

KARASAYEVSKAYA, T.V.

PHILOSOPHICAL SCIENCES

JPL: 6174  
12 Oct 1974

11

66-4-1

SOCIAL, BIOLOGICAL FACTORS IN INDIVIDUAL HUMAN DEVELOPMENT

Article by T. V. Karasayevskaya, candidate of philosophical sciences, docent, department of philosophy, Leningrad Institute for Advanced Study by Physicians: "Scientific-Technical Progress and Human Biopsychological Development", Moscow, *Elitskiy* Nauki, Russian, No 4, 1973, pp 32-33.

Marxist analysis of the problem of the human being at the current stage of scientific knowledge assumes not only a general definition characterize his total nature and the process of his individual development.

At the present time the social factors which determine the biological aspects of this process have frequently fallen aside. The complexity natural interest of current philosophical science in a total study of the human nature, and showing in it the dialectical relationship between the social and biological aspects. Ignoring the natural side of human existence leads to a simplified understanding of real mechanisms and to a simplified portrayal of the real complexities of the process of its formation. It promotes the vitality of metaphysically limited, sometimes naive and distorted notions of the reserves and resources of human development.

Awareness of the contradictory consequences of the influence of the scientific-technical revolution on modern man's way of life, on the environment around him, and on his own nature also stimulates interest in the biosocial sides of human development. The sharp growth in the volume of information, the increase in mental activity, the reduction of physical strains, and the intensification of psychoemotional stresses are all factors which, together with the profound transformation of many natural factors, determine the uniqueness of the process of individual human development and the formation of the personality. The rapid increase in the scale of these processes makes the problem of society's influence on the ecological environment and on the very nature of man extremely critical, and it puts on the agenda the questions of controlling

vital processes in the human organism, including the protection of health and biological improvement of the species *Homo Sapiens*.

Capitalist ideology often attempts to falsify the true role of structure and to make the social significance of the biological uniqueness of particular age groups absolute.

Overcoming widespread naturalist tendencies in explaining human nature means not only substantiating the unsoundness of reductionist and equalizing conceptions which proceed from a recognition of the parallel and equal-ordered nature of natural and social factors in human development, but also a positive solution to the question of the dialectical interaction of social and natural forces in the historical development of *Homo Sapiens*.

The significance of problem analysis of the biosocial aspects of individual human existence is a result of the need, engendered by the current phase of scientific-technical progress, for development of a general conception of man which is capable of serving as a tool for more complete knowledge of the nature of man and controlling the process of individual development. Establishing a general conception of man requires a synthesis of the latest results of the whole range of social, biological, and psychological sciences of man and a methodological interpretation of the new aspects of human existence, one of the manifestations of which is the significant time transformations in the ontogeny of modern man.

Methodological analysis of the temporal aspects of individual human development is only possible on the basis of a dialectical materialist solution to the social-biological problem, based on the decisive materiality of the social in relation to the biological. The dialectical approach also requires a recognition of the preservation of relative independence of human development. Therefore, although during the process of further human development the role of social factors is becoming greater, this should not be accompanied by a violation of his biological characteristics but rather requires a certain coordination in the development of social and biological characteristics.

Application of the systems-structural method of investigation is becoming an important condition for the comprehensive study of individual aspects and levels of the establishment of relationships between different factors in the social and natural environment, determining the dependence of these relationships on multifaceted interactions with different groups of relationships between sequential time phases of the process of individual development.

Stressing the profound dependence of the structure of life's path and its primary moments (start, optimum, and finish) on the course

(1)

of historical development and emphasizing their historical variability from generation to generation, the prominent Soviet psychologist N. G. Aron'yev poses the question of the urgency of investigating the overall unity of the individual life cycle. Transforming the total ontology of modern man into a new subject of modern science requires a study of its ontological status and the objective laws of individual human existence.

The thesis, established by Marxist philosophy, that man as an element of a higher level of organization — the social system, makes it possible to speak of the social causation of the structure and vital activity of the human organism in different stages of its ontogeny.

Progress in the development of society, involving differentiation of its internal structure and increasing complexity in societal relationships, creates new internally essential conditions of human existence and development which reveal themselves in the growing complexity of the system of factors which determines human ontogeny. The particular level of development of physical production and changes in the particularities of individual development. The specific features of each age level of human life are profoundly determined by society. On the biological plane, any age level is an inevitable stage of the individual life, while sociologically it is a segment of life characterized by certain social possibilities and obligations, and sociologically it is a level of development with a certain structure of behavior and method of survival. If the sequence of age levels is natural and irreversible, their duration and level of development depend on the set of physical and cultural factors which determine the level of development of society. During the course of history there is a tendency to prolong the period of preparation for adult life, an extension of the transitional age phases to the point of separating out the adolescent period and old age as independent periods, a significant expansion of the period of maturity, and an increase in the average and modal length of life.

Proceeding from a recognition of the historical nature of human age, the Soviet psychologist P. B. Monakki expressed the supposition that human adolescence is a late acquisition of humanity which occurred almost before the eyes of history. Like other age stages, it varies greatly with different peoples and with ruling and oppressed classes.

Studying systems-structural relationships within the limits of total age blocs and studying genetic relationships between blocs within the framework of total ontogeny will internally the heuristic role of the concepts which characterize the time parameters of ontogeny. The determination of these parameters is significant for further improvement in the theory of learning, of education, therapy, and so on.

The concept of "age" serves to denote the time characteristics of individual human development. As the temporal aspect of a person's

ontology, age may be understood as a systems phenomena whose roots go into biology while its substance is defined by the variety of social development, type of culture, membership in a certain class, and so on. The genealogical specifics of investigating age stages of ontogenetic evolution, their definitions, and the criterion of calibration are expressed in the use of the biological and sociological approaches to it as mutually supplementary.

Individual human development is conditioned by the mutual intersection of a three-pronged system of determining factors (program): biological (specific), social, and ontogenetic, factors arising during life which represent a profound merging of the social and biological factors and are especially significant for understanding the trends which characterize the ontology of current generations.

The nature of the forming human being in different stages of individual development is receptive in different stages of existence of factors in the social and natural environment. The discovery of the existence of so-called critical (sensitive) periods, which has been shown in the development of motor and psychological functions and in intellectual and emotional development, is important for understanding the causal nature of the relationship among successive stages of individual development. The characteristics of psychical and psychological development achieved in preceding stages may be reflected fundamentally in both particular details of further development and in its overall picture. Investigation of sensitivity as a phenomenon of ontogeny produces a deeper understanding of the concealed possibilities for subsequent stages which, at each age level, development contains.

Comprehensive study of the actual trends in the ontogenetic development of current people has revealed not only a profound transformation (acceleration) of psychosomatic maturation in the ascending stage of development with later onset of the involution of biopsychological functions. It is becoming characteristic of the transitional age phases that there is increasing time disruption in the development of the biological and social aspects in the ascending stage of individual development and in involution during the descending stage. This creates the preconditions for the occurrence of unique biosocial crises. Theoretical comprehension of the differential rates of development and involution of the biological and social aspects in a person's ontogeny promotes a deeper understanding of the mechanisms of socialization and also insures conditions for preserving creative longevity.

The extension, caused by acceleration, of the boundaries between the biological and social milestones of maturation during the most active period of development can, as a result of a critical lag in practical experience, lead to disruption in forming an integrated personality and can cause impoverishment of certain fundamental aspects of it.

①

Historical changes in the concluding phase consist primarily growing number of people. The totality of transformations in the way of life, the spread of education, and the introduction of new methods of labor which increase mental activity and are combined with moderate physical activity lead to a situation where groups of old people today are markedly different from those in past ages because both somatically and psychologically they are acquiring something new, something appropriate to current forms of social life and the new substance of social activity. Optimizing the interaction of all factors which determine development in old age, above all preserving mental activity, results in delaying involutionary, destructive processes and a partial reconstruction of established systems, promoting more precise realization of the potential of longevity in modern man.

Society's progress is associated with a frontal expansion of individual-type originality and increasing individualization of the contemporary human existence, which give even greater uniqueness to the individual.

Understanding the dialectical nature of the interaction between social and biological determinants in individual human development leads to a situation where human labor and reason will learn to regulate the course of many processes and achieve more complete and profound coordination of the biological and social aspects. They will make possible a creative expression of human physical and mental efforts in all stages of the progressively longer path of life and they will open new areas for realizing all the potential inherent in man's nature.

11, 176  
CSO: 1850-W

1/2 026

TITLE--RADIOLYSIS OF ACETONE. V. INCLUSION COMPOUND OF ACETONE WITH UREA  
UNCLASSIFIED  
PROCESSING DATE--18SEP70

AUTHOR--(02)--KARASEV, A.L., LARIN, V.A.

COUNTRY OF INFO--USSR

SOURCE--KHIM. VYS. ENERG. 1970, 4(1), 56-61

DATE PUBLISHED-----70

K

SUBJECT AREAS--CHEMISTRY, NUCLEAR SCIENCE AND TECHNOLOGY

TOPIC TAGS--RADIOLYSIS, ACETONE, UREA, LOW TEMPERATURE EFFECT, HYDRAZINE,  
METHANOL, EPR SPECTRUM, QUANTUM CHEMISTRY, FREE RADICAL, PROPANOL,  
KETONE, METHANE, ETHANE, CARBON MONOXIDE

CONTROL MARKING--NO RESTRICTIONS

DOCUMENT CLASS--UNCLASSIFIED

PROXY REEL/FRAE--1987/1115

STEP NO--UR/0456/70/004/001/0056/0061

CIRC ACCESSION NO--AP0104513

UNCLASSIFIED

2/2 026

UNCLASSIFIED

PROCESSING DATE--18SEP70

CIRC ACCESSION NO--AP0104513

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. GAS LIQ. CHROMATOG. WAS USED TO STUDY THE END PRODUCTS OF THE RADIOLYSIS OF UREA AT 26DEGREES AND MINUS 196DEGREES, AND OF THE INCLUSION COMPD. OF ME SUB2 CO AND UREA. BASIC PRODUCTS FROM UREA ARE H SUB2 O, CO, NH SUB3, HCO SUB2 NH SUB2, WITH SMALL AMTS. OF HYDRAZINE AND MEQH. QUANTUM YIELDS ARE GIVEN FOR THE VARIOUS COMPS. THE EPR SPECTRUM SHOWS BASICALLY THE FORMATION OF THE NH SUB2 COHN TIMES RADICAL, WITH RADICALS FORMED AT 0.15 MOLS-100 EV. THE INCLUSION COMPD. GIVES A RADICAL YIELD OF 2.1 MOLS.-100 EV, 1.2 FROM THE ME SUB2 CO, AND 0.9 FROM THE UREA, WITH THE MAIN RADICAL PRODUCT BEING THE HYDROXYISOPROPYL RADICAL. A MECHANISM IS SUGGESTED FOR THE FORMATION OF THIS RADICAL, AND QUANTUM YIELDS ARE GIVEN FOR THE FORMATION OF ISO-PROH, PINACONE, MECOET, DIACETYL, ACETYLACETONE, DIACETONYL, HOAC, ACETALDEHYDE, CH SUB4, C SUB2 H SUB6, WATER, AND CO.

UNCLASSIFIED

Heat, Combustion, Detonation

USSR

KARASEV, A. B., LYAKH, A. N., Moscow

"Investigation of Radiation and Convection Heat Transfer  
From an Emissive Mixture of Carbon Dioxide and Nitrogen  
Flowing Past the Critical Point"

Moscow, Izvestiya Akademii Nauk SSSR, Mekhanika Zhidkosti i  
Gaza, No. 2, March-April, 1971, pp 39-47

Abstract: The subject of theoretical investigation deals with  
hypersonic flow of an emissive mixture of carbon dioxide  
and nitrogen around a spherical shaped body. The heat  
transfer in the vicinity of the leading critical point is  
investigated.

1/2



USSR

KARASEV, A.B., et al, Izvestiya Akademii Nauk SSSR, Mekhanika Zhidkosti i Gaza  
No. 2, March-April, 1971, pp 39-47

The system of equations is set up and extended from the body to the shock wave. Solutions were obtained by iterations for temperatures after the shock wave from 9000°K to 12,000°K, pressures from 1 to 10 atmospheres, radius of the sphere 1 meter, wall temperature 3000°K.

According to this investigation the effect of emissivity on convection heat transfer is insignificant.

The emissivity spectrum is presented in the wavelength range of 0.128 to 1.15 micron.

2/2

USSR

UDC 536.24:536.42

KARASEV, A. B., KONDRANIN, T. V., Moscow

"Radiant Heat Exchange in the Area of the Critical Point with Injection of the Products of Mass Carryover Into the Boundary Layer"

Mekhanika Zhidkosti i Gaza, No 5, 1971, pp 21-30.

Abstract: It is demonstrated that the presence of components with adsorption cross sections other than zero in the visible area of the spectrum in the boundary layer causes an increase in light flux to the surface in comparison with the flow arriving at the external boundary of the boundary layer. Conditions are produced allowing the range of wavelengths in which this effect occurs at all values of optical thickness of the boundary layer to be determined. A criterion is presented, indicating that in many flow modes, the influence of injection of vapors on the increase in radiant flux to the wall can be ignored.

1/1

USSR

KARASEV, A. B., KONDRANIN, T. V., Moscow

"Effect of Mass Removal Products on Heat Exchange During Graphite Disintegration in an Emitting Air Plasma"

Moscow, Izvestiya Akademii Nauk SSSR, Mekhanika Zhidkosti i Gaza, No 1, January-February 1971, pp 23-31

Abstract: The problem of a stationary hypersonic, high temperature, viscous, thermally conducting flow of emitting air around the leading critical point of a blunt body made of graphite in the region between the departing shock wave and the surface of the body is investigated. The radiant and convective heat exchange on an impenetrable surface and also in the presence of blowing are considered. The characteristics of graphite mass removal are found under the condition that radiation transport by its disintegration products occurs.

The diffusion was calculated by a binary model, that is, it was assumed that the mixture consists of two components: the oncoming air and the disintegration products. The chemical reactions in the boundary layer were considered frozen, and on the outer boundary of the boundary layer up to the shock wave, in equilibrium. The state of the gas at the disintegrated surface

1/2

USSR

KARASEV, A. B., et al., *Izvestiya Akademii Nauk SSSR, Mekhanika Zhidkosti i Gaza*, No 1, January-February 1971, pp 23-31

was also determined from the condition of chemical equilibrium where the saturation vapor pressure was assumed equal to the stagnation pressure.

It is pointed out that in finding the thermodynamic and transport properties of the gases, the data from the papers by C. F. Hansen "Approximation for the Thermodynamic and Transport Properties of High-Temperature Air," NACA TR, 1959, R-50 and J. Hirshfelder, et al., Molecular Theory of Gases and Liquids, were used. The optical properties of the air were taken from the paper by Yu. A. Plastinin, et al., "Radiative and Absorption Properties of Air at High Temperatures  $T = 2,000-20,000^{\circ} K$ ," Vses. Konf. po Fizike Nizkotemperaturnoy Plazmy [All-Union Conference on Low Temperature Plasma Physics], Kiev, Naukova Dumka Press, 1966, and the optical properties of the graphite removal products, from the papers by Yu. A. Plastinin "Optical Absorption Cross Sections of Diatomic Molecules," Fizicheskaya Gazodinamika Ionizirovannykh i Khimicheski Reagiruyushcheikh Gazov [Physical Gas Dynamics of Ionized and Chemically Reacting Gases], Moscow, Nauka Press, 1968 and K. Wilson and W. Nicolet, "Spectral Absorption Coefficients of Carbon, Nitrogen and Oxygen Atoms," J. Quant. Spectroscop. Radian. Trans., Vol 7, No 6, 1967. All of the calculations were performed for a sphere 1 meter in radius.

2/2

USSR

K

UDC 620.193.41

KARASEV, A. F., and STABROVSKIY, A. I.

"Behavior of Titanium and Its Alloys with Tantalum in the Case of Cathode Polarization in Nitric Acid Solutions"

Moscow, Zashchita Metallov, Vol 6, No 3, May-Jun 1970, pp 324-326

Abstract: The stationary potentials of titanium and certain other transition metals (tantalum, niobium, etc) in nitric acid solutions are shifted to the passive region as a result of the oxidizability of their surfaces. However, the passive state of these metals can be destroyed in the presence of cathode polarization. An investigation was therefore made of the electrochemical behavior of titanium, niobium, and tantalum and of the corrosion resistance of titanium and its alloys with tantalum in nitric acid solutions with cathode polarization under galvanically static conditions in the temperature range from 20 to 80°. The potentials were measured by the compensation method using the P-4 potentiometer. The comparison electrode was a saturated calomel electrode. The electrolysis was carried out in the open air, and the temperature was maintained within the limits of + 0.1°. Data on the corrosion rate of titanium with cathode polarization in nitric acid solutions and the corrosion rate of titanium alloys with tantalum during cathode polarization in nitric acid solutions were tabulated for current densities from 20 to 60 amps/inch<sup>2</sup>, at various temperatures and for various potentials, as well as 1/2

USSR

KARASEV, A. F., and STABROVSKIY, A. I., Zashchita Metallov, Vol 6, No 3, May-June 70, pp 324-326

tantalum contents of 8 weight %, 10 weight %, and 15 weight %. From the data obtained it follows that titanium is quite stable during cathode polarization in a nitric acid solution containing 6-8 moles/liter of nitrate ion, at 80° and with a current density of 20-60 amps/inch<sup>2</sup> and also at 20-60° with a current density of no more than 20 amps/inch<sup>2</sup>. Titanium alloys with 8-15 weight % tantalum are more stable than titanium in the majority of cases. The alloy with 15 weight % tantalum is corrosion resistant under all the electrolysis conditions studied. This alloy is recommended for use as a cathode material during electrolysis of nitric acid solutions under the corresponding conditions.

2/2

1/2 023 UNCLASSIFIED PROCESSING DATE--20NOV70  
TITLE--RELATION BETWEEN THE MECHANICAL BEHAVIOR OF HIGH DENSITY  
POLYETHYLENE AND THE MOLECULAR WEIGHT DISTRIBUTION -U-  
AUTHOR--(05)--KARASEV, A.N., ANDREYEVA, I.N., DOMAREVA, N.M., KOSMATYKH,  
K.I., KARASEVA, M.G.  
COUNTRY OF INFO--USSR  
SOURCE--VYSOKOMCL. SOEOTN., SER. A 1970, 12(5), 1127-37  
DATE PUBLISHED-----70  
SUBJECT AREAS--CHEMISTRY, MATERIALS  
TOPIC TAGS--POLYETHYLENE, TENSILE STRENGTH, MOLECULAR WEIGHT, CRACK  
PROPAGATION RATE  
CONTROL MARKING--NO RESTRICTIONS  
DOCUMENT CLASS--UNCLASSIFIED  
PROXY REEL/FRAME--3006/1376 STEP NO--UR/0459/70/012/005/1127/1137  
CIRC ACCESSION NO--AP0135050  
UNCLASSIFIED

2/2 C23

UNCLASSIFIED

PROCESSING DATE--20NOV70

CIRC ACCESSION NO--AP0135050

ABSTRACT/EXTRACT--(U) GP-3- ABSTRACT. THE TENSILE STRENGTH AT BREAK AND THE ELONGATION AT BREAK OF HIGH-D. POLYETHYLENE (I) FROM MINUS 40 TO PLUS 100DEGREES WERE MAX. FOR I SAMPLES WITH NARROW MOL.,WT. DISTRIBUTION AND CONTG. HIGH,MOL.,WT. FRACTIONS. THE ABSENCE OF FRACTIONS WITH MOL. WT. IS GREATER THAN OR EQUAL TO 10 PRIMES REDUCED THE CRACK RESISTANCE OF I EVEN WHEN THE MOL.,WT. DISTRIBUTION WAS NARROW. FACILITY: NAUCH.,ISSLED. INST. POLIM. PLASTMASS, LENINGRAD, USSR.

UNCLASSIFIED



USSR

UDC 553.981.6(749.24)

RASULOV, M. N. and ~~KARASEV, A. V.~~ Caspian Sea Petroleum Exploration Trust,  
Cheleken MURB

"The Zhdanov Bank -- a New Gas-Condensate Field in the Caspian Sea"

Moscow, Neftegazovaya Geologiya i Geofizika, No 5, 1972, pp 3-5

Abstract: The article describes the sequence of research on the maritime area of the Zhdanov bank by deep exploratory drilling. The stratigraphy, lithology, tectonics, and the petroleum and gas content of the structure were defined with greater precision. Industrially significant deposits of gas and condensate were discovered. The rapid initiation of industrial development of the Zhdanov bank deposit will permit a considerable increase of oil and gas production in the Turkmen SSR. 2 figures. 1 table.

1/1

KARASEV, B. G.

(3)

SPRS 60684  
STP 180000000 1973

EXPERIMENTAL STUDY OF THE UTILITY CHARACTERISTICS OF THE DC MAGNETOHYDRODYNAMIC CHANNEL

Abstract of a Paper by V. F. Zhigalov, B. G. Karasev, I. V. Lavrent'ev Given at the Magnetohydrodynamic Conference, 1973

In order to check the results of theoretical studies of the electro-magnetic processes occurring in magnetohydrodynamic channels and their integral characteristics, a number of experiments were performed on a conduction magnetic hydrodynamic channel of constant rectangular cross section with conduction walls and one pair of electrodes. The presence in the device of a source of longitudinal power (electrostatic pump) and an external electric power supply (a special machine) permitted experiments to be performed for all operating modes of the magnetohydrodynamic channel in a broad range of variation of the flow factor. In the generator mode the characteristics were taken for constant flow rate of the working medium, and in the pump mode, both for constant and variable current and voltage. The presence on the electromagnet of plug-in coils, variable current field beyond the electrode zone on the interior characteristics of the channel in the generator and pump operating modes. The characteristics of the channel hydrodynamic machine were obtained with a system of compression buses and without them.

A comparison of theory and experiment demonstrated that it is necessary to consider the contribution of the transverse boundary effect to the channel characteristics, especially for sufficiently large extension of the magnetic field beyond the electrodes. The quantitative comparison of the theoretical results obtained from solving the three-dimensional problem, that is, considering both the longitudinal and transverse effects, with the experimental results can be considered entirely satisfactory.

10,843  
CSO: 6046/0653-W

- END -

- 66 -

USSR

UDC 539.4:539.56+620.172.24

CHEREPANOV, G. P., KAPLUN, A. B., KARASEV, L. P. (Moscow, Scientific Research Institute of Motor-Vehicle, Tractor, and Agricultural Machinery-Manufacturing Technology)

"Evaluation of the Influence of Residual Stresses on the Brittle Strength of Welded Bodies With Surface Defects"

Kiev, Problemy Prochnosti, No 12, December 1971, pp 30-35

Abstract: On the basis of the methods of linear mechanics of failure, equations have been obtained which permit evaluation of the brittle strength of a cylindrical shell with account taken of the value of the failure viscosity  $K_{Ic}$  of the most vulnerable zone of the shell material, the dimension of the most vulnerable crack-like defect, the values and distributions of the residual stresses (for example, welding stresses), and the geometrical dimensions of the shell. The equations referred to are presented for the case of an axial and an annular position of the defect.

The procedure for experimental determination of the failure viscosity  $K_{Ic}$  for various zones of a welded joint is briefly presented. The procedure provides for the testing of samples with an already obtained fatigue crack, and for bending through an angle. The load at which the sample fails is  $1/2$

USSR

CHEREPANOV, G. P., et al., Problemy Prochnosti, No 12, December 1971, pp 30-35

recorded. Examples are produced for determining the limit value of the internal pressure for welded cylindrical shells made of high-strength steel 43KhZSNVMA and the titanium alloy VT14. These calculations make it possible to assess the degree of influence of residual stresses upon the carrying capacity of the shell. 5 tables. 3 figures. 6 references.

2/2

1/2 035 UNCLASSIFIED PROCESSING DATE--27NOV70  
TITLE--WORKING METHOD OF DETERMINING THE ENERGY OF RUPTURE OF A METAL -U-

AUTHOR--(04)-CHEREPANOV, G.P., KAPLUN, A.B., KARASEV, L.P., KUTEPOVA, L.I.

COUNTRY OF INFO--USSR

SOURCE--FIZ. KHIM. MEKHAN. MAT., 1970, 6, (1), 64-68

DATE PUBLISHED-----70

SUBJECT AREAS--MATERIALS

TOPIC TAGS--BEND TEST, STRESS CONCENTRATION, RUPTURE STRENGTH,  
THERMODYNAMIC ANALYSIS

CONTROL MARKING--NO RESTRICTIONS

DOCUMENT CLASS--UNCLASSIFIED

PROXY REEL/FRAME--3002/1828

STEP NO--UR/0369/70/006/001/0064/0068

CIRC ACCESSION NO--AP0129196

UNCLASSIFIED

2/2 035

UNCLASSIFIED

PROCESSING DATE--27NOV70

CIRC ACCESSION NO--AP0129196

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. A SIMPLE AND EFFICIENT METHOD OF DETERMINING THE RUPTURE ENERGY OF A METAL FROM THE RESULTS OF BENDING EXPERIMENTS CARRIED OUT ON CRACKED SAMPLES IS PROPOSED AND ITS THEORETICAL PRINCIPLES ARE EXPLAINED. THIS METHOD ENAHLES SMALL SAMPLES CONTG. RELATIVELY LONG CRACKS TO BE TESTED; IT CONSTITUTES A SIMPLIFICATION OF EXISTING TEST PROCEDURES AND GIVES THE RUPTURE ENERGY DIRECTLY WITHOUT ANY COMPLICATED ANALYSIS OF THE EXPERIMENTAL RESULTS.

UNCLASSIFIED

USSR

UDC: 541.49:546.799.3

YELESIN, A. A., ZAYTSEV, A. A., ~~KARASEVA, V. A.~~, NAZAROVA, I. I.,  
PETUKHOVA, I. V.

"Synthesis of (Methyl Phenyl Phosphonyl) Methyl Phenyl Phosphonic Acid, and  
an Investigation of Complexing With Trivalent Ions of Americium, Curium and  
Promethium"

Leningrad, Radiokhimiya, Vol 14, No 3, 1972, pp 374-377

Abstract: The authors studied complexing of trivalent Am, Cm and Pm ions with  
an organophosphorus compound containing two P=O groups joined by a methyl  
bridge. This compound, (methylphenylphosphonyl)methylphenylphosphonic acid,  
was synthesized. The thermodynamic value of its dissociation constant was  
determined ( $pK^0 = 2.04$ ). Complexing was studied by the ion-exchange method on  
KU-2 cation-exchange resin. The logarithms of the constants of stability for  
complexes of  $Am^{3+}$ ,  $Cm^{3+}$  and  $Pm^{3+}$  in solutions with constant ionic strength of  
0.2 ( $NH_4ClO_4$ ) were 3.35, 3.35 and 3.40 respectively, which is appreciably  
higher than the corresponding values with phosphoric and methylphosphonic  
acids, and approaches the value of the constants with trimetaphosphoric acid.  
The additional stabilization of these complexes was attributed to the chelate  
effect associated with ring closure.

1/1

USSR

UDC 621.382.002

KOROBOV, A.I., ABALMAZOVA, M.G., ~~KARASEV, V.I.~~, NAUMCHENKO, A.S., REPIN, V.A.

"Methods Of Control Of The Imperfections Of The Film Structures Metal--Dielectric--Metal"

Elektron. tekhnika. Nauch.-tekhn.sb.Upr.kachestvom i standartiz. (Electronics Technology. Scientific-Technical Collection. Control Of Quality And Standardization), 1971, No 4(10), pp 12-19 (from RZh:Elektronika i yeye primeneniye, No 1, Jan 72, Abstract No 1B515)

Translation: Methods are considered for control of imperfections of the thin-film structure metal--dielectric--metal: electrochemical coloration of the channels of high conductivity in the dielectric film, observation of local charges on the surface of the film with the aid of a mirror electron microscope, measurement of the dependence of the number of partial breakdowns on the magnitude of the applied voltage, and also the frequency dependence  $G$  and  $\text{tg } \delta$  of capacitors in the low-frequency (40--5000 Hz) region, and measurement of the residual polarization. The characteristics are presented of the degree of imperfection of a number of structures which are used in thin-film microcircuits. The qualitative agreement is shown of the evaluation of the imperfection of these structures by various methods. Summary.

1/1

- 62 -



USSR

UDC: 621.396.6-181.5

KARASEV, V. I., KOROBV, A. I., REPIN, V. A., MILOVA, G. P.

"Some Peculiarities in the Breakdown of Thin Films of Photoresist"

Elektron. tekhnika. Nauchno-tekhn. sb. Materialy (Electronic Technology. Scientific and Technical Collection. Materials), 1970, vyp. 5, pp 73-78 (from RZh-Radiotekhnika, No 5, May 71, Abstract No 5V186)

Translation: It is found that breakdown processes in a photoresist film are similar to the ionization processes which take place in gases in nonhomogeneous fields. Gas inclusions play a decisive part in the breakdown processes. The microrelief of electrode surfaces has an appreciable effect on breakdown of thin films of photoresist (up to one micron thick).

1/1

Physical Properties

USSR

UDC 536.63:537.32:621.039.531

~~PEDCHENKO, K. S., KARASEV, V. S., and TRIKULA, V. M.,~~ Institute of Physics, Kiev,  
Academy of Sciences Ukrainian SSR

"Effect of Neutron Radiation on Some Thermophysical Properties of Metals"

Minsk, Inzhenerno-Fizicheskiy Zhurnal, Vol 17, No 4, pp 665-672

Abstract: The article shows and experimentally substantiates the fact that the study of such thermophysical characteristics of irradiated metals as specific heat and thermoelectromotive force can become an effective method of studying radiation and materials. The method of differential and thermal analysis with the use of copper specimens (99.99%) and radiation dose  $8 \cdot 10^{17}$  fast neutrons/cm<sup>2</sup> (E=1 Mev) revealed 8% increase in the specific heat. On the basis of comparison of this data with the increase in specific heat observed under the equilibrium conditions at pre-melting temperatures, the concentration of excess vacancies is calculated whose magnitude corresponds well to the one obtained in the same experiments according to separated excess energy and also to estimates made according to the theory of cascades. The dependence of specific heat increase on the concentration of radiation defects is presented. The appearance of induced thermoelectromotive force in the pair irradiated-nonirradiated metal is shown. The data for Mo at  $4 \cdot 10^{18}$  fast neutrons/cm<sup>2</sup> shows that the absolute differential thermoelectromotive force  $\epsilon = dE_t / 1/2$

USSR

PEDCHENKO, K. S., et al., Minsk, Inzhenerno-Fizicheskiy Zhurnal, Vol 17, No 4, pp 665-672

$dt = -1.3$  microvolt/deg and that neutron irradiation induces changes in the thermoelectromotive force of metals. The obtained value of  $\epsilon$  is used in calculating concentrations of vacancies and comparison with the one obtained in tests according to electrical resistance. The data on isothermal annealing of thermoelectromotive force is presented.

2/2

- 35 -

USSR

*K*  
UDC: 669.017:539.16.04

GARZER, R. I., KARASEV, V. S., KOLYADA, V. M., and FEORENKO, A. I.

"Radiation Erosion and Damage to Certain Metals in the Field of Radiation of a Nuclear Reactor. Part I. Erosion by Fast Neutrons"

Moscow, Atomnaya Energiya, Vol 28, No 5, May 70, pp 400-406

Abstract: The authors studied the dependence of the intensity of erosion of atoms of certain metals on the summary dose of reactor radiation. The targets studied included single- and polycrystals of twenty-five elements: Be, B, Al, Si, Ti, Cr, Fe, Co, Ni, Cu, Zn, Ge, Zr, Nb, Mo, Ag, Cd, Sb, Ta, W, Au, Pb, Bi, Th, and U. It was established that the intensity of particle erosion from single crystals is higher than from polycrystals by 1.5-2.5 times. There is also a periodic variation of intensity of particle emission with atomic number of the element. The maximum intensity was observed for copper, zinc, silver, and gold. The intensity of erosion of single crystals decreases with increasing summary dose. A comparison of the angular distributions of atoms knocked from the surface of single- and polycrystalline targets by fast neutrons showed that the atoms leave the surface of the polycrystals isotropically, whereas they leave the surfaces of singlecrystals primarily in the directions of the densely packed rows of atoms in the crystal.

1/2

USSR

GARBER, R. I., et al., *Atomnaya Energiya*, Vol 28, No 5, May 70, pp 400-406

As the integral neutron dose is increased to  $10^{15} - 10^{16} \text{ n} \cdot \text{cm}^{-2}$ , the angular distribution from singlecrystals no longer shows preferential directions.

2/2

USSR

K

UDC: 669.017:539.16.04

GARBUR, R. I., KARASEV, V. S., KOLYADA, V. M., and FEDORENKO, A. I.

"Radiation Erosion and Damage to Certain Metals in the Field of Radiation of a Nuclear Reactor. Part II. Erosion with U<sup>235</sup> Fission Fragments and Neutrons From a Reactor"

Moscow, Atomnaya Energiya, Vol 28, No 5, May 70, pp 406-410

Abstract: The erosion of atoms from the surface of single- and polycrystalline targets of several pure nonfissionable metals was studied as they were bombarded on the back side with U<sup>235</sup> fission fragments (in contact with the target) and the flux of neutrons in a nuclear reactor. Since the path length of fragments was significantly less than the thickness of the targets, the removal of material from the targets resulted from "mechanical", not thermal processes, which is also confirmed by the anisotropy in the distribution of particles eroded from the single-crystals in sediment on the collectors. In polycrystalline targets, scattering and blocking of fission fragments and distortions of the lattice in the crystallites. The intercrystalline boundaries and distortions of the lattice in the crystallites. Some of the atoms do not reach the surface of the collector. The total yield of eroded particles from polycrystals, measured from sediment on collectors, is 1.6 times less than the yield of particles from singlecrystals of the same elements. The distribution of particles on the collector is isotropic in the case of polycrystals, but not in the case of singlecrystals.

1/1

172 026

UNCLASSIFIED

PROCESSING DATE--27NOV70

TITLE--RADIATIVE DISPERSAL AND DAMAGE TO SOME METALS IN RADIATION FIELD OF NUCLEAR REACTOR. PART II. DISPERSAL BY FISSION FRAGMENTS OF PRIME235 U

AUTHOR--(04)--GARBER, R.I., KARASEV, V.S., KOLYADA, V.M., FEDORENKO, A.I.

COUNTRY OF INFO--USSR

SOURCE--AT. ENERG. (USSR); 28: 406-10, <sup>K</sup>MAY 1970

DATE PUBLISHED-----70

SUBJECT AREAS--PHYSICS, NUCLEAR SCIENCE AND TECHNOLOGY

TOPIC TAGS--METAL, URANIUM ISOTOPE, ATOM, SINGLE CRYSTAL, POLYCRYSTAL, NEUTRON FLUX, ANGULAR DISTRIBUTION, NUCLEAR REACTOR

CONTROL MARKING--NO RESTRICTIONS

DOCUMENT CLASS--UNCLASSIFIED

PROXY REEL/FRAME--3008/0556

STEP NO--UR/0089/70/000/028/0406/0410

CIRC ACCESSION NO--AP0137643

UNCLASSIFIED

2/2 026

UNCLASSIFIED

PROCESSING DATE--27NOV70

CIRC ACCESSION NO--AP0137643

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. RESULTS OF A STUDY ARE DESCRIBED OF DISPERSAL OF ATOMS EMITTED FROM SURFACES OF SINGLE AND POLYCRYSTAL TARGETS OF 13 PURE UNFISSIONABLE METALS UNDER IRRADIATION FROM THE BACK SIDE BY FISSION FRAGMENTS OF PRIME235 U IN CONTACT WITH TARGETS AND NEUTRON FLUX IN THE NUCLEAR REACTOR. THE DISPERSAL YIELD AND ANGULAR DISTRIBUTION OF DISPERSED PARTICLES HAVE BEEN INVESTIGATED BY USE OF ACTIVE DEPOSITS OF DISPERSED ATOMS ON COLLECTORS, PLACED DURING IRRADIATION NEAR THE TARGET SURFACE. A PERIODIC DEPENDENCE OF THE DISPERSAL YIELD ON THE ATOMIC NUMBER OF TARGETS HAS BEEN OBSERVED. IT HAS BEEN SHOWN THAT COMBINED IRRADIATION OF POLYCRYSTAL TARGETS BY FISSION FRAGMENTS AND NEUTRONS FROM THE REACTOR DOES NOT RESULT IN SIGNIFICANT INCREASE OF THE DISPERSAL YIELD AS COMPARED WITH IRRADIATION BY NEUTRONS ONLY. IN THE CASE OF SINGLE CRYSTALS, COMBINED IRRADIATION RESULTS IN AN INCREASE OF THE DISPERSAL YIELD. FOR VARIOUS TARGETS, THE SINGLE CRYSTAL DISPERSAL YIELD IS HIGHER THAN IN THE CASE OF POLYCRYSTALS. AUTORADIOGRAPHICAL REGISTRATION OF ACTIVE DEPOSITS OBTAINED AS A RESULT OF DISPERSAL OF SINGLE CRYSTALS SHOW DISCRETE SPOTS WITH SYMMETRY CORRESPONDING TO THE ORIENTATION OF THE DISPERSION CRYSTAL SIDE. AS TO POLYCRYSTALS, THE DENSITY DISTRIBUTION OF PARTICLES ALONG COLLECTORS FOLLOWS THE COSINE LAW. RESULTS OF THE INVESTIGATION MAKE IT POSSIBLE TO ACCEPT THE HYPOTHESIS OF MECHANICAL, AND NOT THERMAL, PROCESS OF DISPERSAL OF ATOMS FROM THE TARGET SURFACES UNDER IRRADIATION BY FISSION FRAGMENTS.

UNCLASSIFIED



1/3 038

UNCLASSIFIED

PROCESSING DATE--27NOV70

TITLE--RADIATIVE DISPERSAL AND DAMAGE TO SOME METALS IN RADIATION FIELD OF NUCLEAR REACTOR PART I. DISPERSAL BY FAST NEUTRONS -U-

AUTHOR--(04)-GARBER, R.I., KARASEV, V.S., KOLYADA, V.M., FEDORENKO, A.I.

COUNTRY OF INFO--USSR

SOURCE--AT. ENERG. (USSR): 28: 4006, MAY 1970

DATE PUBLISHED-----70

SUBJECT AREAS--PHYSICS

TOPIC TAGS--SINGLE CRYSTAL, ENERGY SPECTRUM, NUCLEAR REACTOR, RADIATION DAMAGE, NEUTRON FLUX, IRRADIATION, POLYCRYSTAL, METAL, PARTICLE ACCELERATOR TARGET

CONTROL MARKING--NO RESTRICTIONS

DOCUMENT CLASS--UNCLASSIFIED

PROXY REEL/FRA--3008/0554

STEP NO--UR/0089/70/000/028/0400/0406

CIRC ACCESSION NO--AP0137642

UNCLASSIFIED

2/3 038

UNCLASSIFIED

PROCESSING DATE--27NOV70

CIRC ACCESSION NO--AP0137642

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. RESULTS OF A STUDY OF DEPENDENCE OF A DISPERSAL INTENSITY FOR SINGLE AND POLYCRYSTAL TARGETS ON A REACTOR IRRADIATION DOSE WITH NEUTRON FLUX 2.10 PRIME12 NCM NEGATIVE PRIME2 TIMES SEC NEGATIVE PRIME1. IT IS FOUND THAT THE YIELD OF DISPERSED PARTICLES FROM SINGLE CRYSTALS IS HIGHER THAN IN THE CASE OF POLYCRYSTALS. FOR SINGLE CRYSTAL AS WELL AS FOR POLYCRYSTAL TARGETS A PERIODIC DEPENDENCE ON DISPERSAL YIELD ON ATOMIC NUMBER OF THE TARGET ELEMENT OCCURS. WHILE THE IRRADIATION DOSE INCREASES, THE DISPERSAL INTENSITY IN THE CASE OF SINGLE CRYSTALS DECREASES BUT REMAINS HIGHER THAN THE DISPERSAL INTENSITY OF POLYCRYSTALS. IT IS SHOWN THAT PARTICLES FROM SINGLE CRYSTAL SURFACE ARE EMITTED MAINLY IN THE DIRECTIONS OF DENSELY PACKED ROWS OF ATOMS, WHILE FROM POLYCRYSTALS EMISSION IS ISOTROPIC. INCREASE OF THE IRRADIATION DOSE IS ACCOMPANIED BY LESSENING ANISTROPY IN THE PARTICLE YIELD FROM SINGLE CRYSTALS, LOWERING THEIR ENERGIES AND BROADENING THEIR ENERGY SPECTRUM. ENERGY SPECTRA OF PARTICLES FROM SINGLE AND POLYCRYSTALS ARE MEASURED. INFLUENCE OF ELECTRONIC SHELLS STRUCTURE ON THE YIELD OF DISPERSED PARTICLES FROM TARGETS AND THEIR ENERGY SPECTRA, IS OBSERVED AND INVESTIGATED. ATOMS OF ELEMENTS BELONGING TO THE FIRST SUBGROUP OF ANY PERIOD ARE EMITTED WITH HIGHER VELOCITIES THAN ATOMS OF ELEMENTS OF THE SECOND SUBGROUP BELONGING TO THE SAME PERIOD. THE MAXIMUM VALUE OF ENERGY (UP TO 650 EV) IS OBSERVED IN THE CASE OF ATOMS OF ELEMENTS WITH VERY WEAK DISPERSION PROPERTIES.

UNCLASSIFIED

3/3 .038

UNCLASSIFIED

PROCESSING DATE--27NOV70

CIRC ACCESSION NO--AP0137642

ABSTRACT/EXTRACT--RESULTS OF THESE INVESTIGATIONS ARE INTERPRETED BY MEANS OF MECHANISMS OF FOCUSING COLLISIONS AND CANALIZING DISPLACED ATOMS IN THE CRYSTAL LATTICE OF TARGETS UNDER NEUTRON IRRADIATION IN THE REACTOR.

UNCLASSIFIED

USSR

UDC 576.8.095:615.479.90

KOROTYAYEV, A. I., ASTAPOV, A. A. and KARASEVA, E. V.

"The Physiological Role of Antibiotics and the Mechanism of Their Anti-microbial Action"

Uspehi Mikrobiologii, pp 199-210

Abstract: A review is given of the latest works on the mechanism of action of antibiotics on the microbial cell. In accordance with literature data and their own research, the authors develop an original hypothesis about the biological nature of antibiotics and their role for microbe-producers. It is considered that antibiotics are biological effectors, monitoring the activity of various enzyme systems of producer cells. Thanks to their effector nature, antibiotics in the cells of organisms which are sensitive to them can interact with regulator proteins and cause changes in conformation, which lead to partial inhibition of the specific activity of enzymes or to complete inhibition. The bacteriostatic effect of antibiotics is, as a rule, based on biosynthesis of protein at the ribosome level. It appears that ribosome proteins are carriers of receptors which are sensitive to antibiotics. Attaching antibiotic molecules to such receptors produces a screening effect: due to partial change in the conformation of the protein subunit, the corresponding ribosome sector

1/2

USSR

KOROZYAYEV, A. I., et al., *Uspheki Mikrobiologii*, pp 199-210

cannot interact with RNA or the anticodon, aminoacyl-S-RNA. Restoration of normal ribosome function after the antibiotics are removed is explained by the reversibility of allosteric protein transfers.

5/8°  
2/2

- 74 -

AP9053079

UR 0289

PRIMARY SOURCE: Izvestiya Sibirskogo Otdeleniya, AN SSSR,  
Seriya Khimicheskikh Nauk, Nr 12(162), Nr 5,  
pp 38-42

A. V. Nikolaev, K. E. Mironov,  
E. V. Karaseva, A. I. Ryabinin

EXTRACTION IN THE SYSTEM  
Nd(NO<sub>3</sub>)<sub>3</sub>-HNO<sub>3</sub>-H<sub>2</sub>O-(C<sub>4</sub>H<sub>9</sub>O)<sub>3</sub>PO at 25°C

14  
5  
1  
20

The extraction of neodymium and nitric acid with tributyl phosphate in the above system at 25°C was studied. Distribution coefficients of neodymium, praseodymium or samarium as well as the extraction of HNO<sub>3</sub> in the corresponding systems were compared. Extraction has been compared of neodymium, praseodymium and samarium nitrates from aqueous solvents without acid.

100

41

1949 1835

18

UDC 627.81:532.59

USSR

KARASEVA, G. G.

"Calculating Wind-Driven Waves on Reservoirs in Connection with Their Use for Transportation"

Tr. koordinats. soveshchaniy po gidrotekhn. (Works of Coordinating Meetings on Hydroengineering), No 59, 1970, pp 104-109 (from RZh-Elektrotehnika i Energetika, No 2, Feb 71, Abstract No 2 D49)

Translation: Calculation nomograms are developed which express the dependence of wave height on fetch and depth for various wind velocities. The calculation is performed successively from section to section.

1/1

- 55 -

1/2 020 UNCLASSIFIED PROCESSING DATE--27NOV70  
 TITLE--EPIDEMIOLOGY OF INTESTINAL COLI INFECTION IN YOUNG CHILDREN -U-  
 AUTHOR--(05)-BELIKOVAALDAKOVA, V.D., TABOLIN, V.A., BYCHENKO, V.O.,  
 DESHCHEKINA, M.F., KARASEVA, K.G.  
 COUNTRY OF INFO--USSR  
 SOURCE--ZHURNAL MIKROBIOLOGII, EPIDEMIOLOGII I IMMUNOBIOLOGII, 1970, NR  
 6, PP 9-14  
 DATE PUBLISHED-----70

SUBJECT AREAS--BIOLOGICAL AND MEDICAL SCIENCES  
 TOPIC TAGS--PEDIATRICS, INFECTIOUS DISEASE, DIGESTIVE SYSTEM DISEASE,  
 SMALL INTESTINE, BACTERIAL DISEASE, EPIDEMIOLOGY

CONTROL MARKING--NO RESTRICTIONS

DOCUMENT CLASS--UNCLASSIFIED  
 PROXY REEL/FRAME--3001/0358

STEP NO--UR/0016/70/000/006/0009/0014

CIRC ACCESSION NO--AP0126114  
 UNCLASSIFIED



2/2 020

UNCLASSIFIED

PROCESSING DATE--27NOV70

IRC ACCESSION NO--AP0126114

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. THE MATERIAL OBTAINED DEMONSTRATED THAT IN CHILDREN UNDER TWO YEARS OF AGE INTESTINAL COLI INFECTION CONSTITUTED ONLY 5-6PERCENT OF THE WHOLE SUM TOTAL OF ACUTE INTESTINAL DISEASES. CLINICALLY MANIFEST FORMS USUALLY OCCURRED IN ENFEEBLED CHILDREN; IN HEALTHY CHILDREN THIS INFECTION WAS MOSTLY EXPRESSED IN THE CARRIER STATE. TO ASCERTAIN THE ROLE OF THE DOSE OF THE CAUSATIVE AGENT IN THE EPIDEMIOLOGY OF INTESTINAL COLI INFECTION THE AUTHORS ANALYGED COMPARATIVE BY THE EPIDEMIOLOGICAL VALUE OF VARIOUS WAYS OF TRANSMISSION OF THE INFECTIVE AGENT. FOOD FACTOR WHICH PROVIDED PENETRATION OF A GREATER DOSE OF THE MICROBE IN TO THE ORGANISM PROVED TO PLAY A LEADING ROLE. IN CONCLUSION IT WAS SHOWN THAT OF THE CARDINAL IMPORTANCE IN THE PROPHYLAXIS OF INTESTINAL COLI INFECTION SHOULD BE THE MAINTENANCE OF HIGH SANITATION STANDARD IN CHILDREN'S COLLECTIVE BODIES, PARTICULARLY IN THE GROUPS OF ENFEEBLED CHILDREN.

FACILITY: I. MOSKOVSKIY MEDITSINSKIY INSTITUT IM. SECHENOVA.  
 FACILITY: II. MOSKOVSKIY MEDITSINSKIY INSTITUT, DETSKAYA KLINICHESKAYA BOL'NITSA IM. FILATOVA.

UNCLASSIFIED

172 023 UNCLASSIFIED PROCESSING DATE--20NOV70  
 TITLE--RELATION BETWEEN THE MECHANICAL BEHAVIOR OF HIGH DENSITY  
 POLYETHYLENE AND THE MOLECULAR WEIGHT DISTRIBUTION -U-  
 AUTHOR--(05)-KARASEV, A.N., ANDREYEVA, I.N., DOMAREVA, N.M., KOSMATYKH,  
K.I., KARASEVA, M.G.  
 COUNTRY OF INFO--USSR

SOURCE--VYSOKOML. SOEDIN., SER. A 1970, 42(5), 1127-37

DATE PUBLISHED-----70

SUBJECT AREAS--CHEMISTRY, MATERIALS

TOPIC TAGS--POLYETHYLENE, TENSILE STRENGTH, MOLECULAR WEIGHT, CRACK  
 PROPAGATION RATE

CONTROL MARKING--NO RESTRICTIONS

DOCUMENT CLASS--UNCLASSIFIED  
 PROXY REEL/FRAME--3000/1370

STEP NO--UR/0459/70/012/005/1127/1137

CIRC ACCESSION NO--AP0135050

UNCLASSIFIED

UNCLASSIFIED

PROCESSING DATE--20NOV70

272 C23

CIRC ACCESSION NO--AP0135050  
ABSTRACT/EXTRACT--(U) GP-G-

ABSTRACT. THE TENSILE STRENGTH AT BREAK AND THE ELONGATION AT BREAK OF HIGH-D. POLYETHYLENE (1) FROM MINUS 40 TO PLUS 100DEGREES WERE MAX. FOR 1 SAMPLES WITH NARROW MOL.,WT. DISTRIBUTION AND CONTG. HIGH,MOL.,WT. FRACTIONS. THE ABSENCE OF FRACTIONS WITH MOL. WT. IS GREATER THAN OR EQUAL TO 10 PRIME6 REDUCED THE CRACK RESISTANCE OF 1 EVEN WHEN THE MOL.,WT. DISTRIBUTION WAS NARROW.  
FACILITY: NAUCH.,ISSLED. INST. POLIM. PLASTMASS, LENINGRAD, USSR.

UNCLASSIFIED

USSR

YAKUBOV, Sh. Kh., SEMENOV, B. F., MAKSUMOV, S. S., KARASEVA, P. S., SADYKOVA, V. D., and CHUNIKHIN, S. P., Institute of Poliomyelitis and Viral Encephalitis Academy of Medical Sciences USSR; and Uzbek Scientific Research Institute of Epidemiology, Microbiology, and Infectious Diseases

"Serological Data on the Circulation of Virus of the Tachina Fly (Larvae-veridae) in the Uzbek SSR"

Tashkent, Meditsinskiy Zhurnal Uzbekistana, No 4, 1971, pp 27-30

Abstract: A serological study was carried out to determine the possible foci of the Tachina virus in Uzbekistan. Human and domestic animal sera were collected in Tashkentskaya, Surkhandar'yinskaya, Samarkandskaya and Kashkadar'inskaya Oblasts, and in the Karakalpak Autonomous Soviet Socialist Republic. Virus-neutralizing antibodies were found in all areas studied in 16.7% of the human population and 15.5% of animals with titers of 1:10-1:80. Immunity was lower in people inhabiting mountainous and foothill regions than in the plains, except for Kashkadar'yinskaya oblast', where the percentage of antibodies in the plains was lowest probably because of weakly developed irrigation and resultant lesser number of flies. Statistically, immunity was higher among older inhabitants. The presence of antibodies proved that the virus

1/2

USSR

YAKUBOV, SH. Kh., et al, Meditsinskiy Zhurnal Uzbekistana, No 4, 1971,  
pp 27-30

does circulate within Uzbekistan, as it apparently also does in other southern  
regions of the USSR, where investigations showed similar results.

2/2

- 38 -

USSR

UDC 541.49:546.79

YELESIN, A. A., ZAITSEV, A. A., IVANOVICH, N. A., KARASEVA, V. A., and  
YAKOVLEV, G. N.

"Complex Formation of Trivalent Americium, Curium, and Promethium Ions with  
Hydroxymethylphosphonic Acid and Hydroxymethylethylphosphonic Acid"

Leningrad, Radiokhimiya, Vol 14, No 4, 1972, pp 546-551

Abstract: Dissociation constants of hydroxymethylphosphonic acid [HMPA] and hydroxymethylethylphosphonic acid [HMEPA] were determined at 25°C; it was found that in their strength these acids are close to phosphonic acid. Using the ion exchange method on a cation exchange resin, the complex formation of  $Am^{3+}$ ,  $Cu^{3+}$  and  $Pm^{3+}$  with HMPA and HMEPA was studied. HMPA forms two complexes:  $[M(HA)]^{2+}$  and  $[M(HA)_2]^+$ , while HMEPA is capable of only one complex formation of the  $[MA]^{2+}$  type. It was shown that no additional binding between the metal ions and hydroxy groups of these acids takes place.

1/1

USSR

UDC 59:616.986.7:591.522(470.111)

KARASEVA, Ye. V., KOKOVIN, I. L., and REYCHUK, Ye. A., Institute of Epidemiology and Microbiology, Academy of Medical Sciences USSR

"Natural Foci of Leptospirosis in the Far North (From Data Obtained in the Yamalo-Nenets National Area)"

Moscow, Zoologicheskii Zhurnal, Vol 51, No 3, 1972, pp 467-468

Abstract: The field work was carried out in July and August, 1969, by two groups working simultaneously: one in the region of Seyakha, the other in a boat along a course up along the Seyakha river, through lake Khento up to lake Yambuto. All of the material obtained underwent a bacteriological examination in the field laboratory and a blood serum agglutination reaction and was placed with known strains in the permanent laboratory. A total of 541 specimens of rodents were obtained from the central part of Yamal (Seyakha) region: 426 Lemmus obensis, 38 Dicrostonyx torquatus, 78 Microtus gregalis, and three Clethrionomys glareolus from near Salekhard. Fifty-three birds, mainly from the orders Anseriformes and Charadriiformes, and 14 pigeons were also examined. Foci of leptospirosis were absent from the valley of the Seyakhi river (70° N latitude). Antibodies to *L. grippityphosa* were found in the blood serum from three voles further south, near Salekhard

1/2

Vector Studies

USSR

UDC 599.323.4:591.526:59.08

LITVIN, V. Yu., KARULIN, B. Ye., NIKITINA, N. A., KARASHVA, Ye. V., and  
KHLIYAP, L. A., Institute of Epidemiology and Microbiology, Academy of  
Medical Sciences USSR, Moscow

"Repeated Trapping and Radioisotopic Labeling in Studying the Use of  
Territory by Rodents (as Illustrated by the Common Vole)"

Leningrad, Zoologicheskii Zhurnal, No 6, 1973, pp 931-938

Abstract: The advantages and disadvantages of studying the home ranges of  
small rodents (voles) by labeling them with P<sup>32</sup> and Co<sup>60</sup> are compared. The  
use of P<sup>32</sup> and recording of radioactive excretions is useful in determining  
the size and approximate contours of the animals' ranges over several days  
and on individual days. Drawbacks of the technique are the small number of  
animals that can be observed at the same time (on common territory) and the  
short period in which information can be collected. Labeling the animals  
with Co<sup>60</sup> and tracking them round the clock produces the most detailed and  
objective information. The resolving power of the method is very great  
but its usefulness is limited by the small number of animals that can be  
observed at the same time. Both methods yield more information than the  
1/2



USSR

LITVIN, V. Yu., et al., Zoologicheskii Zhurnal, No 6, 1973, pp 931-938

old technique of amputating toes. The choice is determined by the particular objective of a study and by the degree of precision and completeness of the results desired.

2/2

- 78 -

1/2 014 UNCLASSIFIED PROCESSING DATE--04DEC70  
TITLE---DAILY DIURESIS AND DYNAMICS OF LEPTOSPIRA EXCRETION BY ROOT VOLES  
MICROTUS OECONOMUS -U-  
AUTHOR--(04)-KARASEVA, YE.V., PASSOVA, O.M., LITVIN, V.YU., KOKOVIN, I.L.  
COUNTRY OF INFO--USSR  
SOURCE--ZOOLOGICHESKIY ZHURNAL, 1970, NR 3, PP 435-439  
DATE PUBLISHED-----70

SUBJECT AREAS--BIOLOGICAL AND MEDICAL SCIENCES  
TOPIC TAGS--RODENT, LEPTOSPIRA, URINE, EXCRETION

CONTROL MARKING--NO RESTRICTIONS

DOCUMENT CLASS--UNCLASSIFIED  
PROXY REEL/FRAME--3007/1384

STEP NO--UR/0439/70/000/003/0435/0439

CIRC. ACCESSION NO--AP0136738

UNCLASSIFIED

2/2 014

UNCLASSIFIED

PROCESSING DATE--04DEC70

CIRC ACCESSION NO--AP0136738

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. STUDY OF THE DAILY DIURESIS AND EXCRETION OF LEPTOSPIRA IN THE URINE OF MICROTUS DECONOMUS SHOWED THAT THE DAILY URINE VOLUME VARIED FROM 8.1-30.1 ML (AVERAGE 18.3 ML) AND INDIVIDUAL URINE SAMPLES AVERAGED 0.72 ML. URINE WAS PASSED 11-38 TIMES A DAY (25 AVERAGE). THE NUMBER OF LEPTOSPIRA EXCRETED IN THE URINE IN 24 HOURS VARIED FROM 1 TO 10 OUT OF 70-80 MICROSCOPE FIELDS. DURING THE DAY THERE WERE GAPS IN LEPTOSPIRA EXCRETION IN THE URINE, WHILE AT NIGHT DIURESIS WAS INTENSIFIED (URINE WAS PASSED MORE TIMES), AND CONSEQUENTLY THE NUMBER OF LEPTOSPIRA IN THE URINE INCREASED. MICROTUS DECONOMUS WAS THE MAIN CARRIER OF L. GRIPPOTYPHOSA IN NATURAL LEPTOSPIROSIS FOCI. THE VOLES WERE ARTIFICIALLY INFECTED WITH L. GRIPPOTYPHOSA, STRAIN MICROTUS DECONOMUS 475, AND URINE VOLUMES WERE COLLECTED IN THE LABORATORY. IN INITIAL STAGES OF LEPTOSPIROSIS, FEW LEPTOSPIRA WERE EXCRETED, WITH LEVELS INCREASING ON THE FOURTH AND NINTH DAYS IN TWO VOLES STUDIED. FACILITY: INSTITUT EPIEMIOLOGII I MIKROBIOLOGII, AMN SSSR; INSTITUT MEDITSINSKOY PARAZITOLOGII I TROPICHESKOY MEDITSINY, MINISTERSTVA ZHRAVVOOKHRANENIYA, SSSR, MOSCOW.

UNCLASSIFIED

USSR

UDC 576.809.55

KARASEVICH, Yu. N.

"Theoretical Problems in Studying the Initial Stages of Metabolism of Organic Compounds in Microorganisms"

Uspekhi mikrobiologii (Advances in Microbiology), No 7, 1971

Abstract: Problems involved in studying the metabolism of synthetic compounds not found in nature, analogs of natural compounds, and of the possible mechanisms of adaptation of microorganisms to new sources of carbon and energy, are presented.

1/1

USSR

UDC 541.183

DOKHOV, M. P., ZADUMKIN, S. N., KARASHAYEV, A. A., Editorial Staff of  
"Zhurnal fizicheskoy khimii" AN SSSR

"Contact Wetting Angle for Solid Gallium in its Own Melt"

Krayevoy ugol smachivaniya tverdogo galliya sobstvennym rasplavom (cf. English above), Moscow, 1971, 6 pp, ill, bibliography of 6 titles, No 2978-71 Dep. (from RZh-Khimiya, No 1 (I), Jan 72, Abstract No 1B1263 Dep.)

Translation: the paper describes the procedure and results of measurement of the contact wetting angle  $\theta$  of solid gallium by liquid gallium at the melting point. A drop of liquid gallium was applied to the surface of solid gallium. The angle  $\theta$  was measured by comparing photographs of this surface before and after application of the drop, followed by removal of the molten metal. From  $\theta (6 + 2)^\circ$  and the surface energy of the melt ( $718 \text{ ergs/cm}^2$ ) the work of adhesion is calculated ( $1433 \text{ ergs/cm}^2$ ). Using the calculated value of  $62 \text{ ergs/cm}^2$  for the interphase energy, Neumann's formula gives a value of  $744 \text{ ergs/cm}^2$  for the surface energy of solid gallium at the melting point. Resume

1/1

USSR

UDC 621.382.2

KARASHEV, T.B., ARANOVICH, R.M., VAYNO, A.A., TALI, A.A.

"Effect Of Annealing Of Radiation Defects On The Electrical Properties Of P-N Junctions, Produced On High-Resistance P-Type Silicon By Bombardment Of Nitrogen Ions"

V sb. Radiatsion. fiz. nemet. kristallov (Radiation Physics Of Non-Metallic Crystals--Collection Of Works), Minsk, "Nauka i tekhn.," 1970, pp 174-180 (from RZh--Elektronika i yeye primeneniye, No 2, February 1971, Abstract No 2B134)

Translation: Injection of nitrogen ions with an energy of 34 kev with a current density of 10 microamp/cm<sup>2</sup> was performed in p-type Si with a resistivity of 1500--2000 ohm. cm. and an orientation of the surface in the (111) plane; the duration of irradiation was one minute and the residual pressure in the chamber 10<sup>-5</sup> mm. Annealing of radiation defects was conducted for 30 minutes at temperatures of 20--900° C. Thickness of the n-type layer amounts to 0.4 micrometer; the resistance of the layer decreases with an increase of the annealing temperature to 600° C and remains unchanged with a further increase of the temperature. The ratio of the average concentration of electrons to the concentration of injected ions  $\approx 5 \cdot 10^{-3}$ . The breakdown voltage of n-p junctions of annealed and non-annealed specimens amounts to 1500--1700 v. 6 ill. 6 ref. Y.M.  
1/1

1/2 015 UNCLASSIFIED PROCESSING DATE--30OCT70  
TITLE--STRUCTURE OF THE PARTICLES AND MORPHOLOGY OF MAGNESIUM HYDROXIDE  
CRYSTALLITES -U-  
AUTHOR--(03)--CHEREMUKHIN, E.P., KARASIK, E.M., PRIYMA, T. *K*  
COUNTRY OF INFO---USSR  
SOURCE---ZH. PRIKL. KHIM. (LENINGRAD) 1970, 43(3), 533-8  
DATE PUBLISHED-----70  
SUBJECT AREAS--CHEMISTRY  
TOPIC TAGS--ELECTRON MICROSCOPY, MAGNESIUM HYDROXIDE  
CONTROL MARKING--NO RESTRICTIONS  
DOCUMENT CLASS--UNCLASSIFIED  
PROXY REEL/FRAE--1996/1947 STEP NO--UR/0080/70/043/003/0533/0538  
CIRC ACCESSION NO--AP0118909  
UNCLASSIFIED

2/2 015

UNCLASSIFIED

PROCESSING DATE--30OCT70

CIRC ACCESSION NO--AP0118909

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. ELECTRON MICROSCOPY WAS USED TO STUDY MG(OH) SUB2 PPTD. WITH LIME MILK FROM DIL. NATURAL SOLNS. MG(OH) SUB2 FORMS AGGREGATES WHICH CONSIST OF PRIMARY CRYSTALLITES. UNDER VARYING CONDITIONS OF MG(OH) SUB2 PREPN. AND AGING, PLATE SHAPED CRYSTALLITES OF IRREGULAR FORM WITH A MEAN DIAM. OF 600-900 ANGSTROM AND THICKNESS OF 80-100 ANGSTROM WERE FORMED. IN THIS CASE, MG(OH) SUB2 WAS POLYDISPERSE. MANY EXPTS. LED TO MG(OH) SUB2 CRYSTALLITES WHICH EXHIBITED AN ALTERED MORPHOLOGY REGULAR HEXAGONAL PRISMS. FACILITY: KRYM. FILIAL GOS. INST. PRIKL. KHIM., USSR.

UNCLASSIFIED



THE WORLD'S FRESH WATER RESOURCES

[Article by Professor M. I. L'vovich, Moscow, Zashchita  
Nauk SSSR, Russian, Vol 42, No 11, November 1972, pp 70-76]

UDC: 551.28(100)

The earth's water resources are composed of stationary water resources and resources renewed in the process of its circulation. The total volume of stationary resources is almost 1.5 billion cubic kilometers, of which the fresh water accessible for use, including ground, lake, and river water and also soil moisture and atmospheric vapor, amounts to 4-5 billion km<sup>3</sup>, according to our calculations. From those figures it follows that the earth apparently is not poor in fresh water resources. But the needs of mankind are assured only to a small degree through those reserves. The most reliable and constant source is water renewed in the process of such a colossal phenomenon as the water cycle. This is why in counting the fresh water resources the basic method is that of the water balance, which permits quantitatively considering the cycle and its separate elements and also estimating the continuous renewal of fresh water resources.

The concept of water exchange, proposed by us, which characterizes the time taken to replace all the water of a given part of the hydrosphere in the process of circulation, permits revealing important and interesting regularities of that phenomenon (Table 1). The activity of exchange of the saline parts of the hydrosphere-ocean and deep ground waters, the main volume of which are brines, is numbered in thousands of years. On the other hand, comparison of the separate parts of the stationary reserves of the hydrosphere with the corresponding elements of the water balance shows that the fresh water reserves most valuable to people, in the exception of very low stationary reserves, are characterized by an exceptionally dynamic character. Thus the simultaneous reserve of water in the beds of all rivers is very small in comparison with other parts of the hydrosphere and does not exceed 1200 km<sup>3</sup> (the volume of all lake waters is

KARASIK G. Ya.  
JRS 58011  
18 Jan 73

1 DC: 551.48 (100)

calculated the river runoff by 5- and 10-degree belts of latitude, generalizing for each of them all the available data on river runoff, others (M. I. Budzko, 1939; L. I. Zubanov, 1970; F. Albrecht, 1961) took as a basis evaporation (if it is deducted from precipitations it is possible to obtain an approximate concept of the river runoff), and a third group (M. I. L'ovich, 1945, 1960, 1964) started from the first compiled (later refined) world maps of river runoff.

All work on the water balance, including the world balance, was formerly constructed on the equation  $P = R + E$  (precipitations = runoff + evaporation). That equation created a whole epoch in hydrology, since in the course of 7-8 decades it served as the basis of water-balance investigations of river basins and territories in general, but it reflects the interconnection of only three elements of the water balance and this does not satisfy contemporary science.

Last year in the Institute of Geography of the AS USSR, under the leadership of the author of this article and with the participation of N. N. Dreyer, G. Ya. Karasik, G. M. Nikolayeva and G. M. Chomskaya, work on the water balance of the continents of the world was completed. The basis of the investigations was the following system of differentiated equations, proposed by us (1959):

$$R = U + S; P = U + S + E; W = P - S = U + E;$$

$$Kv = \frac{U}{P}; Ks = \frac{S}{P}; Kv = \frac{E}{P}.$$

where R is the total river runoff; U is the underground and S is the surface (high-water) runoff into rivers, P is the atmospheric precipitations, E is the evaporation, W is the gross wetting of a territory, and  $Kv$  and  $Ks$  are the coefficients of feeding of rivers by underground waters and of evaporation.

The system of differentiated equations differs from those used earlier by increase in the number of elements of the water balance from 3 to 6, including genetically different parts of the river runoff which are of different practical value and are determinable by analysis of the course of runoff during the year, which permits distinguishing the runoff of underground origin. By means of calculations based on the new equations it is possible to arrive also at a general estimate of the reserves of soil moisture -- an important component of soil fertility.

The water balance of our country has been studied by that method in the Institute of Geography of the AS USSR, in the State Hydrological Institute, and in the institutes of Geography of the AS Azerbaijan and Georgian SSR. That method has been used in investigations of Romanian, Bulgarian and Yugoslav specialists.

USSR

UDC: 621.317.8(088.8)

BADINTER, Ye. Ya., ZELIKOVSKIY, Z. I., KARASIK, N. Ya., PONYATOV, G. A.,  
SAVENKOV, A. N., FARMAKOVSKIY, B. V., TSEYENS, V. P., SHIROKSHIN, K. A.

"A Resistor With a Winding of Cast Microwire in Glass Insulation"

USSR Author's Certificate No 287161, filed 24 Nov 69, published 1 Feb 71  
(from RZh-Radiotekhnika, No 6, Jun 71, Abstract No 6V334 P)

Translation: This Author's Certificate introduces a resistor wound with cast microwire in glass insulation. The body of the resistor is made from an electrical insulating material such as glass. To improve the stability of operational characteristics in the negative temperature region, the core and insulation of the microwire are made from materials whose effective temperature coefficient of expansion is close to that of the body material. A modification of the resistor is proposed which is distinguished by the fact that borosilicate electric vacuum glass is used as the insulating material, and a ternary or more complex alloy is used as the core material. The components of the alloy are taken in the following ratios (percent): Cr--8-12, Mn--8-16, Si--6-12, Mo--0.1-5, Re--less than 2.2, Ce--less than 1.2, Pr--less than 1.2, the remainder--Ni-Co.

1/1

- 168 -

USSR

UDC 615.365.018.53.015.45:612.112.94

VIKHMEN, A. A., ~~KARASTK, O. A.~~, and SOFRONOV, B. N., Institute of Experimental Medicine, Academy of Medical Sciences USSR

"Sensitivity of Lymphoid Cells to Antilymphocytic Serum in Different Stages of Immunogenesis"

Moscow, Byulleten' Eksperimental'noy Biologii i Meditsiny, No 5, 1971, pp 77-80

Abstract: Experiments on mice immunized with sheep erythrocytes showed that antibody-forming spleen cells are more sensitive to antilymphocytic serum (ALS) soon after immunization than they are in the later stages. The overall number of viable spleen cells decreased shortly after injection of ALS and then was restored. ALS affects both the viability and immunological function of lymphoid cells. It has a brief cytotoxic effect on the total population. Injected a day before antigenic stimulation, it sharply lowers the function of the immunocompetent cells. This shows that the lymphoid cells participating in the initial stages of immunogenesis are highly sensitive to ALS. Cells producing antibodies after antigenic stimulation or producing "normal" antibodies are more resistant to ALS than the total lymphoid cell population. Injection of ALS clearly increases the number of antibody-producing cells, 1/2

USSR

VIKHEMAN, A. A., et al., Byulleten' Eksperimental'noy Biologii i Meditsiny,  
No 5, 1971, pp 77-80

indicating that ALS has a stimulating effect on the cell population producing antibodies. The in vitro effect of ALS is different in that the antibody-producing cells are more sensitive to the serum than the overall mass of lymphoid cells. The reason may be that the same high concentration of anti-serum is not achieved in vivo or the injurious effect of the serum is quickly compensated.

2/2

USSR

SOFRONOV, B. N., VIKHMAN, A. A., KARASIK, O. A., OBREZHA, G. N.,  
and POLENOVA, I. M., Institute of Experimental Medicine,  
Academy of Medical Sciences, USSR, Leningrad

"Modern Aspects of Nonspecific and Specific Suppression of  
Immunological Reactivity," pp 75-88

Abstract: Various ways and means of suppressing immunogenesis are discussed in the article. Of the many methods studied, the most important are surgical methods -- extirpation of such immunocompetent organs as the spleen, thymus, and some groups of lymph nodes; physical methods -- application of radiation; chemical methods -- administration of chemical preparations; and biological methods -- based on the action of antisera against antigens in lymph tissue. Investigations established, however, that removal of immunocompetent organs from young animals tends to hinder the further development of the lymph system -- the main source of lymphocytes, and causes dysfunction of the lymph system and prolonged suppression of the immunological reactivity of the organism. Thymectomy and bursectomy in adult animals  
1/2

USSR

SDFRONOV, E. N., et al., "Modern Aspects of Nonspecific and Specific Suppression of Immunological Reactivity," pp 75-88

tend to weaken considerably the immunological system of the organism and retard the regenerative process of immunological reactivity. The application of ionizing radiation and chemical preparations, while suppressing immunogenesis, tends to interfere also with the development and functions of vitally important proteins and nucleic acids. The most promising method is the application of antilymphocyte sera. The use of these sera is based on the premise that antilymph antibodies while affecting lymph cells will not disturb the functions of non-lymphatic tissue cells. There are, however, some well-grounded apprehensions with respect to the utilization of antilymphocyte sera because of their possible toxic properties and content of impurities. Work done on these problems by Soviet and foreign authors is discussed.

2/2

USSR

UDC: 537.312.62

VERESHCHAGIN, V. G., KARASIK, V. R., KURGANOV, G. E.

"Method of Measurements of Longitudinal Critical Currents in Superconductive Alloys"

Moscow, Sverkhprovodyashchiye splavy i soyedin.---sbornik (Superconductive Alloys and Compounds---collection of works), "Nauka", 1972, pp 175-177 (from RZh-Radiotekhnika, No 12, Dec 72, abstract No 12D551 [résumé])

Translation: In studying the dependence of critical currents on longitudinal magnetic field strength, procedural difficulties arise due to three circumstances: the necessity of locating the contacts in a strong magnetic field; the high current density (about  $10^6$  A/cm<sup>2</sup>); the damaging effect of the transverse component of the magnetic field. These difficulties were overcome by means of a specially designed holder and by using ultrasonic tinning. Contacts are produced with a resistance of  $\approx 10^{-8}$   $\Omega$  in a magnetic field of  $\sim 50,000$  Ei/cm. The proposed method is used for measurements of longitudinal currents in superconductive specimens. One illustration, bibliography of five titles.

1/1

- 147 -



Miscellaneous

USSR

UDC: 519.3:62-50

KARASIN, I. A. and KOTCHENKO, F. F.

"Synthesizing a Quasi-Oscillating Second-Order Optimal System"

Izv. Leniner. elektrotekhn. in-ta (Leningrad Electrical Engineering Institute News) 1970, No. 90, pp 35-38 (from RZh-Matematika, No. 3, March 71, Abstract No. 3B372)

Translation: The authors consider an example of the synthesis of a quasi-oscillating system with an asynchronous slave motor for frequency control. Authors' resume

1/1

USSR

UDC: 519.3:62-50

KARASIN, I. A. and KOTCHENKO, F. F.

"Non-Oscillating and Quasi-Oscillating Optimal Second-Order Systems"

Izv. Leningr. elektrotekhn. in-ta (Leningrad Electrical Engineering Institute News) 1970, No. 90, pp 27-35 (from RZh-Matematika, No. 3, March 71, Abstract No. 3B371)

Translation: A second-order system with a piecewise continuous right-hand member which is optimal in rapidity of action is investigated. Author's resume

1/1

- 2 -

1/2 018 UNCLASSIFIED  
TITLE--HIGH POLISH STAINLESS STEEL -U-

PROCESSING DATE--11DEC70

AUTHOR--KAKASIYCHUK, YE.

COUNTRY OF INFO--USSR

SOURCE--RABOCHAYA GAZETA, AUGUST 21, 1970, P 1, COLS 5-8

DATE PUBLISHED--21AUG70

SUBJECT AREAS--MECH., IND., CIVIL AND MARINE ENGR, MATERIALS

TOPIC TAGS--STAINLESS STEEL, METALLURGIC PLANT, METAL POLISHING

CONTROL MARKING--NO RESTRICTIONS

DOCUMENT CLASS--UNCLASSIFIED

PROXY FICHE NO----FD70/605001/B06 STEP NO--UR/9015/70/000/000/0001/0001

CIRC ACCESSION NO--AN0139303

UNCLASSIFIED

2/2 018

UNCLASSIFIED

PROCESSING DATE--11DEC70

CIRC ACCESSION NO--AN0139303

ABSTRACT/EXTRACT--(U) CP-0- ABSTRACT. IT IS CLAIMED THAT ENGINEERS V. G. DODSKA, CHIEF PLANT ENGINEER I. N. AVRAMENKO, A. I. GOLOVKO, V. N. LOLA, V. S. MOVSHOVICH, ASSISTANT CHIEF OF THE PLANT LABORATORY K. I. MARKOV, S. S. SELYUKOV, V. A. TITARENKO, AND V. M. TSELOVAL, MIKOV, SUPERINTENDENT G. A. DROBOT, AND POLISHER V. G. LYSIKOV, ALL WITH THE "ZAPOROZHSTAL" PLANT, HAVE REVOLUTIONIZED THE PRODUCTION OF THE STAINLESS STEEL POLISHED ON BOTH SIDES. THE PLANT NOW PRODUCES POLISHED SHEET WITH THE 14TH CLASS SURFACE QUALITY. BEFORE THAT "THEY PAID IN GOLD FOR THIS TYPE OF STEEL". THIS PLANT'S PROJECT WAS SUPPORTED BY SOME UNNAMED RESEARCH INSTITUTE.

USSR

UDC 538.2

BURAVIKHIN, V. A., KARASOV, P. I., KAZAKOV, V. G., and ANUFRIYEV, V. S.,  
Irkutsk Pedagogical Institute

"Effect of Stresses on Pulsed Remagnetization of Thin Nickel-Iron Films"

Sverdlovsk, Fizika Metallov i Metallovedeniye, Vol 31, No 4, Apr 71, pp 739-744

Abstract: The effect of elastic stresses on the remagnetization time ( $\tau$ ), the switching factor, and the change in character of pulsed remagnetization processes was experimentally investigated by a method in which the stress intensity could be varied continuously. The remagnetization was carried out on 20% Fe-80% Ni films  $\sim 1500 \text{ \AA}$  thick by a constant amplitude value of the remagnetizing impulse ( $H_S$ ) and various strain values ( $\epsilon$ ). The results are analyzed by reference to oscillograms of the longitudinal signal of remagnetization, the domain structure of the investigated film, and diagrams showing effects of stresses and  $1/\tau$  dependences on  $H_S$  at various  $\epsilon$ . Six figures, seven bibliographic references.

1/1

USSR

UDC 669.24:538.653

KARASYUK, N. P., MIROSHNICHENKO, F. D., and GAYTOTA, G. I.,  
Zaporozh'ye Pedagogical Institute

"Magnetostriction of Heat-Resistant Nickel-Base Alloys"

Sverdlovsk, Fizika Metallov i Metallovedeniye, Vol 36, No 4,  
Oct 73, pp 887-890

Abstract: The magnetostrictions of complex-alloyed heat-resistant alloys (KhN77TYuR, ZhS6K, ZhS3LS, and VZhL8) of different chemical composition, depending on their method of thermal and mechanical treatment, were investigated. These alloys are paramagnetic in the temperature range of room temperature — 700 to 800°C. Their measured magnetostrictions, in dependence on the outer magnetic field intensity  $H$ , were found to be negative. The appearance of the negative magnetostriction and its magnitude is explained by the percentage content of the hardening  $\gamma'$ -phase of  $Ni_3(Al, Ti)$ -type in the first alloy and by the quantity of the same phase, but of more complex chemical composition, in the other 3 alloys. The magnitude of the magnetostriction depends on

1/2

- 69 -

USSR

KARASYUK, N. P., et al., Fizika Metallov i Metallovedeniye, Vol 36, No 4, Oct 73, pp 887-890

the chemical composition of the alloys, the kind of their thermal treatment, and also on their mechanical surface treatment. The presence of magnetostriction in the investigated alloys can be considered related to the  $\gamma'$ -phase, separated during aging, and its magnitude of magnetostriction can be considered related to the percentage content of this phase. Three figures, two tables, two bibliographic references.

2/2

Refractory Materials

USSR

BOFACHEV, I. N., VEKSLER, YU. G., and KARASYUK, YU. A., Ural Polytechnical Institute

"Features of Cavitation Fracture in Refractory Metals and Alloys"

Novokuznetsk, IzVUZ-Chernaya Metallurgiya, No 6, 1971, pp 111-116

Abstract: Refractory metals with a b.c.c. lattice and alloys based on these metals are used extensively in the manufacture of pipelines and pump parts for the transfer of molten metal heat carriers in nuclear power engineering. A study was made of the features of deformation and fracture of refractory metals and refractory metal-based alloys under conditions of cavitation-erosion action. It was found that for one and the same refractory metal with a b.c.c. lattice the cavitation resistance and nature of fracture, kinetics, and depth of strengthening the surface layer depend on the condition of the metal (cast or powder metal). The character and magnitude of this difference depends on the nature of the metal as well as the size and distribution of micropores in the powder-metal material. The relatively high cavitation resistance of tungsten has been linked with its high strength properties. For an alloy of molybdenum with 47% Re the combination of high initial strength and hardness with intensive strengthening in the initial period of 1/2



USSR

BOGACHEV, I. N., et al., IzVUZ -- Chernaya Metallurgiya, No 6, 1971,  
pp 111-116

testing gives it a significantly higher resistance in comparison with tungsten. For powdered molybdenum and especially tungsten, the primary start of fracture at the grain boundaries was characteristic. In the case of a significant magnitude of micropores (powder-metal niobium), nucleation fractures are involved. For cast molybdenum and niobium a significant plastic deformation of the surface precedes failure. In contrast to molybdenum, primary fracture of the grain boundaries is not observed in niobium. Five figures, one table, 12 bibliographic references.

2/2

- 58 -

USSR

UDC 548.5

KARATAEV, V. V., MIL'VIDSKII, M. G., OSVENSKII, V. B., STOLYAEV, O. G.,  
Government Scientific-Research and Planning Institute for the Rare Metals  
Industry

"Effective Partition Coefficient of Excess Basic Components in Crystallization  
of Gallium Arsenide from a Melt"

Moscow, Kristallografiya, vol 18, No 4, July-August 1973, pp 830-832

Calculations were made of effective partition coefficients for Ga and As with  
growth of GaAs monocrystals by crucible-free zone fusion from a melt with  
different deviations from stoichiometry. Total impurities were less than  
 $10^{17} \text{ cm}^{-3}$ . The formula used in the calculations is given. When the melt is  
enriched in Ga,  $k = 6.1 \times 10^{-3}$ ; when enriched in As,  $k = 8.5 \times 10^{-3}$ . Since  
crystals grow slowly (0.5 mm/min) under the conditions used, the values may be  
considered close to equilibrium.

1/1

USSR

UDC 550.83.01

KARATAYEV, G. I.

"Problems of Modeling Processes of Geological and Geophysical Data Analysis"

Geofiz.---Sbornik AN USSR (Geophysics---Collection of Works of the Academy of Sciences Ukrainian SSR), No 50, 1972, pp 13-20 (from Referativnyy Zhurnal--Geologiya, No 5, May 73, Abstract No 5D116 by M. I. Lapina)

Abstract: An analysis of the modern state of problems for the complex interpretation of geophysical data is given and means of its further development are noted. It is mentioned that the correlation theory of interpretation, developed by the author, can serve as a start for developing the complex theory of geological interpretation of geophysical data. Concrete problems have been listed from the solution of which (with the aid of a computer) depends the development of the overall theory of complex interpretation. An important area of modeling the process of geological and geophysical data analysis and creating models describing the operating diagrams of experimental interpreters in the acceptance of these or other solutions in different situations has been noted.

1/1

1/2 008 UNCLASSIFIED PROCESSING DATE--02OCT70  
TITLE--NEOTECTONICS, RECENT MOVEMENTS OF THE EARTH'S CRUST AND THE MOHO  
DISCONTINUITY -U-  
AUTHOR--(02)-FOIADI, E.E., KARATAYEV, G.I. *R*  
COUNTRY OF INFO--USSR  
SOURCE--GEOLOGIYA I GEOFIZIKA, 1970, NR 4, PP 87-97  
DATE PUBLISHED-----70  
  
SUBJECT AREAS--EARTH SCIENCES AND OCEANOGRAPHY  
  
TOPIC TAGS--EARTH CRUST MOVEMENT, SEISMIC SOUNDING, VERTICAL EARTH CRUST  
MOVEMENT, ISOSTASY, EARTH CRUST DEFORMATION, TECTONICS, MOHOVICIC  
DISCONTINUITY  
  
CONTROL MARKING--NO RESTRICTIONS  
  
DOCUMENT CLASS--UNCLASSIFIED  
PRGXZ FILE/FNAME--1994/0054 STEP NO--GR/0210/70/000/004/0087/0097  
CIRC ACCESSION NO--AP0114450  
UNCLASSIFIED

2/2 008

UNCLASSIFIED

PROCESSING DATE--02OCT70

CIRC ACCESSION NO--AP0114450

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. BASED UPON ANALYSIS OF THE DATA ON RECENT NEOTECTONIC MOVEMENTS OF THE EARTH'S CRUST, DEEP SEISMIC SOUNDING AND PRE CENOZOIC TECTONICS THE GOOD AGREEMENT BETWEEN RECENT VERTICAL AND NEW CRUSTAL MOTIONS IS ESTABLISHED BOTH IN REGIONAL PLAN AND IN DETAILS, REVERSIBLE CORRELATION OF MOHO DISCONTINUITY RELIEF WITH RECENT CRUSTAL MOVEMENTS IS ALSO SHOWN. THE ACTIVE PROCESSES OF EARTH'S SURFACE ELEVATION ARE SUPPOSED TO BE LEADING PROCESSES IN THE FORMATION OF THE PRESENT APPEARANCE OF BOTH SURFACES. THESE PROCESSES ARE CAUSED BY TEMPERATURE DEFORMATIONS AND ASPIRATION OF THE EARTH'S CRUST TO ISOSTASY. IN ADJACENT AREAS THE LISTED MOTIONS ARE THE PASSIVE CONSEQUENCES OF THE PROCESSES OF THERMOELASTIC AND VISCOUS DEFORMATIONS.  
FACILITY: IGIG SO AN SSSR, NOVOSIBIRSK.

UNCLASSIFIED

1/2 015 UNCLASSIFIED PROCESSING DATE--18SEP70  
TITLE--RESEARCH IN A DESIGN PLANNING INSTITUTE -U-

AUTHOR--(05)-KARATAYEV, G., VNIYZEMAMASH, M., GAYDAYENKO, YU., NAUMOV, A.,  
BLOKH, G.  
COUNTRY OF INFO--USSR

SOURCE--STROITEL, NAYA GAZETA, MAY 6, 1970, P 2, COLS 5-7

DATE PUBLISHED--06MAY70

SUBJECT AREAS--MECH., IND., CIVIL AND MARINE ENGR, BEHAVIORAL AND SOCIAL  
SCIENCES  
TOPIC TAGS--RESEARCH AND DEVELOPMENT, EARTH HANDLING EQUIPMENT, DESIGN  
FACILITY PLANNING, INDUSTRIAL INSTITUTE

CONTROL MARKING--NO RESTRICTIONS

DOCUMENT CLASS--UNCLASSIFIED  
PROXY REEL/FRAME--1986/0183

STEP NO--UR/9024/70/000/000/0002/0002

CIRC ACCESSION NO--AN0102254

UNCLASSIFIED

2/2 015

UNCLASSIFIED

PROCESSING DATE--18SEP70

CIRC ACCESSION NO--AN0102254

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. THE THREE ARTICLES BY THE AFOREMENTIONED AUTHORS DISCUSS CERTAIN DRAWBACKS OF THE SOVIET RESEARCH AND DEVELOPMENT SYSTEM. ACCORDING TO KARATAYEV, THE VNIIZEMMASH COMPRISES RESEARCH DEPARTMENTS NAUCHNO ISSLEDOVATEL, SKIYE OTDELY, A LEADING DESIGN BUREAU GOLOVNOYE KONSTRUKTORSKOYE BYURO, AND A PILOT PLANT, OPYTNYY ZAVOD-. ITS PRINCIPAL PROBLEM IS LACK OF TESTING AND FIELD TESTING FACILITIES FOR THE EARTH MOVING MACHINERY IT DEVELOPS. GEMMERLING COMPLAINS ABOUT THE "DOUBLE LIFE" STANDARD FORCED UPON HIS INSTITUTE BY THE MINISTRY OF BUILDING MATERIALS, U.S.S.R. THE RESEARCH, NAUCHNAY, AND THE DEVELOPMENT, PROYEKTNAY, SECTIONS OF THE INSTITUTE ARE SUBORDINATE TO DIFFERENT MAIN ADMINISTRATIONS OF THE MINISTRY AND HAVE DIFFERENT BUDGETS. IN GEMMERLING, S OPINION, BUDGET MONEYS SHOULD BE ALLOCATED TO THE ADMINISTRATION OF THE INSTITUTE TO FUND THE DEVELOPMENT OF PILOT PROJECTS ON THE BASIS OF COMPLETED RESEARCH PROGRAMS.

UNCLASSIFIED

USSR

K UDC: 621.376.43

SHTAREV, N. N., KARATAYEV, N. A.

"A Ring-Type Phase Detector With Split Load"

Tr. Tomskogo in-ta radioelektron. i elektron. tekhn. (Works of the Tomsk Institute of Radio Electronics and Electronic Technology), 1970, 16, pp 117-123 (from RZh-Radiotekhnika, No 7, Jul 70, Abstract No 7D30)

Translation: The stability of the detector is analyzed as a function of temperature and transformer asymmetry. Bibliography of two titles. N. S.

1/1

137 -



USSR

UDC 548.4

BUBLIK, V. T., KARATAYEV, V. V., KULAGIN, R. S., MIL'VIDSKIY, M. G.,  
OSVENSKIY, V. B., STOLYAROV, O. G., KHOLODNIY, L. P., State Scientific-Research  
and Design Institute of the Rare Metals Industry

"Nature of Point Defects in GaAs Single Crystals as a Function of Composition  
of Melt Used in Growing Them"

Moscow, Kristallografiya, Vol 18, No 2, Mar-Apr 73, pp 353-356.

Abstract: The dependence is studied between the nature and concentration of point defects in GaAs monocrystals and the composition of the growth melt. During the studies, the density of specimens was determined with high precision, lattice periods and internal friction were measured. The results produced indicate that single-phase GaAs crystals can be grown from melts containing between 46.7 and 53.5 at. % As, crystals of stoichiometric composition being produced from a melt rich in As, with its concentration in the melt 50.5 at. %.

1/1

USSR

UDC 621.317.77 5

MISYURA, V. A., PIVEN', L. A., SURKOV, A. K., SOMOV, V. G.,  
KARATEYEV, N. G., ZAGVOZDKIN, B. V., NABOKA, A. N., LITVINENKO,  
O. A., and KAPANIN, I. I.

"Systems of Phase and Doppler Measurements in a Mobile Radio  
Ionosphere Complex"

Moscow, V sb. X Vses. konf. po rasprostr. radiovoln. Tezisy dokl.  
Sekts. 3 (Tenth All-Union Conference on the Propagation of Radio  
Waves; Report Theses; Section 3--collection of works) "Nauka,"  
1972, pp 109-113 (from RZh--Radiotekhnika, No 10, 1972, Abstract  
No 10A426)

Translation: A device for phase probing and a system for recording  
the Faraday and Doppler effects in artificial earth satellite sig-  
nals and rockets, including a series of multichannel receiver and  
recorder devices operating at two, three, and four coherent fre-  
quencies (20, 40; 24, 48, 144; 20, 30, 90, 180; 150 and 400 MHz,  
and others), are described. The difference between the phase  
probing system and those now known is the separation of the mea-  
sured phase differences with a heterodyne frequency and consequent  
narrow-band filtration. Resume  
1/1

USSR

UDC 621.317.08 3

MISYURA, V. A., PIVEN', L. A., LITVINENKO, O. A., SOMOV, V. G.,  
NABOKA, A. M., SURKOV, A. K., and KARATEYEV, N. G.

"Mobile Radio Ionosphere Complex for Investigating the Ionosphere  
and Radio Wave Propagation"

Moscow, V sb. X Vses. konf. po rasprostr. radiovoln. Tezisy dokl.  
Sekts. 3 (Tenth All-Union Conference on the Propagation of Radio  
Waves; Report Theses; Section 3--collection of works) "Nauka,"  
1972, pp 104-108 (from RZh--Radiotekhnika, No 10, 1972, Abstract  
No 10A427)

Translation: A mobile radio ionosphere complex, developed in the  
Khar'kov University for complex investigations of the ionosphere  
and the propagation of radio waves by the method of vertical prob-  
ing and the method of single-frequency and multifrequency differen-  
tial Doppler and Faraday effects in satellite and rocket signals,  
is described. The mobility of the complex permits, in addition to  
conducting independent measurements, combination measurements with  
devices for noncoherent scattering and with experiments using geo-  
physical and meteorological rockets, as well as various shortwave  
ranges and the like. Resume

1/1

1/2 006 UNCLASSIFIED PROCESSING DATE--13NOV70  
TITLE--POTASSIUM SULFATE, RUBIDIUM SULFATE, WATER SYSTEM AT 0, 25, AND  
100DEGREES -U-  
AUTHOR--(02)-KARATAYEVA, I.M., LEPESHKOV, I.N. *K*  
COUNTRY OF INFO--USSR  
SOURCE--ZH. NEORG. KHIM. 1970, 15(4), 1113-16  
DATE PUBLISHED-----70  
  
SUBJECT AREAS--CHEMISTRY  
TOPIC TAGS--POTASSIUM SULFATE, RUBIDIUM COMPOUND, SOLID SOLUTION  
  
CONTROL MARKING--NO RESTRICTIONS  
DOCUMENT CLASS--UNCLASSIFIED  
PROXY REEL/FRAE--1999/1123 STEP NO--UR/0078/70/015/004/1113/1116  
CIRC ACCESSION NO--AP0123115  
UNCLASSIFIED

272 006 UNCLASSIFIED PROCESSING DATE--13NOV70  
CIRC ACCESSION NO--A0123115  
ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. THE SOLY. AND THE NATURE OF THE  
SOLID PHASES WERE STUDIED IN THE K SUB2 SO SUB4-RB SUB2 SO SUB4-H SUB2 O  
SYSTEM AT 0, 25, AND 100DEGREES. THE SYSTEM FORMS A CONTINUOUS SERIES  
OF SOLID SOLNS. AT THESE TEMPS. THE NS OF THE SALTS AND SOLID PHASES  
ARE TABULATED. FACILITY: INST. OBSHCH. NEORG. KHIM. IM.  
KURNAKOVA, MOSCOW, USSR.

UNCLASSIFIED

USSR

UDC: 621.376.43

SHTAREV, N. N., KARATAYEVA, N. A.

"Zero Drift of a ~~Phase~~ Detector"

Tr. Tomskogo in-ta radicelektron. i elektron. tekhn. (Works of the Tomsk Institute of Radio Electronics and Electronic Technology), 1970, 16, pp 105-116 (from RZh-Radiotekhnika, No 7, Jul 70, Abstract No 7D29)

Translation: The paper gives a theoretical analysis of the temperature instability of a phase detector. The resultant expression for zero drift is also used to evaluate the amplitude error which arises because of the difference between semiconductor diodes in the phase detector. Methods of reducing this error are indicated. Bibliography of three titles. N. S.

1/1

USSR

UDC 546.284-31:66.093.8

ARSIAMBEKOV, V. A., GORBUNOVA, K. M., KARATEYEVA, V. I., and SMUGHCHENKO, V. YA., Institute of Physical Chemistry, Academy of Sciences USSR

"Properties of SiO<sub>2</sub> Films, Prepared by the Hydrolysis of SiF<sub>4</sub>"

Moscow, Neorganicheskiye Materialy, Vol 9, No 12, 1973, pp 2120-2123

Abstract: The precipitation of the SiO<sub>2</sub> films was carried out at temperatures of 550 to 730°C and concentrations of H<sub>2</sub>SiF<sub>6</sub> of 13, 21, and 45%. A graph shows the deposition rate as a function of the substrate temperature and the vaporized acid, being a maximum for the highest values of both. Measurement of the breakdown voltage at 15-20 points showed that a film 2.4 μ thick had a breakdown voltage of 7 x 10<sup>6</sup> v/cm, whereas films 1.7 and 0.83 μ had breakdown voltages of 8 x 10<sup>6</sup> and 7.5 x 10<sup>6</sup> v/cm, respectively. Treatment of the surface with organic solvents changed the breakdown voltage somewhat. Curves for the distribution of contact differences in the surface potential φ are also shown. Characteristic differences are observed which may be a function of the heterogeneous distribution of charge in the layers which is in turn a function of the preparation methods.

1/1

math

# KARATSUBA, A.A.

INTERNATIONAL CONFERENCE ON NUMBER THEORY  
Article by Doctor of Physical and Mathematical Sciences A. A. Karatsuba, Moscow, Vsesoyuzhnyi Akademi Nauk SSSR, Russian, Vol 42, No 4, April 1972, pp 98-99

OPRS SECRET  
213 May 74

An International Conference on Number Theory was held in Moscow on 14-18 September 1971. Besides about 150 Soviet mathematicians, 30 scientists from 14 foreign countries participated in it.

The start of the Conference coincided with the 80th birthday of the chairman of its organizing committee, the most eminent mathematician of the present day, I. M. Vinogradov. Opening the conference, the President of the AS USSR R. V. Keldysh warmly congratulated I. M. Vinogradov upon his jubilee and upon his receiving a high governmental award -- a second "Hammer and Sickle" medal. The President of the International Mathematical Union K. Chandrasekharan (Switzerland) and Yu. V. Linnik (USSR) presented plenary reports on the influence of the ideas and methods of I. M. Vinogradov on the development of number theory and also on the latest achievements obtained by means of those methods.

The following three working days of the conference were spent in the Mathematics Institute named V. A. Steklov of the AS USSR in two sessions: analytical and algebraic number theory. Thirty reports were presented, a large portion of which were surveys. The reports, mainly very eminent ones, were actively in their own areas of science, reflected the contemporary state of number theory, its successes and problems, the directions of investigations and prospects of development. The interest was aroused by the reports of D. Cassels (England), D. Burgess (England), E. A. Diophantine, V. A. Dem'yanenko, V. P. Platonov, and V. Ya. Volynskiy (USSR), and D. Hinzbruch (West Germany).

The report of D. Cassels was devoted to problems in the representation of strictly and nonstrictly positively determined



USSR

UDC 511.292

KARATSUBA, A. A.

"Sums of Characters With Prime Numbers Belonging to an Arithmetic Progression"

Moscow, Izvestiya Akademii Nauk SSSR, seriya Matematicheskaya, Vol 35, No 3,  
May-Jun 71, pp 469-484

Abstract: One of the implications in the basic theorem described in this article is that of the residues and non-residues of mod  $q$  in sequences of the type  $p+k$ , where the prime numbers  $p$  belong to the beginning of an arithmetic progression. The author uses a method which he developed in a previous paper for solving the problem of estimating a sum of characters. The problem is posed here of obtaining a non-trivial evaluation of the sum for values of  $N = N(q, Q)$  as small as possible and for any  $k$ ,  $(k, q) = 1$ , although large values may be studied by this method as well. The author first states his definitions and then continues to formulate the basic results, wherein he gives four theorems. He devotes one section to stating seven lemmas and proving them and a third section to proving in detail the theorems stated in the first section. The author makes extensive use of the mathematical apparatus to cite his proofs. The article contains a bibliography of four titles.

1/1

USSR

UDC 620.178

BARANOV, S. M., VOROB'YEVA, G. A., ~~KARATUSHIN, S. I.~~, Leningrad

"Tendency of Type 40Kh Steel from Various Melts to Brittle Rupture"

Problemy Prochnosti, No 11, 1971, pp 101-105.

ABSTRACT: The influence of the method of deoxidation of Type 40Kh fine-grained steel on its brittle rupture tendency is studied. Tests are performed using impact specimens with a fatigue crack. The value of  $a_3$  [the work expended in the growth of an existing crack to critical size] and  $a_p$  [remaining component of impact toughness] are determined. Throughout the entire interval of below-freezing temperatures, the value of  $a_p$  is significantly (3-4 times) higher for heat-treated steel produced by siliconless deoxidation.

1/1

Plant Pathology

USSR

UDC 581.2

KARATYGIN, I. V., Botanical Institute imeni V. L. Konarov, Academy of Sciences USSR, Leningrad

"Mycelium of *Ustilago maydis* (DC) CDA. in Tissues of Pathological Neoplasms During Corn Smut"

Moscow, Doklady Akademii Nauk SSSR, Vol 201, No 6, 1971, pp 1,500-1,503

Abstract: The cytological principles of the developmental cycle of *U. maydis* in tissues of corn plants were studied and also the characteristics of the reaction of this pathogen with the host plant on a cellular level. Teleuto-spores of the fungus sprouted on the surface of corn plant leaves with the formation of either sporidia or hyphae. Anastomosis between hyphae (heterokaryosis) was observed, which would be significant from the standpoint of formation of new biotypes of *U. maydis*. In the initial stage of development of the mycelium, the majority of cells of the pathogen had two nuclei. Multikaryons with 3-8 nuclei were also present. At the stage of sorus formation, the number of cells with a single nucleus increased in the mycelium, particularly the sporogenic mycelium. However, cells with two nuclei persisted during the course of subsequent development of the fungus. The presence of spore dikaryons was presumably associated with karyogamy. The  
1/2

USSR

KARATYGIN, I. V., Doklady Akademii Nauk SSSR, Vol 201, No 6, 1971, pp 1,500-1,503

mycelium in the tissue often divided with the formation of sporidia, which in most cases had a single large nucleus. The sporidia were similar to those formed in cultures of the fungus. They may be effective as a supplementary factor bringing about the spread of infection. Upon contact of hyphae with nuclei of the host cells in the process of infection of the host cells, the nuclei of the host cells were enlarged, deformed, and subjected to partial lysis. The nucleoli were also enlarged and their number increased to five. There was no correlation between the amount of intracellular mycelium and the degree of hypertrophy of the nuclei of host cells. One may assume that the action of the hyphae that produced hypertrophy of the host cell nuclei was not limited to a single cell, but extended over a number of cells of the host plant. Development of haustoria-like branches by *U. maydis* was observed.

2/2

USSR

UDO 621.372.45.001.5

KONTOROVICH, M.I., KARATYGIN, V.A.

"Some Problems Of Motion Stability In Pulse Schemes"

Radiotekhnika i elektronika, Vol XVII, No 6, June 1972, pp 1224-1233

Abstract: Some properties are investigated of the functions of a linear active two-terminal network. Consideration is given to two-terminal networks: (1) Stable in a regime of short circuiting of the input terminals; and (2) Stable with disconnected terminals. A four-terminal network enveloped by feedback is also studied. Examples are given of criteria which make it possible to judge the stability of equilibrium of a system. Particular attention is paid to the case where the output from the balanced state takes place "by jumps." 11 fig. 2 ref. Received by editors, 3 May 1971.

1/1

- 167 -

USSR

UDC 518:517.25

KONTOROVICH, M. I., KARATYGIN, V. A., and ROZOV, V. A., Leningrad

"Asymptotic Calculations of a Double Integral for the Case of a Stationary Line"

Moscow. Zhurnal Vychislitel'noy Matematiki i Matematicheskoy Fiziki, Vol 10, No 4, Jul/Aug 70, pp 811-817

Abstract: Integrals of the type  $\int_S f e^{ik\phi} ds$  occurring in problems concerning wave diffraction and antenna theory are discussed; it is noted that the approximate calculation of such integrals for large values of the parameter  $k$  is ordinarily based on the stationary phase method and leads to expansions in which stationary terms and contour integrals figure. The case in which the phase function  $\phi$  is extremal not at one point but on a certain curve which is called the stationary line is considered. Integrals of this type are obtained in calculating the spread between rectangular antennas with parallel sides or coaxial parabolic antennas generally speaking, in cases in which the function  $\phi$  has the sense of the distance between points on parallel curves. The initial integral is reduced to the sum of integrals of slowly varying functions in terms of a stationary line and the sum of integrals over the curve  $L$  enclosing  $S$ .

1/1

USSR

UDC 615.832.9.015.156:612.015.642

DOLGOVA, Z. Ya., and KARATYSH, B. V., Semipalatinsk Medical Institute,  
Semipalatinsk

"Changes in the Distribution of Ascorbic Acid in the Organism During the  
Post-Hypothermic Period"

Moscow, Voprosy Meditsinskoy Khimii, Vol 18, Vyp 1, Jan/Feb 72, pp 73-75

Abstract: Hypothermia was induced by lowering the environmental temperature for one group of rats to 32-29°C and to 22-19°C for a second group. Upon removal of rats from the low-temperature chamber rats were killed 1, 2, 5 hr later and 1, 3, 5, and 7 days later. The concentration of ascorbic acid in adrenal glands, brain, heart, liver, skeletal muscles, and blood plasma was analyzed by the dichlorophenolindophenol method. The concentration of ascorbic acid in heart, liver, and skeletal muscles among rats of the first groups decreased to 64.2, 67.1, 59.0% (control 100%), respectively, one hour after hypothermia, and it continued to be low in adrenal glands, heart, and skeletal muscles 2 and 5 hours and 1 and 3 days removal from the chamber. In 5 days, only heart and skeletal muscles contained a decreased amount of ascorbic acid, and in 7 days all organs attained a normal concentration of ascorbic acid. Among rats of the second group all organs analyzed contained a decreased amount 1/2

USSR

DOLGOVA, Z. Ya., and KARATYSH, B. V., Voprosy Meditsinskoy Khimii, Vol 18, Vyp 1, Jan/Feb 72, pp 73-75

of ascorbic acid 1, 2, 5 hr, and 1 day after removal from the low-temperature chamber. It remained below control level in heart, adrenal glands, and skeletal muscles 5 days after hypothermia. It did not normalize in skeletal muscles 7 days after hypothermia. The concentration of ascorbic acid in blood plasma increased to 126.6-131.6% in rats of the first group and to 133.3-200% in rats of the second group 2 hours after hypothermia. Thereafter it decreased to a normal level.

2/2

- 51 -



USSR

UDC 615.832.9.015.45:612.014:612.015.642-06:612.444

DOLGOVA, Z. Ya. and KARATYSH, B. V., Semipalatinsk Medical Institute

"Effect of Thyroid Hormones on the Distribution of Ascorbic Acid in Rats Exposed to Hypothermia"

Moscow, Byulleten' Eksperimental'noy Biologii i Meditsiny, No 5, 1971, pp 72-74

Abstract: Both hyperthyroidism and hypothyroidism experimentally induced in rats significantly reduced the ascorbic acid content of the adrenals, brain, heart, liver, skeletal muscles, and blood plasma. Mild hypothermia (chilling to a rectal temperature of 29 to 32°) in the hyperthyroid rats further lowered the ascorbic acid levels of the above organs but raised them substantially (by a factor of 2) in the plasma. The effect in the hypothyroid animals was the same but less pronounced. Deep hypothermia (chilling to a rectal temperature of 19 to 22°) in the hyperthyroid rats lowered the ascorbic acid levels of the tissues but raised them (by a factor of 3) in the plasma. Deep hypothermia in the hypothyroid animals produced similar changes in the vitamin C balance. However, the changes were more pronounced in the heart and liver than in the same organ of the hyperthyroid animals.

1/1

USSR

UDC 621.791.754.019:546.74

KUZ'MIN, G. S., KARATYSH, V. V., Perm' Polytechnic Institute

"Resistance of Welded Joints in Nickel to Hot Cracks"

Kiev, Avtomaticheskaya Svarka, No 11, Nov 72, pp 20-21.

Abstract: The metal of nickel seams produced using various welding wires was tested for technological strength. The hot-crack resistance of the seams was evaluated on the basis of the minimal and critical deformation rates of the metal during welding. The maximum technological strength was achieved by using type NMts5 and NMtsAT3-1-0.6 wires. The data produced allow only a qualitative estimation of the influence of individual alloying elements on hot crack resistance of seams. To estimate the influence of welding rate on critical deformation rate, pairs of nickel specimens were spot melted using the same wires. The studies showed that spot melting is a more rigid testing method and that unalloyed seam metal has the greatest sensitivity to changes in the thermal cycle of welding.

1/1

USSR

UDC 620.193.5

MOVCHAN, B. A., KUZ'MIN, G. S., MOCHALOVA, T. F., KARATYSH, V. V., TIKHONOVSKIY, A. L., and YAGUPOL'SKAYA, L. N., Academy of Sciences Ukrainian SSR, Institute of Electric Welding imeni Ye. O. Paton, Perm' Polytechnical Institute

"Corrosion of Nickel of Varying Purity in Gaseous Hydrogen Fluoride"

Moscow, Zashchita Metallov, Vol 7, No 1, Jan-Feb 71, pp 32-34

Abstract: A study was made of the behavior in gaseous hydrogen fluoride of commercially pure nickel NP-2A and ultrapure nickel refined by the electron-beam method in vacuum. A specially designed apparatus was used for the experiments, consisting of two communicating nickel ovens connected with a chemical absorber. Experiments lasting up to 120 hours were carried out at 550° and an HF pressure of 20 atm. The results indicate that the corrosion resistance of the ultrapure nickel in gaseous HF is five times higher than that of nickel NP-2A. The electron-beam re-

1/2

- 9 -

USSR

MOVCHAN, B. A., et al., Zashchita Metallov, Vol 7, No 1, Jan-Feb 71, pp 32-34

finned nickel shows no intercrystalline corrosion. Consequently, nickel refined by the electron-beam method is recommended for the manufacture of nickel equipment. The electron-beam refining of nickel is also economically advantageous.

2/2