
Summaries

UDC 550.311

Letnikov F.A.

SYNERGETIC ASPECTS OF THE EARTH GEOLOGICAL DEVELOPMENT

The features of the Earth geological development have been considered from the point of view of synergetics. It was noted that the Earth is a nonlinear open self-organizing system. The shells different in composition were formed in the process of the system development. Oxygen-free accumulations of sulfides, hydrocarbons occur locally, functions and disappear in time in oxygen area. The reasons of occurrence of organization discrete processes were analyzed. They overlap on self-organizing Earth system and they are connected with occurrence of external gravity forces of the triad the Sun – the Earth – the Moon. Tectonic processes were characterized in the order of decreasing their energy potential. It was noted that evolution of geological self-organizing systems is the process of occurrence of fundamentally new subsystems with new qualities, another properties and parameters of existence that complicates considerably the analysis of their «related» correlations. The methods and approaches of one of the fields of synergetics – the dynamic chaos paradigm was recommended to be used for predicting.

UDC 549.514:549.752.141

Novoselov K.L., Nebera T.S.

GENETIC NATURE OF HETEROGENEITY OF ACCESSORY TUNGSTENFEROUS COLUMBITE-TANTALITE FROM SCHLIEREN PEGMATITES OF KOLYVAN GRANITOID MASS (KOLYVAN-TOMSK FOLDED ZONE)

Phase and intra-phase heterogeneity of accessory tungstenferrous columbite-tantalite from schlieren pegmatites developed within the frames of source leucogranites of Kolyvan granitoid mass (T_{2-3}) have been examined on submicroscopical level for the first time. Different-type heterogeneities of tungstenferrous columbite-tantalite and sequence of their occurrence – protogenetic, syngenetic and epigenetic were determined on the basis of analytic material. The urgency of the investigations was determined by the obtained new data on forms and time of occurrence of W, Nb, Ta, Pb, rare-earth and radioactive elements in granitoids of Kolyvan mass known in Kolyvan-Tomsk folded zone as a potentially rare metal ore-bearing.

UDC 549.02

Polienko A.K., Potseluev A.A.

FEATURES OF FACED MICRORELIEF OF ONE-WATER CALCIUM OXALATE (WEWELLITE) CRYSTALS

Micromorphology of faced relief of one-water calcium oxalate (wewellite) crystals has been studied. The elements of microrelief with the traces of growth and solution occur on crystal faces. Studying the face surface microrelief allows obtaining information for recovering the history of single crystals and urolithe aggregate formation. Observation of growth and solution parts on crystal faces allows understanding their ontogenesis.

UDC 553.493.5:552.331.4

Korobeynikov A.F., Gusev A.I.

PETROLOGY AND FLUID REGIME OF SOME CARBONATITE MASSES

The data on petrology and ore content of carbonatites of different mineragenetic types have been introduced. Concentrations and ratios of isotopes Sr, Nd, C, O are given for some types of carbonatites and temperatures of their crystallization and concentration of fluohydric and chlorohydric acids in fluids are estimated. The differ-

ences of parameters of carbonatites fluid regime with industrial mineralization and non-ore bearing are introduced. The criteria of fluid regime of carbonatites with gold mineralization are presented. Chlorohydric acid fugacity plays the important role among these criteria. The important part in transportation of chloride and hydro-sulphide complexes gold is supposed.

UDC 553.411.491:550.42

Gusev A.I., Korobeynikov A.F.

PETROGENESIS AND GEODYNAMICAL SITUATION OF FORMING GOLD-ENRICHED SULFUR SYSTEMS OF ORE-ALTAI METALLOGENIC ZONE

Petrologic features of ore-generating gold-enriched sulfur systems of ore-Altai metallogenic zone have been determined on the basis of authors' and literature data. Gold-enriched systems of the zone are timed to earlier stage of volcanic activity which occurred in intraslab environment and anomalous oceanic ridge. Rhyolite and rhyodacites of Au-enriched sulfur systems bent for the source of enriched mantle by geochemical data.

UDC 553.411.071.242.4+550.4

Kucherenko I.V., Gavrilov R.Yu.,

Martynenko V.G., Verkhozin A.V.

PETROLOGIC-GEOCHEMICAL FEATURES OF PERI-ORE METASOMATISM IN SUKHOI LOG GOLD-ORE DEPOSIT (LENA REGION). P. 1. THE SURVEY OF PETROLOGIC-GEOCHEMICAL RESEARCHES OF ORE-CONTAINING SUBSTRATE.

The article consists of three parts. The multivariate results of semicentennial petrologic and geochemical researches of ore-containing black shale layers of Sukhoi Log – the consequence of using inadequate methods, have been introduced in the first part of the article. The appropriateness of applying approaches and methods of the correct solution of the problem questions, approved in the other regions, were noticed. The results of petrologic researches were given in the second part and the results of geochemical researches and their discussion were introduced in the third part of the article.

UDC 553.411.071:550.4

Gavrilov R.Yu., Kucherenko I.V.,

Martynenko V.G., Verkhozin A.V.

GEOCHEMICAL ZONALITY OF ORE-CONTAINING HALO OF CHERTOVO KORYTO MESOTHERMAL GOLD-ORE DEPOSIT (PATOMSK UPLAND)

The results of processing geochemical data by primary diffuse haloes of Chertovo Koryto mesothermal gold-ore deposit by the methods of mathematic statistics have been introduced. The data of analyses of vertical test well core samples formed the base of the research. The generalized scheme of distributing statistic indices into 6 survey traverses was constructed. The volume structure-geochemical model of the deposit was discussed in comparison with the results obtained before.

UDC 553.441:549.28(571.53)

Vagina E.A.

THE INFLUENCE OF ADMIXTURES ON MICROHARDNESS OF ARSENOPYRITE AND PYRITE OF CHERTOVO KORYTO GOLD-ORE DEPOSIT (PATOMSK UPLAND)

Pyrite and arsenopyrite microhardness of a new deposit of black shale type (Chertovo Koryto, Patomsk upland) as well as admixture

composition in them has been studied. It was ascertained that different values of microhardness conditioned by the presence of isomorphous and mechanical admixtures, as well as mineral formation conditions, are characteristic for pyrite and arsenopyrite of various generations. So, the presence of Co and Ni in the form of isomorphous admixtures decreasing microhardness value was determined in pyrite. It was ascertained preliminary that the high content of Au and stressed tectonic conditions of formation turned out to be the reason of arsenopyrite microhardness change. It was shown that hardness investigation allows dividing minerals into generations which enter into mineral complexes of ore-formation stages.

UDC 553.41:553.46

**Babkin D.I., Potseluev A.A., Ananyev Yu.S.
GOLD AND SILVER IN ORES OF KALGUTINSKOE
DEPOSIT (GORNÝ ALTAY)**

High concentrations of gold and silver have been developed in ores of Kalgutinsk rare-metal greisen deposit (Gorny Altay). Ore was determined in ores in the form of kustelit; microinclusions of natural gold were determined in pyrite, wolframite, chalcopyrite at electron microscope. Silver is the major admixture in gold. Silver natural extractions were determined in molybdenite. Silver selenide – naumannite (Ag₂Se) was first diagnosed in bismuthine grains.

UDC 549.324.31:553.41

**Korotkikh S.A., Voroshilov V.G.
GEOLOGICAL STRUCTURAL CRITERIA OF LOCATING
GOLDEN AND VOLLASTONITE MINERALIZATION
OF SINYUKHINSKOE ORE FIELD (GORNÝ ALTAY)**

A mechanism of forming ore-containing depth and structure of Sinyukhinskoe ore field (Gorny Altay) has been proposed on the basis of analysis of geological data and structural imaging. The main types of gold-ore bodies were singled out and characterized. Geological structural criteria of predicting golden mineralization and vollastonite raw material were proposed.

UDC 552.321.5,6:553.08

**Yurichev A.N., Chernyshov A.I.
ORE MINERALIZATION OF PERIDOTITES AND GABBROIDES
OF THE KULIBINSKY COMPLEX (NORTHWEST
OF EASTERN SAYAN)**

Features of ore mineralization of peridotites (lerzolite, verlite, vebsterite) and gabbroides (gabbro, gabbro-norite) of the Kulibinsky complex of the Kansk block located in northwestern part of Eastern Sayan have been examined. Tipomorfizm, mineral and chemical compound of minerals are shown. The resulted data allow assuming the detection of sulphidic ore content in complex peridotites.

UDC 551.24

**Korobkin V.V.
TECTONIC ZONING AND STRUCTURAL STYLES
OF KAZAKHSTAN PALEOZOIDS**

Evolutionary model of forming Kazakhstan paleozooids and time of formation of the compound accretion-collision Kazakhstan paleocontinent have been considered on the basis of analyzing the data of paleogeographical, palinspastic, tectonic, tectonofacial and geodynamic reconstructions. The diagram of tectonic zoning and structural styles of Kazakhstan paleozooids was developed on this base.

UDC 550.8.01

**Bernatonis P.V.
ENGINEERING FEASIBILITY OF QUALITY REQUIREMENTS
IN ESTIMATING PEAT RESERVES**

The industrial demands for studying the quality of raw material for delineation of peat and associated minerals such as sapropel, marsh phosphates and carbonates, vegetation, organic-mineral deposits, metalliferous formations, marsh water, mineral deposits and marsh methane have been considered.

UDC 550.831.01

**Isaev V.I., Kosygin V.Yu., Lobova G.A., Pyatakov Yu.V.
INTERPRETATION OF HIGH-PRECISION GRAVIMETRIA
DATA. VERTICAL DENSITY GRADIENT**

The examples of the determined nonlinear (exponential) laws of changing density of the same age sedimentary complex rocks as the depth increase have been introduced. A series of solution of direct and inverse problems of the detailed and high-precision gravimetria, typical for oil and gas geology, with and without vertical density gradient, was carried out. The obtained errors of modeling (interpretation) at constant density assumption result in conclusion on inappropriateness of increasing accuracy of gravimetric survey better $\pm 0,20$ mGf if there is no opportunity of developing and accounting petrodensity dependences.

UDC 550.83

**Gavrilov M.N.
THE POSSIBILITIES OF GEOPHYSICAL METHODS
AT ESTIMATING THE PERSPECTIVES OF NICKEL CONTENT
OF MAFIC-ULTRAMAFIC ROCKS OF IYSKO-TAGULSK AREA**

The results of geologic-geophysical researches of the wells of Iysko-Tagulsk and Kingashskaya area (Eastern Sayan) have been analyzed. It was shown that the growth of nickel content of ore gap reflects by increase of its magnetic susceptibility and decrease of total radiation. The laws of distribution of physical properties of nickel-bearing mafic-ultramafic rocks and complexes containing them were studied. Quantitative assessment of ore-bearing massif extraction reliability was given by geophysical data.

UDC 552.511.550.8(571.16)

**Ezhova A.V.
COMPOSITION, ACCUMULATION CONDITIONS
AND GEOPHYSICAL CHARACTERISTIC OF BRECCIAS
OF NYUROLSKIY SEDIMENTARY BASIN (TOMSK REGION)**

The conditions of breccia accumulation and transformation due to the complex decomposition processes have been determined on the basis of lithological researches of breccias from the contact area of Paleozoic and Mesozoic eras in the core of Nyurolskiy sedimentary basin exploratory wells. The influence of fractions composition and breccia cement on their development characteristics was examined.

UDC 552.512.550.8(571.16)

**Ezhova A.V.
THE FEATURES OF STRUCTURE AND GEOPHYSICAL
CHARACTERISTIC OF JURASSIC CONGLOMERATES
IN THE EASTERN PART OF NYUROLSKAYA DEPRESSION
(TOMSK REGION)**

The position in sections, features of structure, accumulation conditions and variety of postsedimentation transformations of conglomerates from Jurassic pay section of the Eastern Slope of Nyurolskaya depression (Tomsk region) has been studied. It was ascertained that basal and intraformational conglomerates with fraction content more than 50 %, occurred in cyclite bottom, indicate the beginning of new sedimentation cycles at amplification of tectonic activity in the drift areas. Geophysical characteristics of conglomerates do not allow definitely marking them at logging diagrams.

UDC 552.57:550.42

**Arbuzov S.I., Ilyenok S.S.,
Volostnov A.V., Maslov S.G., Arkhipov V.S.
MODES OF OCCURRENCE OF URANIUM IN COALS
AND PEATS OF NORTHERN ASIA**

Modes of uranium occurrence in coals and peats have been studied. It was shown by the example of different deposits in Northern Asia that the dissipate mode of uranium occurrence dominates in peats, brown and bituminous coals. Along with the dissipate mode, connected with the organic substance, the mineral modes presented by uraninite, coffinite and minerals containing uranium as isomorphous admixture (zircon, xenotime) were found out. New data on the ratio of

mineral and organic modes of uranium occurrence in coals and peats were obtained. The change of uranium occurrence modes in the series peat – brown coal – bituminous coal was shown.

UDC 550.8.05

Belozerov V.B.
A ROLE OF SEDIMENTARY MODELS IN ELECTRIC FACIES ANALYSIS OF TERRIGENOUS DEPOSITS

The principle role of hydrodynamic and tectonic factors in forming terrigenous deposit sedimentary environments has been shown. The sequence of carrying out the electric facies analysis of continental, transition and sea groups of facies on the basis of matching proper sedimentary model was introduced. It promotes the objective interpretation and spatial prediction of facies environments by the well logging data.

UDC 553.98

Belozerov V.B.
THE INFLUENCE OF FACIES INHOMOGENEITY OF TERRIGENOUS RESERVOIRS ON THE DEVELOPMENT OF HYDROCARBON DEPOSITS

Filtration-capacitive heterogeneity of reservoir has been analyzed from point of view formation conditions. Facial, macro-layered (granulometric), layered (textural) and micro-layered filtration-capacitive heterogeneities were singled out depending on facial belonging of sand reservoirs. The participation of the concerned set of reservoir filtration-capacitive heterogeneities in constructing its geological model and features of oil and gas deposit development was shown. Qualitative assessment of the efficiency of the existing development techniques for each selected heterogeneity was carried out.

UDC 553:551.862(571.16)

Chernova O.S., Zhilina E.N.
THE TYPES OF GEOLOGICAL SECTIONS OF PRODUCTIVE FORMATIONS (J_1^4 , J_1^3) OF THE LUGINETSKY OIL FIELD (TOMSK REGION)

Paleogeographic reconstructions for the time of accumulation of productive formations J_1^4 , J_1^3 of the horizon J-I at Luginetsky gas-condensate oil field have been carried out on the basis of the detailed analysis of the data of well geophysical researches, core study, structural-textural, ichnologic and litho-facial analyses. Typification of well log was carried out. A series of lithologic and facies maps reflecting sedimentological features of the selected subdivisions was designed. The conclusion was drawn on coastal-marine genesis of the described sediments.

UDC 553.98

Kuzmin T.G., Molodykh P.V., Naymushin D.G., Popov A.A.
APPLICATION OF REGULAR GEOLOGICAL-ENGINEERING MODEL DEVELOPING THE LAYER J_1^{3-4} MAYSKOE DEPOSIT

The results of the work on supporting the development of the layer J_1^{3-4} Mayskoe deposit (Tomsk region) in the period from 2007 to 2010 using the regular geological-engineering model have been considered. The efficiency of using simulation at deposit development monitoring was shown. The assessment of the efficiency of the system of reservoir pressure maintenance and development of the layer with the thickness from 2 to 12 m by horizontal wells was introduced.

UDC 552.5.551.863(571.16)

Perevertaylo T.G.
RECONSTRUCTING THE SEDIMENTATION CONDITIONS OF THE LAYER B_{10} OF GURARINSKOE-SOBOLINSKOE DEPOSIT (TOMSK REGION)

The core has been described in details, textural-structural features of the rocks have been determined, their electrometric characteristic has been given for reconstructing the sedimentation conditions of the cyclite B_{10} by the wells of Gurarinskoe-Sobolinskoe deposit (Tomsk region). Facies of beaches, edge and central areas of behind-bank lagoons, rain rills of rip flows were singled out. Cyclite B_{10} was proposed to be used as a local marker horizon, occurring in the roof of Tarskaya suite.

UDC 553.984

Koveshnikov A.E.
OIL AND GAS TANKS IN PRE-JURASSIC FORMATIONS OF WESTERN-SIBERIAN GEOSYNECLISE

Oil and gas tanks of the following types: massive hydrothermal limited by faults; metasomatic of fracture zones; fracture have been formed as a result of occurrence of secondary-catagenetic transformations of pre-Jurassic formations of Western-Siberian region. The development of karst-fracture and metasomatically-karst-fracture tanks is supposed that increases considerably the perspectives of finding oil and gas fields not only in Western Siberian pre-Jurassic carbonate complex but in Eastern-Siberian region as well upon condition of searching for similar oil and gas tanks there.

UDC 553.984

Koveshnikov A.E.
OIL AND GAS TRAPS IN PRE-JURASSIC DEPOSITS OF WESTERN-SIBERIAN GEOSYNECLISE (TOMSK REGION)

The formation of oil and gas traps: lithologic and stratigraphic at weathering crusts with reservoir pinchout at orogenic stage; hydrothermal, tectonic zones at secondary-catagenetic stage; metasomatically-fracture, fracture, admittedly karst-fracture and metasomatically-karst-fracture has been determined at the secondary-catagenetic stage of changing pre-Jurassic rocks of Western-Siberian geosyncline. The rocks were represented by limestones and carbonate-cherty-clay rocks of Silurian-early-carbonic age underwent surface desalinization at the orogenic development stage and then the hydrothermal metasomatism (dolomitization, silicification), desalinization and crack formation.

UDC 622.276

Poushev A.V., Kvesko B.B., Karpova E.G., Kvesko A.R.
THE METHODS OF INCREASING THE EFFICIENCY OF DEVELOPING BOTTOM WATER-DRIVE OIL RESERVOIRS

The main reasons of forming bottom water cones in the layer have been studied by the real operating three-dimensional hydrodynamic model of oil reservoir BV_{1-3} of oil and gas deposit A (Tomsk region). Different techniques allowing slowing down the growth of well watering such as determination of optimal position and perforation interval power of vertical well, co-mingled and dual completion production of oil-and water saturated layer zones were considered. The efficiency of dual completion production of water and oil saturated layer zones by a dual well (vertical and horizontal bores) or by two parallel horizontal bores was shown.

UDC 622.276.432

Glavnov N.G., Kvesko B.B.
ANALYZING THE DEVELOPMENT OF WATERFLOOD-INDUCED HYDRAULIC FRACTURES AT INJECTION WELLS OF KRAPIVINSKOE DEPOSIT

The reasons of breakdown pressure reduction at injection wells have been shown; its value for Krapivinskoe deposit of Tomsk region has been estimated. The development of waterflood-induced hydraulic fracture at injection was proved by means of hydrodynamic researches and analysis of well operation technological parameters; its geometry was estimated.

UDC 556

Mishchenko M.V., [Bukaty M.B.], Dutova E.M.
MODELING THE GROUNDWATER TEMPERATURE CHANGE IN SOUTH-CHEREMSHANSKAYA AREA OF TOMSK REGION

Hydrogeological characteristic of South-Cheremshanskoe deposit (Tomsk region) has been given. The results of modeling temperature change at groundwater use from apt-alb-senomansky, goteriv-barremsky and valanzhinskiy water-bearing complexes were shown. The recommendations on possibility of using thermal groundwater were given.

UDC 556.314

Lepokurova O.E., Zyateva O.F.
CHEMICAL COMPOSITION OF MINERAL WATER «OMEGA»
(TOMSK REGION)

The data on gas, macro- and microcomponent composition of some mineral waters in Tomsk region have been introduced. Hydro-geological conditions and chemical composition of mineral water «Omega» deposit were studied. The change of the main indices of water composition during 15 years was observed. It was compared with the other mineral waters in the region. «Omega» uniqueness against them due to its low salinity and high pH index was shown.

UDC 624.131

Abdel Aziz E.Sh., Zhabin V.Yu., Kramarenko V.V.
FEATURES OF SOIL PHYSICAL PROPERTIES
OF RIVER TOM LOW COURSE TERRITORY

The results of the laboratory investigations of soil composition and physical properties within river Tom low course territory have been introduced; they have been classified. Soils specific features: swelling, heaving and subsidence abilities were determined on the basis of calculations and according to recommendations of valid normative documents; the preliminary forecast of deformation characteristics was given.

UDC 556.33

Sidkina E.S.
HYDRO-GEOLOGICAL CONDITIONS
OF SOUTH-WEST PART OF TUNGUS BASIN

Hydro-geological features of the territory of Tungus basin South-West part (Krasnoyarsk Territory) including the description of the main aquifers, their water plenty, water composition, have been considered. Special attention was given to the problems of hydro-geological conditions of the regions with the development of permafrost rocks, presence of salt massive, trap mechanism development zones. Specific capacity values for the main aquifers were introduced.

UDC 556.551

Bernatonis P.V., Kopylova Yu.G., Bernatonis V.K.,
Arkhipov V.S., Merkulov V.G.
CHEMICAL COMPOSITION OF WATERS
IN SAPROPEL LAKES (TOMSK REGION)

The chemical composition of sapropel lakes waters of southern part of Tomsk region has been investigated. Chemical element behavior in ultra-fresh and fresh waters of regenerating geochemical environment was determined; it occurs more distinctly by a character of iron distribution in them.

UDC 622.23.05

Kolodin A.P., Shadrina A.V., Saruev L.A.
THE DETECTION OF RATIONAL USE REGION FOR RIGS WITH
DIFFERENT TYPES OF DRIVES FOR SLIM HOLE DRILLING

Rational use regions of rigs with different types of drives have been determined. It was ascertained that drilling efficiency of compressed air driven machines may be increased in 1,4 times due to selection of rational parameters; but the drilling efficiency all-hydraulic machines may be increased in 2,4 times without increasing specific reduced costs, weight and power of rigs.

UDC 622.24

Gorshenin N.E.
MODELING THE OPERATION OF AGGREGATE
FOR ORE HYDRAULIC BOREHOLE MINING BY THE EXAMPLE
OF BAKCHAR ORE OCCURRENCE

The technique of mathematical simulation of aggregate for borehole mining operation has been introduced. Operation parameters and engineering-and-economical performance of hydraulic borehole mining at Bakchar ore occurrence were mathematically determined. The influence of pump unit supply on hydraulic mining engineering-

and-economical performance was analyzed. It was shown that optimal mode was achieved at maximum allowable pressure and maximum permissible wash out radius.

UDC 504.054

Rikhvanov L.P., Zamyatina Yu.L.,
Mezhibor A.M., Arkhangelskaya T.A., Ivanov A.Yu.
RECONSTRUCTION OF RADIATION ENVIRONMENT
IN TOMSK REGION TERRITORY BY STRATIFIED NATURAL
FORMATIONS

Studying the classical stratified natural objects (annual tree rings, peat deposits, water body lake sediments) in Tomsk region territory the data on the dynamics of radionuclide accumulation during the last 70 years allowing reconstructing radiation environment in the examined territory, have been obtained.

UDC 628.16:541.48(571.16)

Mongolina T.A., Baranovskaya N.V., Soktoev B.R.
ELEMENTAL COMPOSITION OF SALINE SEDIMENTS
OF TOMSK REGION DRINKING WATER

The results of studying saline sediments (scale) of drinking water from Tomsk region settlements have been introduced; geochemical specific character of region areas has been determined by these indices. The comparative analysis with the scale from Irkutsk and Chelyabinsk regions was carried out for determining regional features. It was shown that saline sediment composition reflects both natural and anthropogenic component of effecting hydrosphere and may serve as a detector of ecological welfare of the region.

UDC 574.2:550.4

Baranovskaya N.V., Shvetsova D.V., Sudyko A.F.
REGIONAL SPECIFIC CHARACTER OF HAIR ELEMENTAL
COMPOSITION OF THE CHILDREN LIVING IN THE TERRITORY
OF TOMSK REGION

The features of hair elemental composition of the children from 3 to 15 living in the territory of Tomsk region have been determined. The data of average content of 29 chemical elements in children's hair in different areas were introduced. The coefficients of the examined elements concentration in the hair relative to the average region value were calculated for each territory. Groups of areas with a specific spectrum of elements accumulated in children's hair in the amount exceeding average region indices were singled out.

UDC 556.3:553.98

Trifonov N.S.
SUBSTANTIATION OF THE PERSPECTIVE AQUIFERS
OF UNDERGROUND UTILIZATION
OF BOTTOM AND WASTE WATERS DEVELOPING
DEPOSITS OF YURUBCHENO-TOKHOMSKAYA
OIL AND GAS ACCUMULATION ZONE

The possibility in principle of solving the question of bottom and waste waters utilization on the deposits of Yurubcheno-Tokhomsкая oil and gas accumulation zone (Baykitskaya Antecline) has been shown on the basis of hydrogeological conditions analysis. The reservoirs of angaro-litvintsevskoy depth, bulayskiy and osinskiy aquifers were recommended as the objects suitable for organizing disposal system.

UDC 622(571.16)(09)

Lukyanov V.G.
TOMSK MINE SCHOOL IS 110

The most important stages of forming and developing mining science and its base – TPU mining department from the oldest scientific schools of Tomsk polytechnic university have been reflected. Much attention was paid to the scientists and professors contributed to mining science development.

After closing mining department in TPU (1962) mining school continued existing; its activity was transferred to the other towns

where the graduates of the department continue developing mining science following the traditions of Tomsk mining school. Therefore in 2011 the department and the school celebrate the 110 anniversary.

Many events and facts, which are worth to be kept in historical memory, were gathered during the long creative life of the department. Unfortunately, its history has not got the complete documentation. The author of this work attempted to represent the great life of Tomsk mining school in generalized form.

UDC 55(092)

Gudymovich S.S.

**GEORGY ALEKSEEVICH IVANKIN – LECTURER, SCIENTIST,
GEOLOGIST (THE 90th ANNIVERSARY)**

The course of life, personal qualities, educational and scientific activity and achievements – discovery of deposits, creation of the Center of TPU field studying geological internship in Khakasia – of Ivankin Georgy Alekseevich the senior lecturer of general and historical geology chair at Tomsk polytechnic university has been described.