landscapes bases on a great variety of landslide complexes, determined by the environment and human activities in the area.

Anti-landslide measures should depend, first of all, on intensiveness and effects of landslides, which will let avoid mistakes and unnecessary expenses.

Besides, every region uses its own criteria for planning anti-landslide measures. They are completely different in, for example, Izvestnyakovy and Slantsevoy regions of Dagestan, or in the republic's humid piedmont Northwest and arid piedmont Central part. This is determined by differences in lithogene base, humidity factor, landslide power and etc.

Regional approach to environmental optimization of landslide-affected landscapes is closely connected with local natural resource use and territorial structure of agriculture, aimed at revision of agricultural lands according to the landslide risk. In this respect, it is vital to register the landslide-affected lands, which are listed as miscellaneous in official documents.

Typological approach to environmental optimization of landslide systems in landscapes in the republic should, in our opinion [3], include a thorough diagnostics and search for the landslide main reasons and mechanisms. Clearing the main cause can provoke self-elimination of all other secondary factors.

The typological approach to the environmental optimization bases on the genetic classification of landslides, which distinguishes natural and natural-anthropogenic landslide areas with different morphological structure, functioning and dynamics. The next step includes planning anti-landslide measures. The main of them are anti-erosion plowing of slopes and phytomelioration.

Paradynamic approach is applicable to the environmental optimization of river basins and ravines, which landscapes were transformed under the influence of landslips together with some other exogenous processes. Environmental optimization of ravines should consider their diversity, level of the slope stability, as well as stability of their relief structure and landscape in general. In this case, the environmental optimization focuses on the morphological structure, which can be made stable by means of agro-, forest- and hydro-melioration measures in the whole drainage basin. At the same time, there can exist landslides of different genesis within one ravine, which requires different anti-landslide steps.

To sum up, basing on the regional distinctions, classification of landslide systems and complexity of their morphological structure, it is essential to choose the most efficient way of the environmental optimization, which would not disturb the hemostasis, i.e. the mechanism, providing relative dynamic stability of the system. Approaches to the environmental optimization of natural-anthropogenic landslide systems in landscapes are the same as for the natural ones, but with due account for their anthropogenic genesis.

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Materials of Conferences

ECOLOGICAL MONITORING OF RESERVOIRS OF VOLGOGRAD AND ITS SUBERBS WITH DIFFERENT DEGREE OF ANTHROPOGENIC INFLUENCE

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Hydrosphere is a natural accumulator of the majority of polluting substances, entering the atmosphere and lithosphere.

Presence of polluting substances in the water influences vital functions of some living organisms, functioning the whole water system and people, whose residence is in the coastal zone.

The goal of our work is monitoring of ecological welfare in reservoirs of Volgograd with different level of anthropogenic pollution.

The following reservoirs were chosen to be researched: the Angarsky pond, the Sudomoika eric, a reservoir in the place called Lesobaza which are located in different topodemes of Volgograd and its suburb.

In the process of investigation it was made a repeated water sampling from these reservoirs and organoleptic properties and chemical water composition of them were examined according to 14 indices (pH, petrochemicals, Cl^-, NH_4+, O_2, permanganate oxidation, biochemical oxygen consumption, PO_4^-, NO_2, NO_3, hardness, Ca^{2+}, Mg^{2+}, HCO_3^-).

Organoleptical analysis, the results of the experiment to test sediment and smell of water showed that the water of all the reservoirs is of midrange of pollution, nonpotable, might adversely affect the population of Angarsky settlement and camp settlement on the bank of the eric Sudomoika, as this water is used by some part of the population for cooking.

The results of hydrochemical investigation show that the Angarsky pond, the Sudomoika eric are tipically sweet reservoirs, but the reservoir in the place called Lesobaza is saltish. Maximum allowable concentrarion of the analyzable substances in the Angarsky pond and Sudomoika are in the limits of the possible meanings. As for the reservoir in the place called Lesobaza, maximum allowable concentrarion of magnesium, calcium are increased, and high mineralization takes place here that can be connected the presence of bischofites.

Thus, the Angarsky pond can be considered as the cleanest reservoir, the most polluted is the reservoir in the place called Lesobaza.

The work was submitted to international scientific conference «Monitoring of an environment» (Italy - Rome, Florence, September, 9-16, 2008. Came to the editorial office on 20.07.2009.

HYDRAULIC ENGINEERING PROTECTION OF COASTS OF WATER OBJECTS

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The problem of human adaptation to floods has universal importance. Floods are usually observed at the territories which are rich with water and fertile flood-lands. There is a constant conflict between the necessity of coastal territory reclamation and unavoidable losses from floods.

In Russia about 50 thousand km^2 are flooded annually. The area of the territories which have a risk to be flooded amounts from 400 to 800 km^2. 300 cities and more than 7 million ha of farmlands fall into the flooded area. In Russia the areas with frequent flood are the North Caucasus, the Primorsky Kray, Sakhalin and Amur regions, Transbaikalia, the Middle and South Ural, Nizhnaya Volga.

At studying of high seasonal floods at the Middle Ural the materials of supervision of Perm university scientists with 1902 for 2005 are used. Forwarding, statistical, design methods are used.

The reason of high seasonal floods at the Kama river basin is the spring snow melt with the extremely big snow bank or (and) a friendly spring character. Over the last 100 years 1902, 1914, 1926, 1957, 1965, 1969, 1900, 1991 got the notoriety, when within the whole Kama basin there were observed floods which caused the inundation of banks, settlements and enterprises. Great damage was caused by the extremely high spring flood in 1979. In Perm region 11 cities and 86 small settlements were damaged.

At some places water rose up to 5-11 m, 7200 dwelling houses were flooded, bridges were broken, 338 km of road, 11 km of embankments, 11 km of water pipe -lines, 16 km of sewerage networks, 11 km of LHV were washed out.

Ice gorges are more characteristic for rivers of the Middle Urals and lead to great water level rises. On the Upper Kama level rises measure up 2,0-2,5 m. On Pilva, Kutima,Yazva, Velva, Obva and on a number of other rivers – from 0,5 to 2,0-2,5 m. The highest level rises are registered on the Chusovaya river near the village Kyn (2,8 m), at the Iren river near the village Shubino (2,7 m), and on the Silva river near the village Podkamenoe (3,4 m). Often there occur ice blocks within the transient regions of the Kama water storages on the Kama river feeders.

Due to the heavy snow cover rivers usually are free from frazil or there is not much of it. However, at weather conditions in the beginning of winter (1928, 1937, 1947, 1949, 1966) frazils can sharply appear and present a danger for hydrotechnical constructions. These conditions are the following: rapid air temperature falls at insignificant snow cover that lead to small

and medium rivers freezing in separate areas and to water discharge on ice. Thus, in winter 1966-1967 almost all small rivers of the Kama river basin got frozen. Citizens of Perm, Chusovoj, Lysva, Chernushka cities could see with their own eyes how crafty even the smallest rivers could be. The frazil width at some areas amounted up to 1,5-4 metres. Having filled in the channel ice demolished bridges.

High spring floods in the Kama river basin are observed most frequently within Kungur region. Kungur city appeared at the junction of the Sylva river and its three large feeders – Iren, Shakva and Babka. The origin of this river junction is connected with the long-term development of karst and tectonic movements of the Earth's crust.

The Sylva river – the left feeder of the Chusovaya river, the basin is located in the south-eastern part of Perm region. The river network of the area under study belongs to the Caspian Sea basin. The basin region belongs to the mountain area (The Urals, the Cis-Ural region) as well as to the plain steppe and forest-steppe area. It is located within the South Urals region and a part of the Middle Urals. The basin relief constitutes mainly even land, in the east there are offsets of the South and Middle Urals.

In the Sylva river basin there are more than 300 ponds, about 400 lakes with the total area about 20 km^2, 120 bogs with the total area about 66 km^2.

The territory climate has some peculiarities that manifested in distribution of the air temperature, atmospheric precipitates and some other meteorological elements, that is caused by the influence of the Urals.

Judging by the hydroregime one can refer the rivers of the territory under consideration to a type with distinct spring flood, summer-autumn freshets and long-lasting winter low water. Snow water is important for stream feeding. In the southern forest-steppe areas the part of meltwater amounts up to 85-90% in the total runoff. It is substantially less (60-65%) – within the highest parts of the Ural Mountains where river feeding mostly depends on rains (up to 40%) as well as solid precipitations. On average about 25-35% of the annual runoff appears underground.

The spring flood on the Sylva river begins in the 1st decade of April. Water flow in the Sylva river almost doubles at 5 km, the channel width increases from 100 to 150 metres.

The flood peak comes after ice drift, which lasts for 1-5 days, when the snowmelting on the Kungur lands has already been over. In spring before the water level goes up there is observed a short lowering of the level to its minimum when the river channel is clearing off the ice within the town.

In case of an early spring a flood begins at the end of March (1961, 1978, 1981, 1983, 1984 and 1986), and if the snow melting is delayed the flood level rise begins in the second part of April and actively continues in the first decade of May. Depending on a temperature regime the river water level reaches its maximum in different periods. According to 1934-1997 data peaks of spring floods appear in between 3.IV (1961) and 21.V (1940).

The ebbing after its maximum progresses much slower than its rising. It usually stretches for 1-1,5 months and ends in the first (1975, 1977), second (1976, 1980, 1982 and 1983 years) part of May, and in some years in the first part of June (1934, 1935, 1956, 1978, 1979, 1985, 1986) and even in July (1984) which depends on the moment of its maximum comes.

Cold snaps in the snowmelting period lead to the level diagram dissection into two-three peaks and more complicated forms. The flood type according to its level regime defines its maximum height. Thus, if one-peak floods in 1979, 1981 and 1987 were characterized by the level rise up to 7 and more metres, then two-peak ones in 1959, 1968 ad 1980 had only the rise up to 4,5-5,5, and three-peak floods in 1935, 1961 and 1984 – no more than 3,5 metres. The danger of catastrophic inundations is produced only by one-peak floods with the maximum grades at the end April or in the beginning of May.

Protecting dams must be high enough to prevent the flood going over the edge. As fortifications there are used reinforced concrete, pre- and solid-cast plates, rockfill blankets, soft mattress coating, stone flagging, gabions, asphalt plates, ramping, planting shrubbery, forest plantation and grass sowing and etc.. Bank protection structures are influenced by streaming water, waves, ice drift and atmospheric precipitates. The fortification type is chosen depending on the level streaming water influences on the slope.

The flooding is prevented by dams with the total length about 28 km, the height up to 10 m and the edge width up to 6 m, the slope base from 1:0,5 to 1:1,5. The dams were built in the mid 60ths of XX century, under conditions of the highly cramped urban development. The protecting dams were built with the method of "national development", which means that each enterprise and organization in the city has attached urban lots where they had to provide protection from the flooding, that's why the body of the built dams was so different by its structure. The dams were laid with enterprises' waste products and clay soil, pieces of concrete frames. The dam operation conduct had been unregulated till the mid 90ths, the dam work was conducted only in the spring flood period.

The main dam buildup, broadening, stabilization operations were carried out in 1998-1999. As a result the opportunity for vehicles to drive along the dams' edge appeared.

In spite of taken measures sliding and breaking down of the dams are observed annually, especially on the unstable segments. These can be caused by unsatisfied quality of dam body materials, their height, too steep slope's angle.

To eliminate mentioned processes the agreement was made to reinforce the dam slopes. So far,

since year 2000 the dams in Kungur have became the experimental area for the application of different reinforcing technologies. For the first time in Permsky Kray the following dam reinforcement technologies were applied:

- gabions;
- geoinjection of slopes,
- different biotechnologies (as cocas mesh, boimates, etc.),
- wave energy diminishing copes.

The gabions were designed using the technology of the "Mackaferry Gabions" Company (Italy). Fixing of the sliding slopes were performed via geoinjection method , which was proposed by "Gabions" Company (Russia, Perm). This method was applied for the wet slope for the first time On the dams of our region the boimates of "Mackaferry Gabions" have being successfully applied. Currently they are one of the main technologies of low-crest dam slope fixation, especially for the dams exposed to active surface water influence. These biotechnologies are used all around the world.

The Iren river dam in Kungur built in 2005 can be regarded as an example of a protecting flood wall. Its length amounts to 330 m. It provides protection against the flood for 531 houses with the popularity 3000 people. The prevented damage amounts to 332 million rub.

In some cases especially having a new building development, the protection against floods is fulfilled with soil filling. But this method is economically sound only if the embankment is not very high. The cost of this work usually is two or three times higher than the cost of the protecting dams.

In practice a method of river channels clearing is used. Depositions of wood and sandy silt material affect the water-transmitting capability of the Sylva river and this has resulted in a bad river shallowing. The channel clearing decreases a flood level, reduces the stream bank erosion and overgrowing of shallows, increases the river water quality.

Conclusion

The most radical way of flood protection is to regulate the flow with water storages. Reducing the flood damages is achieved by the redistribution of the flow in time. The water storages specially built up for the flood preventing, are constructed with the help of the dams of different height and length. For their arrangement artificial and natural hollows are used. A routing channel between the river and a detention pond is build to route flood water to and from the detention pond during high and low (water) flow respectively. The channel has constructions for regulating its transmitting capacity.On rivers which have wide flood valleys anti-flood storages are constructed –of a river or lake-river type, or a range of storages on the main river and its feeders. When projected, the designing of variants of location, water marks and operating conditions, the effectiveness of water storage construction is required. Water storages can become a reason of numerous negative processes – karst, erosive, hydrochemical, hydrobiological that can change the naturally developing nature system. Therefore a thorough investigation of the whole complex of questions is required. Any attempt of an isolated solution is doomed to failure as it doesn't lift the threat of a flood, but either intensifies it or leads to new negative consequences.

The work was submitted to international scientific conference « Nature and environment», France (Paris), October 13-20, 2009. Came to the editorial office on 03.09.2009.

RAISING THE EFFICIENCY OF ENGINEERING SURVEY AS ONE OF THE WAYS OF ENVIRONMENTAL PROTECTION

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Caring about nature is a motto of the modern world. The most significant events under such logo are meetings, protests, and attempts to recover from already done mistakes. At the same time, one should not forget about preventing the environmental degradation under human activity. Sometimes damage caused to the nature is not clearly seen or is not significant itself; however, accumulating, even small environmental damages may result in a huge problem.

Mankind regularly affects the environment by building houses, factories, roads, communications, etc. And before building, it carries out engineering surveys. During those surveys wells are drilled and rock samples are taken, which damages so-called geological environment. Thus, even if a piece of land appeared to be not appropriate for building, environment is already breached. For example, during the projecting of trans-Siberian oil pipeline the surveys, to be exact, deforesting was already started before the project was approved. Later, the project was changed under the society pressure, but what about deforested lands?

It is understandable, that we can't refuse from building at all, but we can try to minimize damage that is caused to our planet. An alternative for standard methods of engineering survey are geophysical ones. Geophysics studies physical properties of rocks, such as elastic waves speed, specific electrical resistance, radioactivity, etc. In this case surveys may be carried out not only in wells, but on the surface. For those purposes the surface of the area is laid out with profiles and pickets, and then a recipient and a source of a certain kind of signal is set up. In such method as seismic prospecting a source lets out elastic waves (due to a shock or ultrasound), which go through rocks and reach a recipient in a certain time. Basing on the data from seismic recipient a time section of the area is plotted and then it is mathematically transformed

into depth section. Later, a specialist-interpreter reforms depth section into geological one. The more experienced such specialist, the more precise his forecast about geological structure and physical properties of rocks for the area, and on the base of this particular forecast a decision about building is made.

The word “forecast” is not used occasionally here. A problem to define geological structure and physical properties of rocks on the base of geophysical data is called forecasting because in this case we can’t see what’s under our feet in real. However, using standard methods there are no 100% guarantee in precision as well, otherwise it is required to dig out all area’s surface.

Back to geophysical methods, it’s appeared that to solve the problem of forecasting effectively enough, it is required to know values of two rock properties [1, 2]: elastic waves speed and density. The last one may be evaluated by different methods (e.g. density gamma-method or laboratory measures, in which case comparatively less amount of samples is required).

Researches showed that the forecast based on those two properties matches real geological structure of the area not less than 80%, which indicates the efficiency and perspectivity of such approach. This forecast became possible due to such method of intellectual systems as expert systems, which are systems based on knowledge of experts in a certain subject. Knowledge in those systems are represented according to specific models. In the described experiment a rule-oriented model was applied, when knowledge is represented as a set of rules “if-then” [1, 2].

Applying expert systems is caused by the fact that knowledge and experience of a specialist-interpreter play the major role, as it was already told before. Expert systems allow to accumulate and to use the experience of specialists in engineering geology and geophysics instead of starting from the scratch when expert is substituted with a young specialist, who has no practical experience yet. In this case experimental expert system is able to play its role of interpreter on 80%.

It is necessary to note that the precision of 80% is not a limit so far. In the future it is necessary to carry out further researches, and first of all, it is necessary to make a detailed rocks classifier based on two properties: elastic waves speed and density. It is possible that one more property – specific electrical resistance – should be used, because electrical prospecting is one of the most popular geophysical methods, as well as seismic prospecting. As to the rocks classifier, it will be a value itself, because it will unite the knowledge of engineering geologists and geophysicists for one purpose – to protect the nature. Such engineering survey will reduce the damage caused to the environment by human activity.

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Materials of a Conference

NON-STANDARD MATHEMATICAL TASKS AS A FACILITY OF DEVELOPMENT OF THE GIFTED CHILDREN'S CREATIVE THINKING

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The leading domestic experts in the area of the psychology of giftedness (D.B. Bogoyavlenskaya, V.D. Shadrikov, Y.D. Babayeva. N.S. Leytes and others) regard the concept "a gifted child" as "…a child which is notable for bright, obvious, sometimes remarkable achievements (or he possesses internal preconditions for such achievements) in one or another kind of activity".

There are two extreme points of view in the literature dealing with the problem of the gifted children: "the gifted children are extremely exceptional (giftedness is a unique phenomenon)" and "all children are gifted".

Regarding the children's giftedness we share the point of view which claims that the majority of children have potential inclinations of giftedness.

Modern psychological literature distinguishes different kinds of giftedness: the leader giftedness, the social giftedness, the academic giftedness and others.

Among kinds of giftedness the decisive importance belongs to the academic giftedness (A.I. Savenkov), which manifests itself in learners' good (easy) ability for education.

The academic giftedness also includes the mathematical giftedness. The concept "academic giftedness" is connected with the abilities which (according to V.D. Shadrikov) are determined "through the correlation with the success of activity". The abilities are developed, therefore the giftedness and talents can also be developed.

Among the components of the mathematical giftedness are [3]: the high degree of the perception of mathematical information; its processing which is characterized by the ability for logical thinking, summarizing and reasoning with reductive structures; the storage of mathematical information and the skill to give it out; the mathematical turn of mind.

Children giftedness diagnostics can be realized according to the observations results of their activity character: the high level of operations performance; the fast mastering of activity; the invention of new methods; the bringing up unexpected ideas; the forming of the individual activity style; the high structuredness of knowledge and speed of learning; the strongly marked interest manifesting itself in perseverance, diligence and persistence; the heightened sensibility and cognitive needs; the criticalness towards personal work results; the preference of paradoxical, contradictory and uncertain information; the bright display of creative thinking signs etc.

Among summarized skills of students' creative activity are [8, 9, 10]: the skill of presenting a plan of coming operations, the skill of entering into active mental work, the skill of obtaining extra attainments without assistance, the skill of using additional literature, the skill of applying knowledge in standard and various situations in constructively original way.

The creative work in psychology is studied mainly in two aspects: as psychological process of novelty creation and as the totality of personal characteristics which ensure personal involving into this process.

Creative thinking has following characteristic features [4]:

- openness for experience (the skill to find out and pose a problem);
- breadth of characterization;
- fluency of thinking (wealth and variety of ideas, associations, originating from slight stimulus);
- flexibility of thinking (the ability to pass quickly from one category on to the other);
- originality of thinking.

Observing the connection of creative thinking with mathematical one, A.N. Kolmogorov [5], V.A. Krutetsky [6], A.I. Markushevich note the characteristic features of the latter: breadth and flexibility, the inclination to the operations with numbers and signs; the ability to solve mathematical problems; the ability to produce abstraction and others.

There are different approaches to the solution of the problem of the gifted children's creative thinking formation: the creation of problem situations, the bringing up and substantiation of hypotheses, the concretizing of the problem condition, the dividing of a difficult task into parts, the generalization of a theorem, the working out of an inverse theorem and the checking its truth, the classification of mathematical objects and the ratio between them, the problem solving with different methods and others.

The category of contradiction is considered to be a driving force in dialectics. A teacher should artificially create obstacles in the process of education. The creative component of educational and research activity should be present at every lesson for the developing of students' giftedness and creative thinking.

Non-standard mathematical tasks are used as a facility of the students' creative thinking development; they are the tasks containing "the original, creative beginning which cannot be revealed by the reproductive methods of solution and they demand searches of their own ways of solution from the students" [3, p. 8].

The pupils of 5-6 grades can be offered such non-standard tasks: for the methods of mental arithmetic, for the test of numbers divisibility, for the development of spatial imagination, for the broadening of geometrical horizon; logical tasks; the tasks of logi-

cal and combinative nature; the tasks for scission, shifting and construction of figures; the tasks for calculation of figures areas by dividing into parts and addition and others.

The role of non-standard tasks in the thinking development [1, 2] of the gifted children is diverse and it consists mainly in the following functions:

- develop students' ability to analyze, argue, prove;
- develop students' ability to transfer educational information into non-standard situations;
- develop students' logical thinking;
- develop students' cognitive abilities by way of learning of problem solving methods;
- form universal personal qualities such as the habit of systematic intellectual labor, the aspiration for knowledge, the need for control and self-control etc.;
- inculcate and strengthen an interest for Mathematics in students and others.

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The work is submitted to the Scientific International Conference "Scientific Research of Higher School on Priority Orientations of Science and Technology", June 11-25, 2009. Came to the editorial office on 08.05.2009.

Materials of Conferences

HOTEL MANAGEMENT PROBLEMS

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In virtually all hotels are almost corporate-culture issues. There are profitable hotels that have a few shortcomings, but they may be the ones to keep your eye on when things get tough. Conversely, some of the most beautifully groomed hotels that feature all the amenities and perfect guest service are, quite simply, losers—and that's because no one in management is aggressively focused on the bottom line.

What are some of the positive commonalities—the good signs—that a hotel offers? To begin with, well-groomed, uniformed, name-tagged employees who greet guests with a smile make an excellent first impression, both on guests and new management companies. Sharp curb appeal and public-space cleanliness are usually signs of good things to come. Once you get more "into" a hotel's behind-the-scenes areas, things become clearer: Orderly offices, storage spaces and housekeeping areas are examples of the good signs that usually follow good first impressions.

On the other hand, we always seem to find a messy front desk—not necessarily on the working surface but in drawers, cabinets and storage closets—when we take over a troubled hotel. Clutter, disorganization and years of dust and trash appear in virtually every problem property. We inevitably find old furniture, out-of-date supplies and never-to-be-used "spare maintenance parts" left in storerooms and maintenance shops. This usually happens in hotels where management claims to lack sufficient storage space—another sign of rampant disorganization.

And these shortcomings are not the cause of mediocre profitability—but they're signs of management's poor organizational skills and lack of focus on orderliness and cleanliness. And here's another thing: Management's lackadaisical attitude toward keeping things organized and clean most certainly influences employees' attitudes about their own work habits. Unkempt employee restrooms, for example, not only are a sign of management's lack of concern for staff, but set a poor standard for what management expects of those same employees in keeping guest areas clean.

Here's another sign of a poorly run hotel: low linen pars. They're not the result of poor profitability—they're a cause. If we see housekeepers stripping rooms to get linen back to the laundry, washed and used again immediately, that's a sure sign that there are more things wrong than insufficient linen supplies. For example, it means there are undoubtedly days where not all the rooms get made up—and therefore occupancy may suffer due to unavailability of rooms. As absurd as it may sound, linen wears out more than twice as fast if it is washed and used daily rather than every other day or so. Circulating linen daily by stripping beds and running it back and forth also takes more labor.

Likewise, if printed and other collateral materials are poor in quality, it's a sign that the hotel is too. In full-service hotels, menus are threadbare—good hotels get new ones, poor hotels don't. Raggedy in-room telephone books are another example of things poorly run hotels pay no attention to—and phone books cost nothing to replace.

Finally (and perhaps most important), a hotel's accounting methods also are reliable indicators of what's really going on—after all, if you can't keep score, you can't win the game. There are really three issues involved in good accounting: gathering all data on a timely basis from all areas of the hotel (payroll, revenues, statistics and accounts payable); compiling it quickly and accurately in the form of financial statements; and interpreting and acting on the information once it's gathered. If this isn't being done, it's another symptom of poor organization and lack of attention to details. Without this information, management cannot effect changes for the better in a timely manner. Of course, management must know what the data means and what they can do to make the numbers improve—sadly, this business basic is too often missing in hotel management.

In well over half the problem hotels we've been retained to manage, financial statements do not conform to the Uniform System of Accounts for the Lodging Industry. This makes it difficult, if not impossible, to compare a hotel's operating results to similar hotels. Most of the owners and managers of these properties were aware of the Uniform System but didn't consider it worthwhile to change their accounting system—in other words, they thought had a better way of looking at their accounting data than more 80 percent of the other hoteliers in the world. Now that's arrogance and this how Russian management thinks sometimes.

If we don't make sure every last detail of our hotel is well attended to, we're out of step and marching rapidly toward big trouble. Make lists of what needs to be done to make your property as immaculate as can be—not only in terms of cleanliness and orderliness, but operationally as well. Maybe a good place to start is organizing and cleaning the front-desk area and working your way through the back-of-the-house areas that your guests don't see.

The work was submitted to the International Scientific Conference «Section of young scientists, students and professionals », Turkey (Antalya), August 16-23, 2009. Came to the editorial office on 06.07.2009.

ASSESSING THE EFFECT OF THE CONSUMER LOYALTY FOR A CHAIN RETAILER

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Numerous researches in the USA and Europe show, that the majority of the leading companies in most branches of economy have a stable customer base. This success factor is also called the loyalty effect. Some researchers believe, that the loyalty effect is a more powerful factor required for ensuring the success of the business, than the market share or cost structure. The level of the customer's loyalty depends on his commitment to a specific product brand and is usually measured in the number of recurring purchases. The highest degree of the consumer loyalty is a brand fanaticism, when a customer continues to buy the product regardless of the price-quality ratio.

So, it should be emphasized, that loyalty means a possibility for a company to focus its attention on a specific consumer group, and, correspondingly, focus its marketing efforts on clients, who bring the largest payoff, and thus, to conduct target marketing.

Loyalty means adhesion to one's values. A loyal customer does not change the source of his values and recommends it further. The most loyalty-sensitive businesses are those, that require a high level of intelligence and professionalism.

Consumer loyalty management (L_i) should be regarded as formation of a consumer value, which can be presented as a system of functional dependences between some quantitative and qualitative elements:

$$L_i = L_i(x_{i1}, x_{i2,\dots,} x_{in}),$$ where

L_i is a loyalty function for the i-client; $L_i \in$ [0,1], $i \in N$

n – number of total quantitative and qualitative characteristics of a client, where $n \in N$;

x_i – qualitative or quantitative criterion;

$x_{1,\dots,} x_m$ - qualitative criteria, $1 \le m < n$.

$x_{m+1,\dots,} x_n$ – quantitative criteria, for example, a product's price, which includes terms of payment, credit, delay of payment, financial dependence, discounts, lump-sum bonuses and etc.

Let us use the method of paired comparison. Suppose K is the number of clients, i.e. $i = 1, \dots, K$. Let us use elements of a group expert choice to build a model. Let assume, that a company invites a group of experts, consisting of *V*-experts, who range *K*-consumers ($V \in N, K \in N$) according to all available *m*-criteria (according to the intensity level of some qualitative characteristics). Here a condition of expert preference transitivity is to be met. In other words, each expert first ranges the objects, then shares his opinion in form of a paired comparison matrix of. As a result, we receive *V*-lines of paired comparison vectors as follows:

$$V = \begin{cases} a_{10} \succ a_1 \sim a_8 \succ a_7 \dots \\ \dots\dots\dots\dots\dots \\ a_{78} \succ a_{20} \sim a_1 \succ a_{2\dots} \end{cases}$$

In order to get a consistent group expert opinion, let use the Vega method. As a result, we get, for example, the following line

$$a_1 \succ a_2 \succ a_3 \sim a_4 \succ \dots \sim a_k$$

In other words, for example, the first client has rank 1, the second - rank 2, the third and the forth get rank (3+4)/2=3,5 and so on. But we need, that the most preferable client has the largest loyalty index. Therefore, after some transformations, *j*-criterion of loyalty for an *i*-client equals:

$$x_{ij} = \frac{K - i + 1}{K} \in [0,1], 1 \le i \le K$$

Let S_i be a quantitative value of a *j*-characteristics for an *i*-consumer.

$$x_{ij} = \frac{S_{ij}}{max(S_{ij}, \dots, S_{kj})} \in [0,1] \qquad , j \in [m+1, n]$$

Then, we get a loyalty function vector for an *i*-client

$$L_i(x_{i1}, \dots, x_{in})$$

Let l_i be the value of the loyalty index for an *i*-client:

$$l_i = \left\| L_i \right\| = \min (x_{i1}, \dots, x_{in}) \in [0,1]$$

Loyalty rate equals a minimal value of all criteria of an *i*-consumer.

The Russian companies have already realized the fact, that stable relations with profitable clients are of a great importance. But not all of them are able to assess and manage the client loyalty at high level. Effective customer base management can only base on the reliable, current and relatively full information on the clients.

The work was submitted to international scientific conference «Prospects for the development of university science», Dagomys (Sochi), September 21-24, 2009. Came to the editorial office on 08.10.2009.

Materials of a Conference

ON THE EARTH'S MOVEMENT

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The geophysicists admit the regular displacement possibility of the shell structure around the Earth, concerning its nucleus. One should think that the historians can make their own contribution to the time frames clarification of the similar cases. For example, it was said just in the Nichonovsky Chronicle, dated from May, 10, 1230: « **the Sun having risen,** had been seen from three sides, as the star and, so, in the same way, it had been set down and, then it had been raised, by its own way». Further, it has been followed, dated from May, 14 of the same year: «Many times, the Moon, having crossed the sky, had been appeared to be the inter – Moon period of time, but, in other times, when **the Sun**, **having run back** through the sky by the low orbit of the shell structure around the Earth **from the dark – lighted sides were quickly running under the Sun, just under the afternoon side**» [1]. Thus, there is the quite clear the situation on the displacement of the shell structure around the Earth, concerning its nucleus before us, which has been begun on May 10, 1230 (e.g. the whole Earth rotation is quite fabulous, by its half). The celestial body's reverse motion has been registered on May, 14 of the same year. Then the extraordinarily fast air – masses transport just from the North to the South has been registered, and it is said on the fact, that the displacement has taken its place not only, concerning the Earth rotation axis, but also, concerning the ecliptic. The planet's returning to its initial and primary state has been taken its place just in the opposite direction. It should be noted, that the similar phenomena in the history have, repeatedly, been registered. So, still in the V – th century B.C., the Egyptian priests informed the historian Herodot, that «the Sun four times had raised not at its usual place: namely, it had raised twice there, where it was setting down now, and it had set down twice there, where it was raising nowadays» [2] for the known 11,340 years of the Egyptian history (certainly, the period itself can give the rise to be doubted) for them. One is quite able to comprehend this phrase in the different ways, just after some consecutive translations from the different languages, having supposed the phenomenon for the above – indicated period in one, two or four cases, but it is difficult to be disputed the fact itself of the considerable displacement of the shell structure around the Earth, especially, in comparison with the Russian chronicle's data. Thus, it is quite enough and clearly to state, that in addition to the known Earth motions (e.g. by the elliptical orbit around the Sun; around the axis, having inclined to the ecliptic's plane; the precession and the others) the shell structure around the Earth, is being made the vibrations with some periodicity, concerning its nucleus, that is quite able to be caused, for example, the magnetic Poles displacement, having fixed on the surface and the others. This is the historical discovery, but the geophysicists and the astronomers will have to be investigated and to be examined just in the main reasons of the similar phenomenon.

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Materials of a Conference

ARCHITECT I.F.NOSOVICH

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An important position in the architecture, social and cultural life of Altai region in recent decades of the XXth century takes civil engineer Ivan F. Nosovich.

Ivan F. Nosovich was born 14 (27) October, 1862 in the family of a squireen in Rovno (Volynskaya guberniya). 1883 he entered St. Petersburg Imperial Institute of Civil Engineers. 1889 he was graduated from the Institute with qualification of engineer of 10 rank and 1890 he was named to junior architect of building department of governor general in Amur River region. For construction of triumphal arches and decorative elements in Habarovsk before the visit of the Emperor Alexander III he received the position of titular counsellor.

On November 6th, 1893 Nosovich was send to Semipalatinsk region. 1896 he was given a silver medal for employment years. From 1897 he was irrigation head in Semirechensk region, where he carried out preliminary work and calculations for irrigation systems. For these years he hadn't any opportunity for real engineering, so he tried to take part in architectural competitions. 1897 he received the 3d prize in All-Russian architectural contest "Workmen's colony of Russian-American rubber manufactory". G. Boronovski y included two projects of I.F. Nosovich into seven-volume architectural encyclopedia of the second half of the XIXth century. The publication in this prestigious edition was a real honor for any architect of that time. Being a skilled engineer I. Nosovich took the offer to work in Barnaul. He got a secondary post of roads' engineer but he managed to show his true talent in Altai. He watched out for construction of the Public House upon the project of the architect Ropet and led the construction of government buildings. Among his buildings are well-known: the house of Tomsk factory's chef (1900), the own house of the architect (1907), the building of Roman Catholic Church (1909) in Barnaul and the Public House in Byisk. Unfortunately, the building of Roman Catholic Church loosed its inimitative style after reconstruction in 1936.

In 1913-1916 the mountain laboratory in Barnaul was reconstructed upon the project of Nosovich to Altai State Regional Museum [1]. The two-storeyed wooden house of I. Nosovich with carving and cornice was saved till 1989. It was not only a landmark in eclectic form but also a memorial of architect's life. In spite of general public protests the house was pulled down because of new construction.

The greatest erection of Nosovich in Altai was the Public House (Drama Theatre now) in Biysk known as Kopylov's House and built on employer's money. I. Nosovich projected churches and chapels for towns and villages of Altai. On the order of prioress Parfeniya I. Nosovich constructed a chapel on Sobornaya Square, a stone cathedral of the Kazan icon of the Mother of God and some wooden churches on stone basements.

I. F. Nosovich was an educated public man. From 1908 he was a chairman of grade school board, which established free libraries and schools for common people.

In 1914 the wife of Nosovich died, daughter Tamara and grandson Branik came to a tragic end too. In addition the conflicts with city government made the architects life harder. In summer 1913 a recruit barrack collapsed, so that one man died and eight people sustain injuries. The city government accused I. Nosovich but the citizens went to bat for him.

We know some facts about his life from the memoirs of N.M. Bahareva, whose father was a friend of the architect. She writes about eagerness and a wide range of interests of Ivan Nosovich (photography, woodcarving, making furniture).

In 1902 the futurologist Ebenezer Howard published a book under the title "Garden Cities of Tomorrow". Howard's idea met with wide recognition of Russian city planning. By the end of 1913 Russian society of Garden Cities was based in St. Petersburg, a department of this fond was represented in Barnaul. I.F. Nosovich was a member of Russian society of Garden Cities; he made a project of garden city in the northern part of the city. The garden city occupied the territory of 9 hectares and had a round square in the middle. But the project wasn't implemented because of investments' lack. The last erection projected by Nosovich in Barnaul was a brick building of laundry (Polzunov str.) In 1929 he leaved Altai and moved to Krakow. The exact dates of his final years are unknown, but some of his erections and architectural projects with signature of the author are still kept.

The research work is provided by financial help of Russian Humanitarian Scientific Fond and scientific research project "Russian art tradition of Siberia (the end of the XXth– the beginning of XXIth centuries)", project08-04-60-401 a/m

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Materials of Conferences

THE MORDVINIAN FAMILY DEMOGRAPHIC PARAMETERS AT THE CLOSE OF THE XXTH – AT THE BEGINNING OF THE XXIST CENTURIES

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The negative tendencies just in the family's sphere had been outlined, which resulted in its following weakening and also the degradation, as the social Institute, since the middle of the 1980 – es. The total quantity reduction of the Mordvins' legally have formed the marriage unions has taken its place just in the period between the 1989 and 2002 censuses. So, the married men total quantity has been reduced for 3,596, the married women – for 4,420 marriages in the Republic of Mordovia from 1989 till 2002 – es. The young people contingent reduction, having reached the marriage age and the free marriage partners' exhaustion just in the neighboring age groups is being served, as one of the factors of this tendency negative development. At the same time, the divorced men and women total quantity has been increased, correspondingly, from 1,5% and 4,0% in 1979, up to 5,3% and 6,1% in 5,3% and 6,1%.

The divorces, especially, in the young age groups, are, negatively, being exerted influence upon the birth rate level, which has, considerably, been fallen. In its turn, this has been made its influence upon the family's quantitative characteristic. Up to 2002, the Mordvinian family's average size has been made up 2,6 persons (e.g. 2,7 ones in the town and 2,5 – in the village) in the Republic of Mordovia. The families, having consisted in 1 – 3 people (e.g. 75 %), have already become the predominant family's type. Though, they are being prevailed, as in the towns, well as in the village: they have been made up 74,5 % in the urban settlements, 75,7 % – in the rural area. The single persons have been made up the large number (e.g. 24,5 %). Their part has already been reached 22,1% in the towns, and 28,1% – in the rural area.

If to consider the Mordvinian families' numerical strength without due regard for the single persons, then the biggest their quantity have been made up the family unions just from 2 people – 36,3% (e.g. 33,0 in the town and 38,0 in the village). And the families' part, having consisted in 3 and 4 people, is the considerable share: correspondingly, 29,8% (35,0 and 27,0) and 24,5% (26,5 and 23,4). For the Mordvinian families' part, having consisted in 5 – 7 people has been the share of 9,4 % (8,% and 11,6).

Thus, the Mordvinian family's demographic parameters at the close of the XX – th – at the beginning of the XXI – st have been, considerably, changed. So, its numerical strength falling, and the generational structure simplification, and also the birth rate falling are being observed, since 1990 – es. Hence, it is necessary clearly to follow the national programs on the birth rate growth and the young families' support, having been developed by the President and the Russian Federation Government, that would be able not only to stabilize the current situation, but also to enhance the family's prestige.

The work was submitted to international scientific conference «Present-day problems of science and education», Russia, (Moscow), May, 13-15, 2009. Came to the editorial office on 14.05.2009.

LANDSCAPE SCHOOL AS THE CATEGORY OF ART HISTORICAL PROCESS

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In the history of art the term "art school" has a multilevel content and by its help integration and originality are always stressed. The term is used toward the art of the country; the art of geographical area or city, in case it is marked by originality of features within definite chronological lines; toward the group of congenial painters; the group of apprentices and followers of a master.

Historically formed is a type classification of art schools. The classification takes into account specific peculiarities of art forms and genres. On the basis of this classification landscape school as an art unity is a kind of painting school with specific peculiarities of landscape as a genre. Depending on its localization in time and space a landscape school is systematized according to chronological, territorial and geographical principals. This way a landscape school is a part of territorial culture-natural complexes. According toYu. A. Vedenin, territoriality comes out "…through territorial selectability and regional specificity of art, through location of production sites and made art works" [1].

The peculiarity of landscape school is determined by native environment (natural and social), stability of landscape traditions in art, appearance of group of painters with educated sense of nature and solidary in thematic, stylistic and technical plans and, finally, by the influence of talented masters from another national and regional schools. The way of appearance of a landscape school begins with assignment of a group of painters in natural, social, economic and cultural environment, which are congenial in their art positions; and with creation of art works similar on a number of counts. According to M.S. Kagan, this is a period of demonstration of individuality and peculiarity in mastering of reality [2]. The criterion of creative individuality and singularity is originality (lat. originalis – original, primary), seen as "… originality, singularity of aesthetic object and subject, reflected in fertility of content and form, valuation and

critical interpretation of art works" [3]. The second period in the development of landscape school can be characterized by the appearance of general stable signs in formal structure of landscape painting art works. A complex of peculiarities in elements of form (composition, coloration, texture) is interpreted in art criticism as a manner (fr. maniere – way, method).

Researching the specificity of development of landscape school Prof. T. M. Stepanskaya, Doctor of Fine Arts, points out its six main signs: presence of general motives; stability of compositional plans; general character of tonal developing; general character of texture developing; mastering of general motives in aquarelle, painting, lithography, linocut e.t.c.; general role of landscape in narrative painting.

The third, final period of development of a landscape school supposes the presence of general stable signs not only in formal but also in image structure of landscape painting works. According to native research tradition it makes sense to use the category of style (lat. stylos – a pointed instrument for writing upon wax tablets), defined as "… a stable unity of art image system, art means of expression" [5]. The image structure and form show the principals of practical fulfillment. Generally accepted in art criticism is the term of art method (gr. methodos – way of research, theory).

In conclusion, the following definition of landscape school can be given:

Landscape school is a kind of painting school, which is notable for specific peculiarities of landscape as a genre. As an art unity, determined by objective and subjective factors, it is connected with the integration of thematic, formal and content plans. It is important to underline, that a landscape school has own specific method and style. As a category of art-historical process, landscape school localized in time in space (according to chronological, territorial, geographical principals) is a part of territorial culture- natural complexes, and it is reflected in national and regional art.

The research work is provided by financial help of Russian Humanitarian Scientific Fond and scientific research project "Russian art tradition of Siberia (the end of the XXth– the beginning of XXIth centuries)", project08-04-60-401 a/m

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The work was submitted to international scientific conference «Present-day problems of science and education», Russia, (Moscow), May 13-15, 2009. Came to the editorial office on 06.07.2009.

Materials of a Conference

THE GEOPHYSICAL METHODS EFFICIENT COMPLEX OF THE HYDROCARBONS DEPOSITS DIRECT FORECASTING

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It is usually quite being subjected to the preliminary discussion the two most actual challenges – that is the methods informativeness and the comprehension ones, and also the complexification efficiency, at the geophysical methods complex choice and the validation, having aimed at the one or another practical task and the real – world challenge. The efficiency, one way or another, is being hinged on the costs and expenditures minimization challenge, and also the scheduled time for the works production, that is the complex narrowing challenge, but the informativeness, on the contrary, is being set against its further widening challenge, for the purpose of the indications maximum quantity getting, on the interpretation basis of which it is quite possible to achieve the single value and the unambiguity in the geological nature determination of the studied objects, and also their geometrical characteristics.

The complex widening challenge is being come to the foreground, at the solution so difficult task, as the oil and gas deposits forecasting, and when their presence indications are being revealed themselves in the form of the weak anomalies, which are quite comparable with the observations errors.

But even its maximum widening, at the expense of the geophysics all the methods use, which are available, is not being deleted the challenge from the agenda on the anomalies geological interpretations ambiguity, as the geophysical information is quite capable to characterize the studied object, only by the indirect way in the form of the anomalies in one or another physical field distribution.

Therefore, only the methods inclusion into the complex, having permitted to receive the direct information on the oil and gas presence, that is the geochemical and the bordering methods, having combined, as the indirect geophysical, well as the direct geochemical ones, is being permitted to be hoped for this challenge cardinal solution.

And the costs and the expenditures minimization necessary degree also the scheduled ones for the works production is being achieved by the suggested combination of all these diverse methods, as far as the «heavy» ones and the cost – based geophysical investigations are usually being excluded from the field stage – the seismo – and the electrical exploration, which are able to be changed and to be substituted by the efficient and the inexpensive non – deep and the shallow modifications. At the same time, the seismo – and the electrical exploration data inevitably would be claimed and be demanded just from the fund and the corresponding fiscal sources at the materials processing and the further interpretation stage.

The gravimagnetic surveys results of the last years will also be claimed and be demanded just from the fund and the corresponding fiscal sources, which are quite necessary for the preliminary territory division into the districts and the fields zoning by the peculiarities and the specific features of all these geophysical fields. All these materials are the main basis for the tectonic lands division into the districts and the fields zoning. So, it is quite impossible to achieve the most reliable the private, the particular, and the specific tasks solution, having connected with the separate objects, without such territory division into the districts and the fields zoning, that is at the integral presentation absence on the geophysical fields distribution regularities and on the studied territory subsurface geological section structure. Thus, the suggested approach to the task solution of the oil and gas deposits direct forecasting is being structured and is being well – defined, as the three – stepped one.

The investigations territory division into the districts and the fields zoning by the geophysical fields peculiarities and the specific features with the further parcellation, which are the most perspective for the field work and the field operation carrying out by means of the low – cost based geophysical, geochemical and the bordering methods is practically being carried out at the first stage. All this work is completely based on the fund materials and the corresponding fiscal sources use. So, the main elements of such territory division into the districts and the fields zoning technology have already been covered in a number of the issued publications [1,2].

The field observations are usually being carried out at the parcellated perspective lots and the plots at the second stage. The gravi – and the geomagnetic reconnaissance, the electrochemistry, the gasogeochemistry, thermomagnetometry methods are being included into the field complex. So, the above – indicated methods have been included into the field complex by the following considerations.

The minimum gravitational force is usually being observed just over the oil and gas deposit in the anomalous gravitational field, and sometimes with the sharp horizontal gradient at the ends. So, the minimum presence may be the main searching indication, at the oil and gas structures estimation, though such clear and the sharp deposit manifestation in the Δg total field is being observed not always. However, it is succeeded, as a rule, considerably to be increased and to be synergized the effect by the low – exponential trend removal and the frequency transformations use. So, the minimums, as often as not, are being mapped in the magnetic field just over the deposit. In the total, the an-

nular geopotential anomaly is being mapped just over the deposit – and this fact is quite enough well – known from the gravimagnetic methods use practice [3].

The oil and gas geochemical searching is being included the whole series of the methods, having distinguished, as by the investigations object type, well as by the determinate and the defined geochemical parameters (e.g. the fixed and the retained UV content and the composition, the defined and the specified secondary minerals content and the rest). The gas survey method is being consisted in the hydrocarbon gases composition and the distribution study on the studied and the researched area. All the gas survey varieties are being based on the methane, the ethane, the propane, the butane, the pentane, the hexane microconcentrations definition, having contained in the rocks and in the groundwater. So, it has been suggested to use the thermomagnetic method of the oil and gas structures exposure with the combination of the gas survey [4]. The last one has been based on the fine – dispersed authigenic minerals definition (e.g. the pyrite and the siderite), the granules concentrations and the dimension of which are quite insufficient just for their definition by means of the optical or the X – ray diffraction methods. Mediately, this task is being solved simple comparatively, by means of the test heating up to the temperatures 450 – 500 o C, which is being lead just to the pyrite and the siderite transformation into the magnetite. So, the soils magnetic susceptibility is sharply being increased, at the expense of these phase transformations. The increment quantity is being defined by the kt/k correlation, where k – is the initial magnetic susceptibility of the soil pattern, but kt – is its quantity just after the heating. Hence, the experiment scheme is being followed: the soil magnetic susceptibility measurement up to the following heating (k) → the heating → the magnetic susceptibility measurement just after the heating (kt) → the thermomagnetic coefficient (TMC) definition dk = kt/k. Thus, it has been empirically determined, that this ratio on the background lots and plots, having placed beyond the deposits UV influence zones, is not being exceeded the 1.1 – 1.5 values, and it seldom is being reached up to the 1.8 – 2 ones. The dk value is being varied from 3 up to 30 and even the more units over the UV active migration zones just from the oil and gas deposits, depending on the specific geological conditions. It has also been determined at the practical application, that many thermomagnetic and the gas anomalies are being formed the annular or the semi – annular structures over the efficient anticlinal raisings wings. So, the most thermomagnetic effect is being observed at the structure peripheral part, as if, having repeated the oil – and gas content and their drainage boundary presence.

The thermomagnetic minimum is being fixed directly over these deposits. Such annular character of the TMC anomalous values is being explained by the intensive epigenetic mineral – formation just in the weakest zones, having had the UV migration ways.

The geoelectrochemical method of the oil and gas place – accumulations searching [5] is being based on the mobile forms laid on halos of the heavy metals microelements (such as: Mn, Ni, Cu, Ti and so on and so forth), having formed just in the rock under the migrating hydrocarbons from the deposit influence. The weakly fixed microelements release from the gross content practically is being carried out, at the expense of the geochemical process activization by the electrical current. It is quite possible sequentially to remove the microelements from the weakly fixed up to the syngenetic ones, having changed the current strength and its passing time through the rock samples. The laid on halos distribution study is being carried out by the samples, having selected in the soil by one and the same scheme, that it is being used at the thermomagnetic method realization.

So, the investigations results are being presented in the form of the microelements concentrations distribution schemes. C init., and their concentrations just after the current transmission – C cur. All these values are being permitted to be defined the relative parameter U, having calculated by the following formula:

$$U = C\ cur. / C\ init.$$

The relative parameter, by its meaning, is being reflected the geochemical processes activization degree in the rock samples by the electrical current. In addition, the complex parameter (Cp) is being calculated, as on the anode, well as on the cathode for the purpose of the geochemical processes activization degree recording.

$$Cp = U\ a\ av. \cdot U\ c\ av.,$$

where U a av. – is the average value of the relative parameter by all the elements on the anode part; U c av. – one and the same on the cathode section. Only after this, distribution maps of these parameters are being made by the researched territory. The rocks epigenetic changes zones, having revealed by these maps, are able to be observed, as the inside part of the oil and gas – drainage boundary, well as the outside part of it, having formed the annular anomalies with the minimum just over the deposit. Thus, the similar anomalies distribution pattern is being revealed by all these methods, having included in the field complex.

And the other phenomena are also well – known, which are quite able to be used at the oil – and – gas content section forecasting, for example, the seismic and the electrical emission, the study of which is quite accessible for the seismo – and the electrical exploration and the further prospecting of the small deep and the shallow modifications. All this is being served the basis for these modifications field works

inclusion into the suggested complex.

The complex processing and the materials interpretation of the second stage with the GIS fund data and the other fiscal sources, the seismo – and the electrical exploration and the further prospecting utilization is being carried out at the third stage.

The mentioned similar oil – and – gas anomalies distribution pattern is practically being permitted to be presented the field stage final results in the form of the integrated cartographical document, having received by the directed summation of all the earlier made by the method – like maps, just after their preliminary normalization and, ipso facto, by the dimension removal. Thus, the above – stated document comparison and the further coordination with the having had fund seismo-electro-exploratory constructions is being given the possibility considerably to increase the hydrocarbon place-accumulation forecasting reliability.

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The work was submitted to international scientific conference « Recent developments in science and education», Russia, (Moscow), May 11-13, 2009. Came to the editorial office on 05.07.2009.

Materials of a Conference

THE JURISTICAL ACADEMIC DISCIPLINES TEACHING IN THE INNOVATIVE CONTEXT (THE DISTANCE TEACHING FORMS)

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Today, the changes processes in the society, as, on the whole, well as in the educational system, in particular, having connected with the new humanistic educational paradigm introduction, are being put just on the agenda the new educational system formation challenge, having orientated upon the entering into the world – wide informationally – educational space. The developing society educational needs satisfaction is being entailed with the population teaching system reorganization necessity. So, the distance teaching is one of such reorganization forms. The distance teaching is being become just not so much the information exchange means among the people throughout the whole duration of their vital functions and their activities, as it is being suggested, as the knowledge man mastering organization, well as the return his to them, in exchange for the received ones.

It is necessary to note, that the information transfer optimization methods, having developed in the framework of the distance teaching system, today, often, they are, mechanically, used in the traditional educational process scheme, without its recomprehension and the reconstruction. In this connection, only the systemic presentation on the place and the realization ways of the specific (in this case, the distance teaching technology) educational technology, having supported by the corresponding programmatically – methodological provision and the teachers' occupational qualification, in essence, is able to be influence upon the teaching process quality in the academic disciplines teaching of the juristical cycle.

Today, the distance teaching is, intensively, being entered into the educational sphere, that it is able to be explained by the whole number of the advantages of this pedagogical system. Now, we shall consider the essence of the distance teaching (DT) specific character, having noted, in the beginning, that under it, it is comprehended the whole educational services complex, having provided to the broad strata of the population, with the help of the specialized educationally – informational surroundings at the every distance from the educational institutions. Under the educationally – informational surroundings of the distance teaching, they comprehend the systemically organized whole complex of the data transmission facilities (DTF), the informational resources, the interfacing protocols, the hardware and the methodologically – organizing provision, having orientated upon the uses' educational needs satisfaction.

As the distance teaching (DT) specific characters, they have singled out the following.

The Flexibility. The students are working at the convenient time for them, in the comfortable position, and also in the comfortable rate.

The Modularity. The every separate course is created the whole presentation on the specific subject field.

The Economic Efficiency. It is, practically, reached by means of the use more concentrated presentation and the content unification, the DT directivity for the more number of the students, and also the more efficient existing school areas and the technical facilities use.

The Teacher's New Role. Such functions, as the cognitive process coordination, the teaching course correction, the educational projects guidance, the educational groups of the mutual support direction, the help to the students in their occupational self – determination are charged with the teacher.

The Specialized Educational Quality Control. The distantly – organized examinations, the interviews, the practical, the yearly projects and the design works, the computer intellectual testing systems are used, as the control forms in the DT. The DOT are able to be used, first of all, for the students' independent controlled activity organization at the full – time tuition and the tuition forms by the correspondence.

The students' cognitive activity control system, at the distance educational technologies use, must be realized the regularities and conformities, having underlain the teaching process organization.

In this connection, we shall note, in the first place, that the specific character of the teaching regularities and the conformities, having presented by itself the objective and subjective factors complex conditionality, is told on the special meaningfulness of the teaching principles, as the specific regulations, having expressed the study process development dialectics, and also the interactions of its existing systems. In the actual fact, but namely, the principles are defined the teaching practice in two ways. On the one hand, having orientated upon them, it is quite possible to be based in the each specific case, all the necessary control actions upon the student's cognitive activity. On the other hand, having orientated upon the didactic principles, it is quite possible to estimate the quality one or another teaching conception.

For the purpose of the distance teaching systems introduction into the teaching process of the faculty of law of the Stavropol State University, the part of the students' independent controlled activity (ICA) by the general occupational academic disciplines the specialty 030501 – «The Science of Law» at the full – time form tuition is being transferred to the distance form, that not is changed, but only it is added the traditional ICA conducting forms. The ICA conducting

advantages with the distance educational technologies usage is being consisted in the flexible connection the teacher – the student – the University, just from the positions of the time and the space (Modus (Moodle) is quite permitted the students to carry out the ICA just at the convenient time and in the comfortable position, having provided, for all this, the teacher's control for the student of law learning activity final results).

The teachers, having intended for the teaching control and, who are responsible for these courses, are especially the teachers, who conduct the seminar activities in the groups.

The distance educational technologies usage just in the teaching process of the department of law is allowed to verify the teachers' and the students' instructional work, to simplify the digital educational resources usage, including, which have already been placed in the Internet network, to make more flexible the teacher – the student – the University connection, efficiently, to carry out the teachers' and the students' learning activity monitoring.

The distance educational technologies are being used, as in the distance teaching system, well as by way of the technology at the full – time tuition form.

The domestic psychologists, having revealed and described the knowledge mastering psychological mechanisms, proceed from the fact, that the thinking is not simply being induced, but and it is being formed by the activity, and the mental and the intellectual activities methods – are the common thinking operations, having concretized on the specific didactic material.

Hence, the teacher's main task is being consisted in, that to form the mental and the intellectual activities methods through their content by the students' mastering, the training in the independent use and also their transfer into the new situations during the teaching.

The teaching on the interiorization is being served the thinking formation basis in the in the teaching process for the domestic psychologists. In terms of this teaching, the thinking is presented itself the practical actions over the objects, having transferred into the ideal plan and having performed, as the mental and the intellectual activities over these objects' imageries, having reflected their real relations.

The mental and the intellectual activities systems realization (e.g. the operational thinking structures), as it has already been shown by the series of the investigations, is, directly, depended on the cognitive tasks type, during the solution of which the teaching is being conducted.

If, for example, the student is being set before the necessity independently to discover the objects' qualities and indications during the activities with them, to apply the corresponding notions and the conceptions to them, and to decide some practical tasks with their help at the teaching, then, in this case, the analysis and the synthesis are underlain of the mental and the intellectual activities. As far as, all these operations are being produced in the ideal plan, then they are able to be carried out at the various levels of the generality: over the objects themselves, over their qualities and indications, over their relations and so on, and so forth. So, it is quite permitted to be seen just the very various sides and the diverse qualities of the studied objects at the analysis, but at the synthesis – to be correlated and to be compared them at the different levels. The analysis of that, how it should be carried out all these operations, concerning to the defined objects' and specific tasks' classes enough completely has been given in a number of papers.

If rather the knowledge mastering is being on through the message, the learning, and the general rules usage at the teaching, then, in this case, the mental and the intellectual activities basis is the general rule connection with the studied objects. All these connections (e.g. the generalized associations), their role, and the types have already been shown in many papers, in details. Also it has been proved, that it is quite possible to be formed the associative mechanisms not only during the routine tasks solution by the students, but also and in the searching process of the quite unknown solution methods, in the course of the initial data analysis and the synthesis and so on, and so forth.

When in teaching process, the knowledge mastering is being organized by means of the reality relations bringing under ones or anothers categories or the logical structures, then, in this case, in the mental and the intellectual activities basis are being lain the categorization and the systematization processes. So, the general invariant relations are being singled out just in the studied objects, by means of the categorization; the classification, the regulating, the removal (e.g. the implication), the studied objects existing qualities and indications inclusion and exclusion are being carried out by means of the systematization. In other words, the dominance – submission relations or the collateral subordination relations, the converse or the compatibility ones are being formed just between the studied objects or their qualities by means of the operations, having underlain of the categorization and the systematization.

The distance teaching peculiarities are being demanded, separately, to be noted the functional role just in the educational and cognitive activities organization of the technical facilities. For its characteristic, we shall note the following. In the specialists' and experts' in didactics opinion, the technical facilities will have to be created the necessary possibilities for the direct observation for the objects and the phenomena, thus, having made «to work» the large number of the students' perception organs, having exerted the defined and the specific emotional impact on them.

Having provided the students' figurative knowledge side, at the same time, the technical facili-

ties will have to be provided their indirect cognition organization, to the transition from the concrete thinking to the abstract one, and its further formation on the basis of the scientific thinking methods. So, in this connection, the technical facilities will have to be provided the existing indications of the studied objects and phenomena reflection and to be given the necessary material to the pupils just for their analysis, synthesis, generalization, and also the abstraction.

The work was submitted to international scientific conference «Modern education. Problems and solutions», Thailand, December 20-30, 2009. Came to the editorial office on 02.10.2009.