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ZUBTSOV, A. V., PONOMAREV, V. I.

"Asymptotic Solution of the Problem of Flow Around a Wavy Surface by a Flat Stream of a Viscous Fluid"

Uch. zap. Tsentr. Aero-gidrodinam. In-ta. [Scientific Writings of Central Aerohydrodynamics Institute], 1972, Vol 3, No 2, pp 39-50, (Translated from Referativnyy Zhurnal, Mekhanika, No 10, 1972, Abstract No 10 B677, from the Resume).

Translation: Flow around a profile with a wavy contour by a stream of a viscous, incompressible fluid with $R \gg 1$ is studied. The case is studied when $b_0 \gg \lambda \gg \delta \gg h$ (b_0 is the length of a profile chord, $2\pi\lambda$ is the wavelength, h is the amplitude of the wave, δ is the thickness of the boundary layer). The perturbations caused by the waviness of the surface are determined by solving linearized Navier-Stokes equations. The solution of these equations is found approximately by the method of external and internal asymptotic expansions with respect to small parameters, dependent on the value of $\lambda = \bar{\lambda}/b_0$ and the Reynolds number. The solution found is used to estimate the influence of surface waviness on the stability of a flat boundary layer.

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USSR

UDC 629.78.015:533.6.015.04

BARINOV, V. A., ZUBTSOV, A. V.

"Flow of a Viscous Fluid on a Wavy Surface of a Sliding Wing"

Uch. zap. Tsentr. aero-gidrodinam. in-ta (Scientific Notes of the Central Aerohydrodynamic Institute), 1970, Vol. 1, No. 6, pp 75-81 (from RZh-Raketostroyeniye, No 9, Sep 71, Abstract No 9.41.60)

Translation: The effect of surface waviness on the flow over a sliding wing is investigated. The problem is solved for small wavelengths under the assumption that the wave amplitude is much less than the thickness of the boundary layer. In this case the solution of the problem is broken up into a nonviscous solution and the solution of the boundary layer equations. It is shown that perturbations caused by waviness in a nonviscous flow appear in a very thin zone near the wall, the thickness of which is of the order of a wavelength. The nonviscous solution for perturbations in the neighborhood of each point of the surface coincides with the solution for a certain equivalent wavy plate in an ideal flow with a velocity equal to the local velocity of the unperturbed flow. An example of a numerical calculation of the three-dimensional boundary layer on a sliding

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BARINOV, V. A., ZUBTSOV, A. V., Uch. zap. Tsentr. aero-gidrodinam. in-ta, 1970, Vol. 1, No. 6, pp 75-81

wing is given. The results show that the waviness of the surface may produce a considerable change in the characteristics of the dynamic boundary layer and a redistribution of thermal flows on the wing surface. 5 ill., 4 ref. Resume.

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USSR

UDC 629.78.015:532.526

ZUBTSOV, A. V. and PONOMAREV, V. I.

"Asymptotic Solution to the Problem of Viscous-Fluid Plane Flow Around a Fibrous Surface"

Uch. Zap. Tsentr. Aerogidrodinam. In-ta (Scientific Writings of the Central Aerohydrodynamics Institute), Vol 3, No 2, 1972, pp 39-50 (from Referativnyy Zhurnal--Raketostroyeniye, No 8, 1972, Abstract No 8.41.91)

Abstract: In the viscous-fluid flow around a wing at a Reynolds' number greater than 1 the flow in the boundary layer is, as a rule, turbulent. One of the methods of artificial laminarization of the flow is sucking the air from the boundary layer. In the technological preparation of a wing surface, a high-frequency undulation can form on it and, consequently, there is practical interest in investigating the effect of surface undulation on the flow of a fluid in the boundary layer. The flow around a profile, having an undulating contour, by the flow of a viscous incompressible fluid at a Reynolds' number greater than 1 can be investigated. The case where $b_0 \gg \lambda \geqslant \delta \gg h$ (b_0-- length of profile chord, $2\pi\lambda$ -- wave length, h -- wave amplitude, and δ -- boundary layer thickness) is examined. Disturbing effects, caused by surface undulation, are determined from solving linearized Stokes-Navier equations. The solution of these equations was

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ZUBTSOV, A. V. and PONOMAREV, V. I., Uch. Zap. Tsentr. Aerogidrodinam. In-ta, Vol 3, No 2, 1972, pp 39-50 (from Referativnyy Zhurnal--Raketostroyeniye, No 8, 1972, Abstract No 8.41.91)

approximated by the method of external and internal asymptotic expansions for small parameters depending on the magnitude of $\lambda = \lambda / b_0$ and the Reynolds' number. The solution is used for evaluating the effect which shows the surface undulation on the stability of the plane boundary layer. Author's view, 5 tables, 3 bibliographical references.

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USSR

UDC 532.526

ZUBTSOV, A. V.

"Effect of a Single Rough Spot on the Flow of a Liquid in the Boundary Layer"

Uch. zap. Tsentr. aero-gidrodinam. in-ta (Scientific Notes of the Central Aerohydrodynamic Institute), 1971, Vol 2, No 1, pp 9-16 (from RZh-Mekhanika, No 11, Nov 71, Abstract No 11B566)

Translation: A study was made of the flow of a viscous incompressible liquid around a body for Reynolds numbers of $R \gg 1$ under the condition that there is a single rough spot on its surface protruding deep into the boundary layer ($h \ll \delta$). The case where $R_h = V_h h/\nu = 1$ was investigated (h is the height of the rough spot, V_h is the velocity in the undisturbed layer at the level of the rough spot far away from it). It is demonstrated that in the vicinity of the rough spot ($r \sim h$) the liquid flow has locally nonviscous and locally viscous zones. Under defined conditions, recirculation occurs in the locally nonviscous zone. The solution of the equations in the locally viscous zone demonstrated that separation of the flow or burbling occurs after the rough spot. It is demonstrated that in the vicinity of the rough spot the magnitude of the friction (heat transfer) is on the order of $\sqrt{R_h}$ ($\sqrt[4]{R_h}$) times higher than the corresponding values in the undisturbed boundary layer.

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UDC 532.526

BARINOV, V. A., ZUBTSOV, A. V.

"Flow of a Viscous Liquid on the Wavy Surface of a Slipping Wing"

Uch. zap. Tsentr. aero-gidrodinam. in-ta (Scientific Notes of the Central Aero-hydrodynamic Institute), 1970, Vol 1, No 6, pp 75-81 (from RZh-Mekhanika, No 11, Nov 71, Abstract No 11B584)

Translation: A study was made of the effect of waviness of the surface on flow around a slipping wing. The problem is solved for small wavelength under the assumption that the wave amplitude is much greater than the thickness of the boundary layer. In this case, the solution of the problem degenerates into the nonviscous solution and the solution of the boundary layer equations. It is demonstrated that disturbances caused by waves in a nonviscous flow appear in a very thin wall zone the thickness of which is on the order of the wavelength. Here, the nonviscous solution for disturbances in the vicinity of each point of the surface coincides with the solution for an equivalent wavy plate around which an ideal flow takes place with a velocity equal to the local velocity of the undisturbed flow.

An example of a numerical calculation of the three-dimensional boundary layer on a slipping wing is presented. The results of the calculation demonstrate that the waviness of the surface can cause an essential variation in the characteristics of the dynamic boundary layer and redistribution of the thermal fluxes on the surface of the wing.

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USSR UDC 547.217.4:542.943:542.976

NOVOSELOVA, L. V., ZUBTSOVA, L. I., BABEL', V. G., and PROSKURYAKOV, V. A.

"Study of the Conversions of Dialkylphosphites in Synergistic Mixtures with MB-1 in the Process of Inhibited Oxidation of Decane"

Leningrad, Zhurnal Prikladnoy Khimii, Vol 46, No 6, Jun 73, pp 1329-1333

Abstract: An attempt has been made to investigate the chemical conversions of diisopropylphosphite [DIP] and diisooctylphosphite [DOP] in the process of inhibited oxidation of decane at 175° by means of IR and PMR spectroscopy. On the basis of spectral data it has been shown that the hydrocarbon portion of DIP and DOP are eliminated in pure state and in the hydrocarbon medium (175°) with the formation of phosphorus acid. An effect of synergism has been established for the composition of phosphorus acid with 4,4'-methylbis-2,6-di-tert-butylphenol [MB-1] during the process of inhibited oxidation of white oil, the reaction being carried out at 175°, with total concentration of 0.005 g-mole/l.

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USSR UDC 547.341

ZUBTSOVA, L. I., RAZUMOVA, N. A., and YAKOVLEVA, T. V., Leningrad Technological Institute imeni Lensovet

"Phosphorus-Containing Heterocycles. A Kinetic Study of the Reaction of Certain Phosphites With Isoprene"

Leningrad, Zhurnal Obshchey Khimii, Vol 41, No 11, Nov 1971, pp 2,424-2,428

Abstract: The nature of the effect of electron and steric factors on the reactivity of both cyclic and acyclic phosphites toward dienes is not fully clear. The kinetics of condensation of dichloromethyl-, ethylenechloro- and diethylchlorophosphites with isoprene was studied. Reaction rate was checked by the infrared spectrometric method, based on intensity of a certain absorption band. Reactions were carried out in excess isoprene, with initial concentration of 1.7 mole percent of phosphite -- a close simulation of pseudo-monomolecular conditions. On the basis of kinetic data obtained, it was concluded that the phosphorus component in these reactions is definitely electrophilic. Comparison of the kinetic parameters for cyclic and for acyclic phosphites supported the presumption of a significant degree of conjugation of unshared electron pairs of oxygen with 3d orbits of trivalent phosphorus, in acyclic phosphites.
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UDC 547.341

RAZUMOVA, N. A., ZUBTSOVA, I. I., and PETROV, A. A.

"Phosphorus-Containing Heterocyclics: Condensation of Phosphites and Dihalo-phosphites of the Aliphatic Series With 1,3-Dienes"

Leningrad, Zhurnal Obshchey Khimii, Vol XL, No 12, Dec 70, pp 2563-2565

Abstract: The esters of catechol and glycolphosphorous acids condense with dienes to form phospholine oxide derivatives; and with replacement of the alkoxy group by the stronger electron-withdrawing acetyl group there is an acceleration of the condensation. The authors tested whether this pattern would hold good for derivatives of trivalent phosphorous which do not contain a ring in their structure, and reached these conclusions:

With increase in the electron-acceptor capability of trivalent phosphorus, the rate of condensation with 1,3-dienes of acyclic phosphites, just as in the case of the cyclic esters, increases;

As regards the condensation rate, the 1,3-dienes can be arranged in the following descending order: isoprene, butadiene, piperylene; and chloroprene.
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RAZUMOVA, N. A., Zhurnal Obshchey Khimii, Vol XL, No 12, Dec 70, pp 2563-2565

With bulky substituents, in the presence of trivalent phosphorus, steric hindrance predominates over the electron effect.

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USSR UDC 537.563:547.341

BOGOLYUBOV, T. M., ZUBTSOVA, L. I., GRISHIN, N. N., RAZUMOVA, N. A., and PETROV, A. A., Leningrad Technological Institute imeni Lensovet

"Organic Derivatives of the V-VII Group Elements. XVII. Mass-Spectra of Phosphine Derivatives"

Leningrad, Zhurnal Obshchey Khimii, Vol 41 (103), No 3, Mar 71, pp 527-530

Abstract: Fragmented ions formed during mass-spectroscopical analysis of phosphines and phosphine oxides retain the positive charge on fragments containing heteroatoms. In this paper mass-spectra of phospine oxides are reported, where this tendency does not exist. The spectra show high intensity of the molecular ion and fragmented hydrocarbon ions, in contrast to phosphates, phosphonates, and phosphine oxides. The predominance of fragmented hydrocarbon ions may be related to the presence of electron accepting substituents of the phosphorus atom. The intensity of the fragment ion m/e 54 correlates qualitatively with the activity of organophosphorus compounds in nucleophilic substitution reactions at the tetrahedral phosphorus atom.

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USSR UDC: 621.317.726(088.8)

OSTROUSHKO, A. I., MITSUK, V. I., ZUBTSOVSKIY, A. N., KUZNETSOV, V. D.

"An Amplitude-Time Converter"

USSR Author's Certificate No 256391, filed 6 Jul 68, published 23 Apr 70 (from RZh-Radiotekhnika, No 1, Jan 71, Abstract No 1A312 P)

Translation: This Author's Certificate introduces an amplitude-time converter which may be used for measuring the amplitudes of isolated pulses of various durations. The unit contains a storage capacitor, matching stages, switching diodes, a current-stabilizing discharge circuit, and a nonlinear divider controlled through an amplifier and multivibrator by the discharge voltage of the storage capacitor in the converter. As a distinguishing feature of the patent, the error of undercharging the storage capacitor is reduced by incorporating a delay line in the converter with its input connected to the output of the nonlinear divider, while the output and taps of the delay line are connected to the storage capacitor through the series-connected matching stages and the switching diodes. E. L.

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USSR

UDC 669.017/.018.45:620.18

AGEYEV, N. V., SAVITSKIY, YE. M., KORNILOV, I. I., ZUDIN, I. F., and PROKOF'YEV, D. I., Editors

Strukture i Svoystva Zharoprochnykh Metallicheskikh Materialov (Structure and Properties of Heat-Resistant Metallic Materials), Moscow, "Nauka," 1973, 262 pp

Translation: Results are generalized from studies associated with the physical criteria of heat resistance; the role of the electron structure of alloys; the principles of alloy and dispersion hardening of alloys; the physico-chemical basis for developing composite materials; dislocation mechanisms of failure and deformation; the development of alloys on the basis of Fe, Ni, Mo, Nb, and other refractory elements; ways of increasing the heat resistance of alloys and others. This publication is intended for researchers, metallurgists, metals experts, the designers of the power, aviation, and machine-building industries and for other specialists.

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AGEYEV, N. V., et al., Structure and Properties of Heat-Resistant Metallic Materials, Mocow, 1973

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AGEYEV, N. V., et al., Structure and Properties of Heat-Resistant Metallic Materials, Moscow, 1973

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ZUDIN, I.F.

Heat Resistance of Steels

JPRS 60575 19 Jan 73

ENVIRONMENTAL INFLUENCES ON THE HEAT RESISTANCE OF METALLIC MATERIALS

(Conference in Moscow)

(Article by Corresponding Member of the AS USSR Ye. M. Savitskiy and Candidate of Technical Sciences I. F. Zudin, Moscow, Vestnik Akademii Nauk SSSR, Russian, No 8, August 1973, pp 84-87)

Problems of the influence of the physicochemical environment on the heat resistance of metallic materials were discussed by scientists and specialists of the metallurgical, power engineering, machine-building and aviation industries from various cities of the country at a conference organized by the Scientific Council for "Physicochemical principles of obtaining new heat-resistant inorganic materials", the Institute of Metallurgy of the AS USSR and the Central Scientific Research Institute of Machinery-Manufacturing Technology (TsNIITMash), held in Moscow on 2-4 April. Participating in the conference were about 500 representatives of scientific research institutes, VUZ, plants and planning organizations; 45 reports were heard.

In the introductory address of Ye. M. Savitskiy he emphasized that the development of contemporary machine-building, chemical equipment, rocketry and many physicochemical structures is characterized by a constant growth of unit capacity, increase of the loads on metal, increase of the rates and temperatures of processes, and the application of deep vacuum, inert gases or various aggressive physicochemical media and reagents. In such extreme conditions the interaction of the materials with the external environment acquires paramount importance.

The principal reports heard at the conference were devoted to theoretical and experimental investigations of the heat resistance of metallic materials in air and viscous media, and also in supersonic flows of gas, to the influence of

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Vacuum-arc and electroslag remelting are progressive methods of processing metal. In vacuum-arc remelting, additives of alkali earth metals are partially evaporated, and the content of magnesium and calcium in the composition of the metal decreases. During crystallization of the liquid fusion a nickel solid solution not containing eutectics of those elements forms. Directed crystallization during remelting contributes to an increase of plasticity (A. P. Gulyayev, T. S. Chernyak, and S. B. Maslenkov).

Electroslag remelting contributes to the purification of metal from gaseous admixtures, change of the composition and the degree of dispersenss of nonmetallic inclusions and to increase of stability of the properties of heat-resistant steel (Z. N. Petropavlovskaya and I. A. Shchepkova).

At the conference most attention was given to questions of the oxidation of steels and alloys with iron, nickel and other bases. D. V. Ignatov, E. M. Lazarev and N. G. Abramova studied the rate of oxidation of nickel-chrome steels alloyed with molybdenum, tungsten, cobalt, yttrium, lanthanum and cerium. Upon the addition of rare-earth metals the rate of oxidation decreases sharply. For example, an alloy containing yttrium is less oxidized by a factor of 23-25 at 1100°C during 1000 hours. M. P. Matveyeva et al established that the introduction of niobium and tungsten into 60Cr40Ni alloy increases its heat resistance in the combustion products of natural gas, but alloying with titanium and niobium does not contribute to increase of the heat-resistance of that alloy. Additions of aluminum and silicon increase the heat-resistance of chrome-manganese austenitic steels (O. A. Bannykh and I. F. Zudin).

A number of reports dealt with investigations of the creep of metals. Ye. A. Troyanskiy noted that the presence of an extraneous film on the surface of metals, including a layer of oxides, is reflected in the plastic flow and creep and, depending on the film thickness, can either strengthen or weaken the metal. Such a nature of the influence of a film on creep is connected with a peculiarity of the development of plastic deformation in the layers of metal near the surface. Yu. V. Kornyushin showed that the content of defects in the near-surface layer of a crystal and in the volume of the sample is different. In the report of N. N. Rykalin, M. Kh. Porshurov and V. P. Alekhin the influence of the external environment on distinctive features of the plastic deformation of crystals was examined. Some schemes of the destruction and rupture of solid surface barriers by dislocations were analyzed, and also the influence of liquid media on the mechanical properties of materials. N. F. Portnov evaluated the physicochemical role of the medium in processes of the destruction and working of solids.

metallurgy

JPRS 54353
29 Oct 71

PRINCIPLES OF HEAT RESISTANCE OF METALLIC MATERIALS

(Conference in Moscow)

[Article by Corresponding Member of the AS USSR Ye. M. Savitskiy and Candidate of Technical Sciences L. F. Zudin, Moscow, Vestnik Akademii Nauk SSSR, Russian, Vol 41, No 8, August 1971, pp 101-106]

The Institute of Metallurgy imeni A. A. Baykov and the Scientific Council for "Physicochemical principles of obtaining new heat-resistant inorganic materials" held on 20-22 April in Moscow a conference on the problem of heat-resistant alloys. Participating in its work were over 600 persons -- representatives of academic and branch institutes and VUZ of many cities of the country.

Ye. M. Savitskiy presented an analysis of urgent problems in the creation of heat-resistant materials (effects of thermocycling of single crystals of tungsten and molybdenum and their alloys). The next three reports were devoted to the influence of thermocycling on the physicomechanical characteristics of alloys of molybdenum, tungsten and other metals. It was shown that the loss of resistance of those materials during thermocycling is caused by relaxation and also the anisotropy of the separate phases (V. I. Kiselevskiy and N. N. Margunova). The method of internal friction was proposed as a nondestructive method of monitoring and forecasting the thermocyclic resistance of samples of tungsten (V. S. Mordyuk and others).

Problems of the strengthening of composition materials based on iron and nickel were examined in a considerable portion of the reports. The effect of nickel on tungsten and molybdenum fiber leads to a loss of strength, as the fiber becomes brittle. Prevention of the harmful influence of the nickel matrix -- creating with the strengthener is possible by alloying the matrix -- creating diffusion barriers of titanium nitride (A. T. Tumanov). K. I.

ZUDIN, L.F.

USSR

SAVITSKIY, YE. M., and ZUDIN, I. F.

"All-Union Conference on Physicochemical Fundamentals of the Heat Resistance of Metallic Materials"

Moscow, Izvestiya Akademii Nauk SSSR, Metally, No 5, Sep/Oct 71, p 221

Abstract: The Conference of the Scientific Council "Physicochemical Fundamentals of the Production of New Inorganic Materials" and of the Institute of Metallurgy imeni A. A. Baykov, Academy of Sciences USSR, was held in Moscow 20-22 April 1971. The council chairman, Academician I. V. Tananayev, gave the opening remarks. Some of the papers presented included the following: "Thermal Cycling and Its Effect on Properties of Refractory Metals Molybdenum, Tungsten, and their Alloys" (Ye. N. Savitskiy); "Effect of Cyclic Heating on Long-Term Strength of Molybdenum Alloys" (N.N. Morgunova and A. D. Gorchakova); Interaction of Matrix With Strengthening Agent in Nickel-Based Alloys" (A. T. Tumanov et al.); "Phase Equilibria in Three-Component Alloys Containing an Incorporated Element, and the Stability of Composition Materials" (A. K. Shurin); "Strength of Bond Between Fiber and Matrix in Reinforced Aluminum-Steel and Nickel-Molybdenum Compositions" (L. I. Tuchinskiy et al.). The work of A. V. Petrov et al. dealt with the kinetics of the formation and growth of intermetallic compounds in composition materials based on sintered aluminum power,

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SAVITSKIY, YE. M., etal, Izvestiya Akademii Nauk SSSR, Metally, No 5, Sep/Oct 71, p 221

and fiber-reinforced steels U8A, Kh18N9T, and Kh14N14M2. It was shown that at 400° the strength of the composition material of the type Kh14N14M2-sintered aluminum powder is not reduced for several years due to the formation of an intermetallic compound. The characteristics of creep and the failure mechanism of reinforced copper was reported by Z. G. Fridman.

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Conferences

UDC 669.01

USSR

ZUDIN, I. F., and BANNYKH, O. A.

"25th Conference on the Problem of High-Temperature Strength of Alloys"

Moscow, Izvestiya Akademii Nauk SSSR,-- Metally, No 5, 1970, pp 236-237

Abstract: This article contains brief reviews of papers given at the 25th Conference on the Problem of High-Temperature Strength of Alloys, held by the Scientific Council on Physical-Chemical Principles of Obtaining New Heat-Resistant Inorganic Materials of the USSR Academy of Aciences and the TsNIITMASh /Central Scientific Research Institute of Heavy Machinery/ in Moscow on 7-9 April 1970. Deputy Minister of Heavy, Power, and Transport Machine-Building of the USSR P. O. Siryy gave a report on "Requirements for Power Machine-Building Materials." In 3 days 35 reports were heard. A number of reports were devoted to the general laws of creep and rupture of alloys. In the report by Yu. N. Rabotnov there was a phenomenological description of the creep process, and the problems of mechanics in the field of creep and stress-rupture strength of metals were investigated. I. I. Trunin analyzed the time-temperature relation of stress-rupture strength of boiler and turbine materials. In the report en-

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ZUDIN, I. E., and BANNYKH, O. A., Izvestiya Akademii Nauk SSSR,-- Metally, No 5, 1970, pp 236-237

titled "Generalized Parametric Method of Determining Stress-Rupture Strength of Materials With High-Temperature Strength," V. K. Adamovich and A. V. Stanyukovich used a computer to process experimental data and demonstrated that in the case of nonmonotonicity of the variation of the high-temperature strength of steel and alloy under certain conditions it is possible to use short testing to estimate the stress-rupture strength.

A great deal of attention was given to the problem of composition materials. In a report entitled "Study of High-Temperature Strength of Reinforced Metal Systems Using Model Material," V. S. Ivanova and Z. G. Fridman presented data on the strength and structural characteristics of strain and rupture of the Cu-W composition material. It is demonstrated that reinforcing copper with networks of high-strength tungsten wire is more efficient than reinforcing with unidirectional wiring. In the paper by K. I. Portnoy and A. T. Tumanov, the possibility of increasing the temperature interval of high-temperature strength of nickel alloys to 1,200-1,300°C by reinforcing the matrix of ZhS6K nickel alloy with tungsten wire is demonstrated. The report by S. A. Golovanenko and S. B. Maslenkova, et al., is devoted to a study of the mechanical properties of a

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ZUDIN, I. F., and BANNYKH, O. A., Izvestiya Akademii Nauk SSSR,-- Metally, No 5, 1970, pp 236-237

composition material based on KhN70Yu reinforced with tungsten and molybdenum wire as a function of the volumetric proportion of wire at room temperature and higher.

The problems of diffusion and surface alloying were the topics of reports by Yu. P. Romashkin ("Activation Nature of Diffusion of Interstitial Atoms in the Transition Metals"),I. B. Borovskiy, I. D. Marchukova, and Yu. E. Ugaste (mutual diffusion in metal systems), and N. S. Gorbunov, Yu. P. Ponomarenko, et al. (vacuum diffusion chromizing).

The pseudodislocations in multiple phase and composition systems were discussed in a report by V. N. Rozhanskiy and G. S. Knizhnik, who concluded that in order to eliminate the process of accumulation of pseudodislocation sources of internal stresses in multiple phase systems or composition fiber materials, one of the phases must be sufficiently plastic. In the report entitled "Characteristic Features of the Effect of Rhenium on the Dislocation Structure and Mechanical properties of Molybdenum", S. M. Kaverin, G. G. Kurdyumov, et al., noted that alloying molybdenum with rhenium leads to a decrease in the covalent component of the interatomic bond, significantly changes the stress relaxation conditions on the concentrators, complicating the propa-

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ZUDIN, I. F., and BANNYKH, O. A., Izvestiya Akademii Nauk SSSR,-- Metally, No 5, 1970, pp 236-237

gation of cracks, and lowers the temperature of transition to the brittle state. L. I. Ivanov, E. A. Abramyan, and Ye. Ye. Kazilin investigated creep of single crystals of tungsten at 1,400-2,200°C. They established that the process controlling the creep rate under these conditions is climb of the edge dislocations to adjacent glide planes.

In the report by Yu. N. Surkov, F. N. Bersceneva, et al., a study is made of the effect of the dislocation structure on the high-temperature strength of alloys (E1437B, EP481) after high-temperature thermomechanical treatment.

There were reports elucidating the role of the interphase surfaces in alloys as the factor causing hardening at high and moderate temperatures and intense creep at high temperatures, the effect of the structural stability on high-temperature strength of alloys, the effect of carbon on the phase composition and properties of multicomponent alloys on a nickel base alloyed with niobium, the temperature of beginning of intergrain fracture as a function of solubility of the admixture and the eutectic melting point, evaluation of the possibility of using fine-grain structure of heat-resistant nickel alloys for short

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ZUDIN, I. F., and BANNYKH, O. A., Izvestiya Akademii Nauk SSSR, -- Metally, No 5, 1970, pp 236-237

service lives, algebraic description of temperature-dependent type of brittleness of heat-resistant alloys, the problems of structural strength of parts of power plants, the effect of a number of alloying elements on the phase composition, structure, and physical-chemical properties of alloys, and the effect of silicon on the impact toughness, creep, and high-temperature strength of chromium-manganese austenitic steel. It was established that silicon accelerates the process of carbide formation, decreases the solubility of carbon in austenite, and promotes piling up of carbide particles along the grain boundaries. Other reports dealt with the achievement of high-temperature strength and structural stability of ferrite steel by using an Fe_2W hardening phase, the positive effect of heat treatment on hardening of niobium alloys with high-temperature strength, the advantage of new methods (diffusion welding and explosion welding) of combining metals in solid states, and the optimal sizes of hardening particles of vanadium carbide (~300Å) in order to obtain high strength and ductility of age-hardenable austenitic steel.

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1/2 027 UNCLASSIFIED PROCESSING DATE--27NOV70
TITLE--STRUCTURE OF OXIDE FILMS AND SCALE RESISTANCE OF AUSTENITIC CHROMIUM MANGANESE STEEL 45KH15G14YUS -U-
AUTHOR-(04)-PROKOFYEV, O.I., BANNYKH, O.A., ZUDIN, I.F., MIROSHKINA, M.I.

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2/2 027 UNCLASSIFIED PROCESSING DATE--27NOV70

CIRC ACCESSION NO--AP0130385

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. THE SCALE RESISTANCE OF A NUMBER OF MELTS OF AUSTENITIC CR-MN STEEL WAS STUDIED IN RELATION TO THE STRUCTURE OF THE OXIDE FILM. IN ALL CASES GOOD SCALE RESISTANCE WAS RETAINED UP TO 900DEGREESC. THE SCALE FORMED AT 900DEGREESC COMPRISED A NUMBER OF LAYERS INCORPORATING FE SUB2 O SUB3 AND MN SUB2 O SUB3, SPINELS OF COMPLEX STRUCTURE, CR SUB2 O SUB3, AND THIN LAYERS OF OXIDES CONTG. A HIGH PROPORTION OF SI. THE RATE OF OXIDATION GRADUALLY SLOWED AFTER 1500 H AT 900DEGREESC; THIS WAS ATTRIBUTED TO THE CR SUB2 O SUB3.

UNCLASSIFIED

USSR UDC 669.017/018.45:66.046.5

AGEYEV, N.V., SAVITSKIY, Ye. M., KORNILOV, I. I., ZUDIN, I. F., PROKOF'YEV, D. I. (Editorial Board)

Legirovaniye i svoystva zharoprochnykh splavov (Alloying and Properties of High-Temperature Alloys), Collection of Papers, Moscow, "Nauka" Press, 1971, 208 p., illustrations, graphs, tables, 2500 copies printed.

Translation of Annotation:

This collection covers topical problems of the theory of heat resistance (mechanism of creep, hardening of solid solutions by alloying to produce stable dislocation structures, precipitation hardening, and the effect of the type, quantity, and pattern of excess phase distribution on the creep and failure of alloys). Some of the papers discuss problems related to the interaction of metallic materials with the environment (problems of protective coatings on high-temperature alloys, diffusion processes within these alloys). The collection is intended for researchers, design engineers, production personnel, metallurgists, and associates of establishments in power engineering and transportation machinery as well as in the aviation industry.

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USSR

AGEYEV, N. V. (Ed.). et al. Legirovaniye i svoystva zharoprochnykh splavov, Moscow, "Nauka" Press, 1971.

Translation of Table of Contents:

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USSR

AGEYEV, N. V. (Ed.). et al. Legirovaniye i svoystva zharoprochnykh splavov, Moscow, "Nauka" Press, 1971.

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AGEYEV, N. V. (Ed.). et al. Legirovaniye i svoystva zharoprochnykh splavov, Moscow, "Nauka" Press, 1971.

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AGEYEV, N. V. (Ed.). et al. Legirovaniye i svoystva zharoprochnykh splavov, Moscow, "Nauka" Press, 1971.

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AGEYEV, N. V. (Ed.). et al. Legirovaniye i svoystva zharoprochnykh splavov, Moscow, "Nauka" Press, 1971.

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USSR

AGEYEV, N. V. (Ed.). et al. Legirovaniye i svoystva zharoprochnykh splavov, Moscow, "Nauka" Press, 1971.

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USSR

SAVITSKIY, Ye. M., and ZUDIN, I. F.

"Twenty-Sixth Session on Problems of the Structure and Heat Resistance of Metallic Materials"

Moscow, Izvestiya Akademii Nauk USSR, Metally, No 5, Sep-Oct 72, pp 215-216

Abstract: The Twenty-Sixth Session "Structure and Heat Resistance of Metallic Materials" was held in Moscow, April 3-6, 1972, at the Institute of Metallurgy imeni A. A. Baykov of the Academy of Sciences USSR. Fifty reports were given. I. N. Frantsevich and M. D. Smolina reported on new physical heat-resistance criteria and indicated the necessity for development of methods of fine roentgenospectral investigations in combination with quantum-mechanical calculations of zonal structures of the energy spectrum. Ye. M. Savitskiy and V. B. Gribul' indicated the possibility of using computers for predicting the fusing temperatures of high-melting compounds. A series of reports (D. A. Prokoshkin, Ye. V. Vasil'yeva, V. Ye. Panin, V. K. Grigorovich) dealt with investigations of the relationship of the main characteristics of the electron structure to the crystalline structure and properties of materials determining their heat resistance. The subject "Phenomenological and Physical Analyses of the Role of Defects in the Development of Deformation and Disintegration" was discussed in reports of V. S. Ivanova and V. A. Yermishkina, Ye. P. Leyko and

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SAVITSKIY, Ye. M. and ZUDIN, I. F., Izvestiya Akademii Nauk USSR, Metally, No 5, Sep-Oct 72, pp 215-216

E. M. Nadgornyy, V. S. Smirnov and V. I. Valdimirov, S. V. Serensen, and N. N. Rykalin and M. Kh. Shorshorov. V. T. Toroshchenko obtained interesting endurance characteristics of VN-3, VN-4, TsM-2A, and TsM-6 alloys by symmetrical cantilever bending. I. R. Kryanina and I. P. Fedosova reported on tests of disks and rotors of E1415 steel. V. D. Sadovskiy established that the recrystallization process proceeding through growing of new nuclei decreases the effect of high-temperature mechanical treatment in the hardening part. I. L. Mirkin used 1% Cr-Mo-V steel to show the regular change of heat resistance as a function of the distance between particles. O. A. Bannykh reported on the effect of size reduction of grains on the creep of E1437A steel. The effect of heat treatment on the stability of the structure of E1893 alloy was discussed by A. V. Stanyukovich, Ye. Ye. Levin, and Ye. M. Pivnik. L. N. Zimina reported on the positive effect of Nb alloying of Ni-Cr-Fe, Ni-Cr-Mo-W-Ti, and Ni-Cr-Mo-W-Al-Co alloys. G. F. Fedorova reported on the direct relationship between characteristics of interdiffusion and heat resistance. Various stages of the aging process, the mechanism of creep, and stability of alloys of high temperatures were discussed by M. A. Krishtal. L. I. Pryakhina reported on the effect of Ta and Mo alloying elements on increased strength of tungsten.
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SAVITSKIY, Ye. M. and ZUDIN, I. F., Izvestiya Akademii Nauk USSR, Metally, No 5, Sep-Oct 72, pp 215-216

Composite materials were discussed in many reports. A series of reports dealt with problems of surface alloying. The 27th session is scheduled for April 1974.

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Acc. Nr: AP0053896 Abstracting Service: CHEMICAL ABST. 6-70 Ref. Code: UR 0076

114080t Desulfurization of an iron-ore concentrate at a concentrating mill in a reducing gas medium. Zudina, O. V.; Nemkin, V. M.; Morev, I. I. (Magnitogorsk. Gorn.-Met. Inst., Magnitogorsk, USSR). *Zh. Fiz. Khim.* 1970, 44(1), 210–12 (Russ). Thermodynamic anal. was used to evaluate the desulfurization capacities of H, CO, and gas mixts. (32% CO + 68% H and 34% CO + 28% H + 38% CO_2) during redn. of the concs. The highest degree of desulfurization is achieved with pure H (95%), and the lowest with CO (33%). The degree of desulfurization with use of gas mixts. has an intermediate value, but increases with increasing H content. M. Braunovic

REEL/FRAME 19830973

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USSR

UDC: 621.373:530.145.6

DMITRIYEV, V. G., YERSHOV, A. G., ZUDKOV, P. I., SHARIF, G. A., SHVOM, Ye. M.

"Emission of Optical Harmonics in the Pulse Mode With a High Pulse Repetition Frequency"

V sb. Kvant. elektronika (Quantum Electronics--collection of works), No 1, Moscow, 1971, pp 116-119 (from RZh-Radiotekhnika, No 5, May 71, Abstract No 5D174)

Translation: The paper presents the results of an experiment on generation of the second, third and fourth optical harmonics of emission from an aluminum--yttrium garnet laser with neodymium working in the pulse mode with Q-switching at a high pulse repetition frequency. It is noted that the intensity of ultraviolet emission on a wavelength of 266 millimicrons is extremely stable. One illustration, one table, bibliography of eight titles. Resumé.

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USSR

UDC 621.375.82

DMITRIYEV, V. G., YERSHOV, A. G., ZUDKOV, P. I., SHARIF, G. A., SHVOM, Ye. M.

"Generation of Optical Harmonics in a Pulsed Mode With a High Pulse Repetition Frequency"

V sb. Kvant. elektronika (Quantum Electronics), No. 1, Moscow, 1971, pp 116-119 (from RZh-Fizika, No 7, Jul 71, Abstract No 7D996)

Translation: The generation of second, third, and fourth optical harmonics of the radiation of a YAG:Nd laser operating in a pulsed mode with Q-modulation with a high pulse repetition frequency was investigated experimentally. There was found a high stability of ultraviolet radiation intensity at the wavelength 266 nm. Authors abstract.

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USSR

UDC: 533.697

ZATOLOKA, V. V., ZUDOV, V. N., SHUMSKIY, V. V., Institute of Theoretical and Applied Mechanics, Siberian Department of the Academy of Sciences of the USSR, Novosibirsk

"Engineering Analysis of Flat Asymmetric Nozzles in the Case of Supersonic Velocity at the Input"

Novosibirsk, Izvestiya Sibirskogo Otdeleniya Akademii Nauk SSSR, Seriya Tekhnicheskikh Nauk, No 13(208), Issue 3, Oct 72, pp 42-46

Abstract: The authors discuss the design of asymmetric flat nozzles with supersonic velocity at the intake as used in hypersonic ramjet engines. Nozzles are considered which produce maximum thrust for a given length when used in engines with fuel combustion in a supersonic flow.

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USSR

ZUEV, Yu. S., REVAZOVA, M. A., BUKHINA, M. F.

"Influence of Morphology of Elastomers on Strength Properties Under Various Deformations"

Tr. Mezhdunar. Konf. Po Kauchuki i Rezine [Works of International Conference on Cautchouc and Rubber], Moscow, Kimiya Press, 1971, pp 146-152. (Translated from Referativnyy Zhurnal Mekhanika, No 1, 1972, Abstract No 1V1497 by I. M. Kershteyn).

Translation: The influence of the size of crystalites and degree of crystallinity on the strength properties of elastomers is studied. Films about 10 μ thick of regular structure polychloroprene (type NP nairite) and urethane rubber (type SKU-8) are studied. The rate of crack propagation is used as the strength characteristic, allowing the restructuring occurring during deformation of the polymer to be considered. Specimens with various initial spherulite dimensions (60-100, 10-30 and 1-3μ) were stretched to a predetermined deformation level and subjected to corrosive media: ozone-containing air and mixtures of isoamyl alcohol and water. The birth and growth of microcracks and macrocracks were observed in a microscope. At relatively low deformation (less than 100% for nairite and less than 25% for SKU-8) transverse macrocracks were formed, while at high deformations (over 400% for nairite, over 300% for SKU-8) longitudinal cracks formed. At intermediate deformations, both types

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USSR UDC 576.311:591.436.044

ZUFAROV, K. A., SHNEYVAYS, V. B., and INOGAMOVA, T. Ya., Laboratory of Electron Microscopy and Cytophotometry, Tashkent Medical Institute, Tashkent

"The Response of Ergastoplasm of Liver Cells of White Rats to the Effect of an Electromagnetic Field"

Leningrad, Tsitologiya, Vol 13, No 7, Jul 71, pp 813-819

Abstract: Rats were exposed for three hours to the effect of an electromagnetic field with a frequency of 1.625 MHz. Electron microscope study and biochemical analysis showed that the protein-synthesizing structures of liver cells were affected by the action of the electromagnetic field. The most pronounced changes in the ergastoplasm (a part of the endoplasm network of cells, the principal functions of which are synthesis and transportation of proteins) were found in liver cells just after exposure. There were also distinct changes in the nucleoli, i.e., in the ribosome-synthesizing apparatus. In later periods following exposure, there was a correlation between morphological and biochemical changes in liver cells. The decrease in the synthesis of nucleic acids and proteins, which set in initially as a result of dystrophic changes produced in the cells, was followed by an increase of the content of these substances in the liver homogenate.

1/2 020 UNCLASSIFIED PROCESSING DATE--20NOV70

TITLE--HISTOCHEMICAL FEATURES OF THE KIDNEYS OF ADRENALECTOMIZED ANIMALS FOLLOWING ADMINISTRATION OF DOCA DECXYCORTICOSTERONE ACETATE -U-

AUTHOR-(04)-ZUFAROV, K.A., KHAMIDOV, D.KH., AKHMADZHANOVA, M.M., KUZNETSOVA, L.G.

COUNTRY OF INFO--USSR

SOURCE--UZB. BIOL. ZH. 1970, 14(2), 70-1

DATE PUBLISHED--------70

SUBJECT AREAS--BIOLOGICAL AND MEDICAL SCIENCES

TOPIC TAGS--HISTOCHEMISTRY, CORTICOSTEROID, KIDNEY, RNA, RAT, ADRENAL GLAND

CONTROL MARKING--NO RESTRICTIONS

DOCUMENT CLASS--UNCLASSIFIED

PROXY REEL/FRAME--3002/0417 STEP NO--UR/9079/70/014/002/0070/0071

CIRC ACCESSION NO--AP0127988

UNCLASSIFIED

2/2 020 UNCLASSIFIED PROCESSING DATE--20NOV70

CIRC ACCESSION NO--AP0127988

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. DOCA ADMINISTERED FOR 2 WEEKS POSTOPERATIVE DECREASED THE RENAL RNA CONTENT OF ADRENALECTOMIZED RATS TO A LESS EXTENT THAN IN UNTREATED ADRENALECTOMIZED RATS. CHANGES IN THE CHEM. COMPONENTS OF THE KIDNEY CELLS OF ADRENALECTOMIZED RATS ARE PROBALY DUE TO THE ABSENCE OF GLUCOCORTICOIDS AS WELL AS TO THE ABSENCE OF MINERALOCORTICOIDS. FACILITY: INST. BIOKHIM., TASHKENT, USSR.

UNCLASSIFIED

1/2 017 UNCLASSIFIED PROCESSING DATE--13NOV70
TITLE--SPECIFIC ULTRASTRUCTURAL FEATURES OF THE SMALL INTESTINE MUCOSA IN PATIENTS WITH CHRONIC ENTEROCOLITIS -U-
AUTHOR-(04)-ZUFAROV, K.A., TASHKHODZHAYEV, P.I., SHISHOVA, YE.K., VAYSBROT, V.V.
COUNTRY OF INFO--USSR

SOURCE--ARKH PATOL 32(1): 45-52. ILLUS. 1970

DATE PUBLISHED--------70

SUBJECT AREAS--BIOLOGICAL AND MEDICAL SCIENCES

TOPIC TAGS--ENTEROCOLITIS, SMALL INTESTINE, BIOPSY

CONTROL MARKING--NO RESTRICTIONS

DOCUMENT CLASS--UNCLASSIFIED
PROXY REEL/FRAME--3006/0237 STEP NO--UR/9056/70/032/001/0045/0052

CIRC ACCESSION NO--AP0134042

UNCLASSIFIED

2/2 017 UNCLASSIFIED PROCESSING DATE--13NOV70
CIRC ACCESSION NO--AP0134042
ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. SAMPLES OF THE SMALL INTESTINE MUCOSA WERE OBTAINED FROM PATIENTS SUFFERING CHRONIC ENTEROCOLITIS BY USING THE ASPIRATION BIOPSY METHOD. PRYSMATIC CELLS OF THE EPITHELIUM WERE STUDIED BY MEANS OF ELECTRON MICROSCOPY. A LARGE NUMBER OF PRYSMATIC ABSORBING CELLS WERE DEMONSTRATED WITH ACCUMULATED AND SECRETED MUCIGEN THUS CHANGING THEIR FUNCTION. THE EPITHELIAL CELLS ARE CONSIDERED PROTECTIVE. THIS REACTION MAY REPRESENT A MORPHOLOGIC BASIS OF THE MALABSORPTION SYNDROME IN PATIENTS SUFFERING FROM CHRONIC ENTEROCOLITIS. FACILITY: TASHKENT MED. INST., TASHKENT, USSR.

UNCLASSIFIED

APPROVED FOR RELEASE: 09/01/2001 CIA-RDP86-00513R002203820013-0"

USSR

UDC: 576.311.347:591.044.2

ZUFAROV, K.A. and SHNEYVAYS, V.B., Department of Electron Microscopy and Cytopho tometry, Tashkent Medical Institute

"Reaction of White Rat Liver Mitochondria to an Electromagnetic Field"

Leningrad, Tsitologiya, No 2, 1970, pp 146-151

Abstract: A total of three hours of exposure of rat liver mitochondria to an electromagnetic field (1,625 kHz) brought about profound changes in their ultrastructure. Most mitochondria were swollen 1-2 min after cessation of exposure. Reduction in the number of cristae and appearance of electron-dense inclusions were also characteristic. Many of the mitochondria had septa dividing them in two. Twenty-four hours after treatment, many mitochondria displayed destroyed, vacuolated regions, while the remaining part was almost normal. Almost all the cells had light structures surrounded by a double membrane. Some were filled with a homogeneous substance of medium electron density. After 3 days, the vacuole-like structures disappeared from the cytoplasm and most of the mitochondria appeared normal. Others had tightly packed bundles of membranes resembling myelin membranes. After 6 days the ultrastructure was almost completely restored.

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1/2 025 UNCLASSIFIED PROCESSING DATE--23OCT70

TITLE--RESPONSE OF WHITE MCE LIVER CELL MITROCHONDRIA ON THE ELECTROMAGNETIC FIELD IRRITATION -U-

AUTHOR-(02)-ZUFAROV, K.A., SHNEYVAYS, V.B.

COUNTRY OF INFO--USSR

SOURCE--TSITOLOGIYA; 12: 146-51 (FEB 1970)

DATE PUBLISHED----FEB70

SUBJECT AREAS--BIOLOGICAL AND MEDICAL SCIENCES

TOPIC TAGS--ELECTROMAGNETIC BIOLOGIC EFFECT, LIVER, MITOCHONDRION

CONTROL MARKING--NO RESTRICTIONS

DOCUMENT CLASS--UNCLASSIFIED

PROXY REEL/FRAME--1997/1985 STEP NO--UR/9053/70/012/000/0146/0151

CIRC ACCESSION NO--AP0120628

UNCLASSIFIED

2/2 023 UNCLASSIFIED PROCESSING DATE--23OCT70
CIRC ACCESSION NO--AP0120628
ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. THE ULTRASTRUCTURE OF MITOCHONDRIA WAS STUDIED IN MICE LIVER CELLS FOLLOWING THE INFLUENCE OF ELECTROMAGNETIC FIELD OF 1625 KH FREQUENCY. THE INITIAL CHANGES ON MITOCHONDRIA INVOLVING THEIR SWELLING COULD BE TRACED DURING THE TREATMENT. LATER, PART OF MITOCHONDRIA UNDERWENT LYSIS. IN ADDITION, SOME GIANT MITOCHONDRIA APPEARED. THREE DAYS AFTER TREATMENT, MITOCHONDRIA APPEARED TO HAVE MELIN LIKE CRISTAE AS WELL AS THOSE TRANSFORMED INTO MEILIN FIGURES. FACILITY: TASHKENT MEDICAL INST.

UNCLASSIFIED

ZUFAROV, T. Z.

SO: JPRS 54019
9 SEP 71

UDC: 616.995.132.8(Ascaris)-084.36.8.003.1

BENEFIT FROM MARKED DECLINE IN ASCARIASIS AND ITS RELATION TO EXPENDITURES INVOLVED

[Article by T.Z. Zufarov, All-Union Scientific Research Institute of Social Hygiene and Public Health Organization imeni N.A. Semashko, Moscow; Moscow, Sovetskoye Zdravookhraneniye, Russian, No 7, 1971, submitted 18 February 1971, pp 41-45]

The problem of economic effectiveness of expenditures related to eradication or marked reduction of some diseases is growing increasingly urgent in the public health system. G.I. Tsaregorodtsev and S.Ya. Chikin correctly indicate that at the present time scientists and planners in the system of Socialist economics are devoting more and more attention to determination of the role and place of public health in this is not done to reduce the expenses for health protection, but to show that such expenses must be more effective in the interests of society.

In the article by I.D. Bogatyrev et al. on the economic effectiveness of eradicating poliomyelitis and of the marked reduction in incidence of diphtheria in the USSR a comparison is made of the economic effectiveness of the loss prevented as a result of this, and the expenses with the cost evaluate the benefit to the national economy of measures directed toward eradicating or reducing the morbidity rate.

Using a method developed by I.D. Bogatyrev et al., we made a study to determine the detriment prevented by the sharp reduction in incidence of ascariasis and its relation to the expenses incurred.

The epidemiology, means of spread, mechanism of transmission of ascariasis and methods of controlling it have been thoroughly investigated by the Institute of Medical Parasitology and Tropical Medicine imeni Ye.I. Martsinovskiy. The broad attack on helminthiasis in the USSR was initiated after the eradication of malaria as a mass scale disease, when public health agencies were actually in a position to tackle the war against helminthiasis. As a result, from 1951 to 1960 there was a 50 percent reduction in incidence of ascariasis alone in the USSR, and a 2.5-fold reduction for the RSFSR.

USSR

UDC: 621.396.932.1

ZUFRIN, A. M.

"Methods of Constructing Automatic Shipboard Angle-Measuring Systems"

Metody postroyeniya sudovykh avtomatichskikh uglomernykh sistem (cf. English above), 1970, 408 pp, 2 r. 47 k. (as reviewed by V. V. Ol'shevskiy in Radiotekhnika, 1971, 26, No 3, pp 107-108) (from RZh-Radiotekhnika, No 6, Jun 71, Abstract No 6G104 RETs)

Translation: The first part of the book deals with the principles of constructing automatic angle-measuring systems and possible modifications including single-channel and two-channel (monopulse) systems. The second part is dedicated to fundamentals of the theory of automatic direction finding and technical methods of realization of the functional units of angle-measuring systems. N. S.

1/2 021 UNCLASSIFIED PROCESSING DATE--13NOV70

TITLE--METHODS FOR DESIGN OF AUTOMATIC GONIOMETER SYSTEMS FOR SHIPS -U-

AUTHOR--ZUFRIN, A.M.

COUNTRY OF INFO--USSR

SOURCE--(METODY POSTROYENIYA SUDOVYKH AVTOMATICHESKIKH UGLOMERNYKH SISTEM) LENINGRAD, SUDOSTROYENIYE, 408 PP (SL:2388)

DATE PUBLISHED-------70

SUBJECT AREAS--NAVIGATION

TOPIC TAGS--ELECTRONIC GONIOMETER, SHIP AUXILIARY EQUIPMENT, DIRECTION FINDER

CONTROL MARKING--NO RESTRICTIONS

DOCUMENT CLASS--UNCLASSIFIED

PROXY REEL/FRAME--3005/0235 STEP NO--UR/0000/70/000/000/0001/0408

CIRC ACCESSION NO--AM0132504

UNCLASSIFIED

2/2 021 UNCLASSIFIED PROCESSING DATE--13NOV70

CIRC ACCESSION NO--AM0132504

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. PREFACE 3. INTRODUCTION 5. CHAPTER 1 PROBLEMS IN DESIGN OF SINGLE CHANNEL AUTOMATIC GONIOMETER SYSTEMS 23. 2 PROBLEM IN DESIGN OF TWO CHANNEL AUTOMATIC GONIOMETER SYSTEMS 92. 3 OPTIMUM METHODS FOR MEASUREMENT OF ANGLE DATA CONTAINED IN PARAMETERS OF DIRECTION FINDING SIGNALS 161. 4 METHODS FOR OPTIMUM MEASUREMENT OF ANGULAR COORDINATES AND PARAMETERS OF TARGET MOTION 228. 5 INSTRUMENTAL ERRORS OF REAL AUTOMATIC GONIOMETER SYSTEMS. THE EFFECT OF THE ENVIRONMENT 279. 6 SPECIFICATIONS FOR FUNCTIONAL UNITS OF AUTOMATIC GONIOMETER SYSTEMS AND METHODS OF THEIR REALIZATION 337. 7 DESIGN PRINCIPLES OF DIRECT READING QUASIOPTIMUM GONIOMETER SYSTEMS 384. BIBLIOGRAPHY 398.

UNCLASSIFIED

USSR

ZUIKHIN, D. P., and STROGANOV, V. M.

UDC 613.71:355.3

"Intensity of Physical Training of Submarine Crews During Cruises"

Moscow, Voyenno-Meditsinskiy Zhurnal, No 2, 1971, pp 67-69

Translation: The motor activity of members of submarine crews during long cruises is very limited. Through the use of individual pedometers it was found that submariners take more than 10,000 steps a day while at home base but only 4,000 (in the case of those who do not engage in physical exercise) or sometimes only 700 steps during a cruise. This is one of the reasons for the functional changes that take place in the cardiovascular system during cruises.

The adverse effects of hypodynamia on submariners can be mitigated only by systematic, scientifically grounded physical exercises during and between cruises. Since 1964 we have been particular interested in the physical training of submariners during a cruise. Many submarine doctors (A. Ye. Ovchinnikov, Ye. K. Seleznev, Yu. S. Ugulava, Yu. S. Nikolayev, and others) think highly of its value in maintaining the personnel's sense of well-being and work capacity. Studies conducted by F. I. Gorskiy and A. I. Slizhevskiy showed that the performance of all groups of muscles declined in individuals who did

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ZUIKHIN, D. P., and STROGANOV, V. M., Voyenno-Meditsinskiy Zhurnal, No 2, 1971, pp 67-69

not exercise during a voyage, whereas in those who did free exercises (without equipment) for 15 minutes on a shift muscular performance remained as good as before the voyage and in some cases was even better. It was also observed that in well-trained submarines the level of physical fitness was higher than in those less well-trained, even if both did not exercise during a cruise. This shows the need for regular physical training of submariners in the period between cruises.

Physical exercise is known to increase the nonspecific resistance of the body to some poisons and ionizing radiation. Excessive exercise, on the other hand, may diminish this resistance (N. V. Zimkin and A. V. Korobkov, 1960). Therefore, the selection of physical exercises to be performed during a long cruise must be strictly tailored to the individual. The differences in physical condition, nature of the man's job, age and action of unfavorable factors make it impossible for all the submariners to do the same set of exercises.

We have been studying in recent years the effect of various physical loads on certain functional indexes in submariners. For example, during two cruises

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ZUIKHIN, D. P., and STROGANOV, V. M., Voyenno-Meditsinskiy Zhurnal, No 2, 1971, pp 67-69

(fall and summer) we observed individuals who engaged in physical exercise of different intensities. We divided them into three groups. The first included those who were in good condition before the cruise and then continued to do heavy exercise during the crusie (pull-ups, lifting weights of as much as 16 kg, using 8 kg dumbbells for 15 to 30 minutes or free exercise with light equipment - expanders, light dumbbells, rubber stretching straps , gym stick - for 30 minutes to an hour). The second group consisted of men in moderately good condition who performed moderately strenuous exercises during the cruise (pull-ups, squatting, hand grips free exercises with light equipment - from 30 minutes to an hour). The third group consisted of men in moderately good condition who performed light exercises during the cruise (pull-ups, squatting, hand grips - for 10 to 30 minutes).

The exercising was done in accordance with individual programs in the men's free time in the living quarters where the gaseous composition of the air was kept at permissible levels, the temperature fluctuated between 21 and 28°C and the relative humidity between 50 and 70%. The exercises filled out special charts on which they mentioned the nature and duration of the exercises, time and place they were performed, and the way they felt at

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ZUIKHIN, D. P., and STROGANOV, V. M., Voyenno-Meditsinskiy Zhurnal, No 2, 1971, pp 67-69

different times during the cruise in relation to the exercises. In addition, the subjective condition was evaluated by questioning the men every two weeks. The answers showed that a substantial number of those who did heavy or moderate exercises felt worse after exercising: fatigue, apathy, sleepiness, pain in the joints and muscles and in the heart region, tachycardia, etc. Some 60% of those in the first group presented complaints compared with 37% of those in the second group. This is why about one-third of the men in the first and second groups shortened the exercises or abandoned them altogether. The mildness of the exercises performed by the third group had no adverse effect on the subjective feelings of the exercises and most of them judged the activity favorably.

The data on changes in some indexes of the cardiovascular and nervous systems show that the first group of men who did fairly strenuous exercises did not exhibit any substanital improvement in the cardiovascular indexes after the cruise. Among the men in the second and third groups, there was a significant increase in the pulse rate, increase in Quaas' coefficient of tolerance, and rise in diastolic arterial pressure (significant in the second

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USSR

ZUIKHIN, D. P., and STROGANOV, V. M., Voyenno-Meditsinskiy Zhurnal, No 2, 1971, pp 67-69

group) with a fall in systolic pressure. The findings on changes in the clinostatic and orthostatic reflexes show that excitability of the nervous system increased in all three groups, but was more pronounced in the second and third. Thus, there was definite discrepancy between the subjective data and the objective indexes.

A broader study of the effect of hypodynamia on man using up-to-date methods is necessary in order to provide a scientific basis for recommendations on the duration and intensity of physical exercises for submariners during cruises.

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1/2 015 UNCLASSIFIED PROCESSING DATE--02OCT70

TITLE--EFFECTS OF THE ADDITION OF AN EMULSIFIER AND MONOMER IN THE COURSE OF THE EMULSION POLYMERIZATION OF STYRENE IN THE PRESENCE OF NONIONIC

AUTHOR-(04)-ZUIKOV, A.V., MEDVEDEV, S.S., DUDUKIN, V.V., OTRUSHKO, G.V.

COUNTRY OF INFO--USSR

SOURCE--VYSOKOMOL. SOEDIN., SER. A 1970, 12(2) 376-81

DATE PUBLISHED--------70

SUBJECT AREAS--MATERIALS, CHEMISTRY

TOPIC TAGS--EMULSION POLYMERIZATION, STYRENE, POLYMERIZATION KINETICS, BENZOYL PEROXIDE, NITRILE, LATEX

CONTROL MARKING--NO RESTRICTIONS

DOCUMENT CLASS--UNCLASSIFIED

PROXY REEL/FRAME--1992/0323 STEP NO--UR/0459/70/012/002/0376/0381

CIRC ACCESSION NO--AP0111517

UNCLASSIFIED

2/2 015 UNCLASSIFIED PROCESSING DATE--020CT70

CIRC ACCESSION NO--AP0111517

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. THE KINETICS OF EMULSION POLYMN. OF PHCH:CH SUB2, INITIATED BY BZ SUB2 O SUB2 OR AZOBISISOBJTYRONITRILE, WAS STUDIED AT 60 PLUS OR MINUS 0.1DEGREES IN THE PRESENCE OF PROXANOL 228 EMULSIFIER, HO(CH SUB2 CH SUB2 O) SUBX(CH SUB2 CHMEO)SUBY(CH SUB2 CH SUB2 O)H (I). THE POLYMN. OCCURRED IN LATEX PARTICLES WHICH CONTAINED ALL OF THE MONOMER INTRODUCED INTO THE SYSTEM. FROM THE BEGINNING OF THE POLYMN., THE LATEX PARTICLES WERE COVERED WITH AN ADSORBED LAYER OF I WHICH INCREASED THEIR STABILITY AND DETD. THE POLYMN. KINETICS.

UNCLASSIFIED

ZUKHBAYA, T. M.

Radiation Medicine

SO: JPRS 53448
24 June 71

UDC 617-001.28-092.9-085.849.1.015.25-07: 616.155-007.1-076.5

EFFECT OF AMYTETRAVITE AND ATP ON HEMOPOIESIS IN DOGS DURING REPEATED EXPOSURES AGAINST A BACKGROUND OF CHRONIC GAMMA IRRADIATION

[Article by V. D. Rogozkin, N. I. Gvozdeva, [illegible], [illegible], T. M. Zukhbaya and T. Ye. Burkovskaya; Moscow, Kosmicheskaya Biologiya i Meditsina, Russian, Vol 5, No 2, 1971, pp 42-46, submitted for publication 30 January 1970]

6605709   6400482

Abstract: This paper summarizes the results of two-year experiments with three groups of dogs. Two groups received a dose of 188.5 rad/year, whereas the third served as a control. The 30 irradiated dogs were administered radio-protective drugs: amytetravite and ATP. Hemopoietic parameters exhibited higher stability in response to the drugs.

We studied the effectiveness of therapeutic-prophylactic measures under irradiation conditions simulating the radiation associated with a prolonged space flight. This study constitutes part of a complex experiment carried out with 240 dogs which were exposed to chronic low-level radiation (Yu. G. Grigor'yev, et al.; T. Ye. Burkovskaya, et al.).

This article gives the results of two years of observations of three groups of animals. The dogs in the first and second groups (30 dogs shielded and 24 controls) were exposed to constant (22 hours daily) γ -irradiation in a dose of 62.5 rad/year with additional acute prolonged exposures simulating solar flares with a 42-rad dose three times a year. The total radiation dose during the two years was 377 rad. The third group was a biological control.

As antiradiation drugs we used amytetravite and adenosine triphosphate (ATP). These are drugs capable of increasing the natural body radioresistance and intensifying processes of postradiation recovery (O. I. Belousova and M. N. Trushina; V. D. Rogozkin, et al.; V. D. Rogozkin and Ye. I. Marinenko; V. I. Korogodin). Amytetravite, consisting of vitamins C, P, B_1 and B_6 and the amino acids triptophan and histidine, was administered to all 30 shielded dogs in two-week series each 1.5-3.5 months. ATP was injected intramuscularly

1/2 041 UNCLASSIFIED PROCESSING DATE--27NOV70

TITLE--EXPERIMENTS IN THE APPLICATION OF PROPHYLACTICS AGAINST RADIATION INJURIES UNDER SIMULATED PROLONGED SPACE FLIGHT CONDITIONS -U-

AUTHOR-(05)-ROGOZKIN, V.D., SBITNEVA, M.F., SHAPIRO, G.A., GVOZDEVA, N.I., ZUKHBAYA, T.M.

COUNTRY OF INFO--USSR

SOURCE--KOSMICHESKAIA BIOLOGIIA I MEDITSINA, VOL 4, MAR.-APR. 1970, P. 20-24

DATE PUBLISHED-------70

SUBJECT AREAS--BIOLOGICAL AND MEDICAL SCIENCES, PHYSICS

TOPIC TAGS--DOG, GAMMA RADIATION, RADIATION DOSAGE, HEMATOPOIESIS, RADIATION INJURY, RADIATION PROPHYLAXIS, ANTIRADIATION DRUG, ADENOSINE TRIPHOSPHATE

CONTROL MARKING--NO RESTRICTIONS

DOCUMENT CLASS--UNCLASSIFIED

PROXY REEL/FRAME--3008/1710 STEP NO--UR/0453/70/004/000/0020/0024

CIRC ACCESSION NO--AP0138683

UNCLASSIFIED

2/2 041 UNCLASSIFIED PROCESSING DATE--27NOV70

CIRC ACCESSION NO--AP0138683

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. DISCUSSION OF ONE YEAR OBSERVATIONS OF RADIATION EFFECTS IN A GROUP OF 54 DOGS EXPOSED TO CHRONIC GAMMA RADIATION DOSES OF 75 REM-YEAR WITH ADDITIONAL SOLAR FLARE SIMULATING DOSES OF 50 REM GIVEN 3 TIMES DURING THE YEAR TO A TOTAL OF 225 REM-YEAR. ADENOSINE TRIPHOSPHATE OR AMITETRAVIT (A COMBINATION OF VITAMINES C, P, B1, AND B6 WITH TRYPTOPHAN AND HISTIDINE) WERE GIVEN TO THE DOGS AS MEDICATION. A NORMALIZING EFFECT OF THESE PREPARATIONS ON HEMOPOIESSIS IS ESTABLISHED IN RADIATION EXPOSED DOGS.

UNCLASSIFIED

USSR UDC: 51

ZUKHOVITSKIY, S. I., POLYAK, R. A., PRIMAK, M. Ye.

"Concave Games. (Examples of Realization)"

Ekonomika i mat. metody (Economics and Mathematical Methods), 1973, 9, No 1, pp 138-147 (from RZh-Kibernetika, No 5, May 73, abstract No 5V608 by A. Mikhaylova)

Translation: The paper presents some examples of realization of methods of finding an equilibrium situation in a many-person game. An algorithm is found for solving the problem of convex programming treated as an antagonistic game with a Lagrange function as the payoff function. As applied to the classical problem of finding the saddle point of a concavoconvex function, an algorithm is concretized which is a generalization of the well known method of the conditional gradient. The authors establish the equivalence between the classical Wald economy model and some concave n-person game, and construct an algorithm for finding equilibrium in a production model. The Pontryagin principle of the maximum which is used gives an economic interpretation for a dynamic production model.
1/1

UDC 51:330.115

USSR

ZUKHOVITSKIY, S. I.

"Mathematical Models and Methods of Solution of Certain City Building Problems"

Sb. tr. Mosk. Inzh.-stroit. In-t [Collected Works of Moscow Construction Engineering Institute], No 83, 1970, pp 140-162, (Translated from Referativnyy Zhurnal, Kibernetika, No 10, 1971, Abstract No 10 V736 by the author).

Translation: Mathematical models of a number of problems in optimization relating to city building are presented: 1. Selection of the point for construction of a regional center. 2. Selection of points for construction of the network of domestic services installations. 3. Selection of the main transportation line. 4. Problems of organization of city transport. 5. Selection of standard plans for construction. 6. The problem of standardization of parts. Brief indications for methods for solution of these problems are presented.

UNCLASSIFIED PROCESSING DATE -04DEC70

1/2 014

TITLE--SERVICE FOR RESEARCHERS -U-

AUTHOR--ZUKIN, B.

COUNTRY OF INFO--USSR

SOURCE--PRAVDA, AUGUST 9, 1970, P 3, COLS 1-7

DATE PUBLISHED--09AUG70

SUBJECT AREAS--BEHAVIORAL AND SOCIAL SCIENCES

TOPIC TAGS--SUPPLY SYSTEM, R AND D FACILITY MANAGEMENT, ACADEMIC INSTITUTION ADMINISTRATION, R AND D MANAGEMENT ORGANIZATION, RESEARCH AND PRODUCTION INTERFACE, INDUSTRIAL ASSOCIATION, INDUSTRIAL COMPLEX, PILOT PLANT, EXPERIMENTAL PLANT, TEST FACILITY MANAGEMENT, DESIGN FACILITY MANAGEMENT

CONTROL MARKING--NO RESTRICTIONS

DOCUMENT CLASS--UNCLASSIFIED
PROXY REEL/FRAME--2000/1898 STEP NO--UR/9012/70/000/000/0003/0003

CIRC ACCESSION NO--AN0125498
UNCLASSIFIED

2/2 014 UNCLASSIFIED PROCESSING DATE--04DEC70

CIRC ACCESSION NO--AN0125498

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. THE ARTICLE DIRECTS SOME CRITICISM AT THE EXISTING SYSTEM OF PROVIDING RESEARCH ORGANIZATIONS WITH LABORATORY INSTRUMENTS, EQUIPMENT, AND MATERIALS. TODAY, ORDERS FOR LABORATORY HARDWARE MUST BE SUBMITTED ONE YEAR IN ADVANCE. NOR DOES THE SYSTEM PROVIDE FOR ANY CONTINGENCIES ARISING IN THE CAUSE OF RESEARCH. FIRST STEPS TO REFORM THE EXISTING SYSTEM HAVE BEEN MADE BY THE GOSSNAB U.S.S.R. IT ESTABLISHED ADMINISTRATIONS RESPONSIBLE FOR SUPPOLYING RESEARCH, DESIGN PLANNING, AND TECHNOLOGICAL INSTITUTIONS, AND HIGHER AND MIDDLE SPECIAL SCHOOLS WITH NEEDED EQUIPMENT, INSTRUMENTS, AND MATERIALS, ORGNAUCHKOMPLEKTSNAB, IN THREE ECONOMIC REGIONS. ONE OF THESE, "ODESSORGNAUCHKOMPLEKTSANB" HAS BEEN SET UP IN ODESSA, WITH ODESSA POLYTECHNIC INSTITUTE AS ITS BASE OF OPERATIONS. THE ODESSA ADMINISTRATION COVERS ODESSA, NIKOLAYEV, KHERSON, AND CRIMEAN REGIONS. THE AUTHOR URGES THAT THE "ODESSORGNAUCHKOMPLEKTSNAB" BE EXPANDED TO A RESEACH PRODUCTION COMPLEX WITH LABORATORIES, PILOT PLANTS, A STAFF OF ENGINEERS AND TECHNICIANS, AND THAT ITS SERVICES AND EQUIPMLENT BE AVAILABLE TO ALL HIGHER SCHOOLS, DESIGN AND TECHNOLOGICAL ORGANIZATIONS, AND RESEARCH COLLECTIVES FOR CONDUCING RESEARCH, DEVELOPMENT, AND FABRICATION OR PROTOTYPES. FACILITY: ODESSA POLYTECHNIC INSTITUTE.

UNCLASSIFIED

APPROVED FOR RELEASE: 09/01/2001 CIA-RDP86-00513R002203820013-0"

USSR UDC 533.92:621.039.61

ZUKOV, V. G., KARPUKHIN, V. I., RUDNEV, N. I., TOLOK, V. G.

"Study of the Stability of a Plasma Jet in the Magnetic Field of a Divertor"

Fiz. plazmy i probl. upravl. termoyader. sinteza. Resp. mezhved. sb. (Plasma Physics and Problems of the Controlled Thermonuclear Fusion. Republic Interdepartmental Collection), 1972, No. 3, pp 213-220 (from RZh-Fizika, No 11, Nov 72, Abstract No 11G296)

Translation: The stability of plasma motion in the magnetic field of a divertor was studied. Observations with the aid of a plasmascope and measurements of radioelectrical fields in the plasma showed that the instability of the rotating plasma occurring in the longitudinal magnetic field of the solenoid is effectively stabilized by the divertor magnetic field.

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USSR UDC 539.213

IMANOV, L. M., Corresponding Member of the Azerbaydzhan SSR Academy of Sciences, ZUL'FUGARZADE, K. E., AKHUNDOV, A. A., GADZHIYEV, G. A., Institute of Physics, Azerbaydzhan SSR Academy of Sciences

"Investigation of Intramolecular Motions in Some Dialkyl Phthalates by the Method of Polymer Matrix Isolation"

Baku, Doklady Akademii Nauk Azerbaydzhanskoy SSR, Vol 29, No 7, 1973, pp 11-12

Abstract: The paper gives some results of a study of radio-frequency spectra of relaxation absorption in the dimethyl phthalate-polystyrene and di-n-butyl phthalate-polystyrene system with ether content of 20% by weight. The dielectric loss tangents of both systems were measured on eight frequencies ranging from $5 \cdot 10^2$ to $7 \cdot 10^5$ Hz at temperatures from 40 to 150°C. On the basis of analysis with regard to the magnitudes of dipole moments corresponding to the observed dielectric absorption regions for dimethyl and dibutyl phthalates, as well as the spectrum of iodobenzene in the polystyrene matrix with a single absorption region, it is concluded that the low-frequency contribution to the absorption regions is from the motion of individual molecules of the dialkyl phthalates as a whole, while the high-frequency component is due to intramolecular motions.

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1/2 017 UNCLASSIFIED PROCESSING DATE--16OCT70

TITLE--NEW MEASUREMENTS OF ANGULAR DEPENDENCE OF DEPOLARIZATION PARAMETER IN PP SCATTERING AT 635 MEV -U-

AUTHOR-(03)-ZULKARNEYEV, R.YA., NADEZHDIN, V.S., SATAROV, V.I.

COUNTRY OF INFO--USSR

SOURCE--YADERN. FIZ. 11: 178-83, 1970

DATE PUBLISHED--------70

SUBJECT AREAS--PHYSICS

TOPIC TAGS--PROTON SCATTERING, PROTON INTERACTION, DEPOLARIZATION, PHASE SHIFT ANALYSIS, PARTICLE SYMMETRY

CONTROL MARKING--NO RESTRICTIONS

DOCUMENT CLASS--UNCLASSIFIED

PROXY REEL/FRAME--1988/0670 STEP NO--UR/0367/70/011/000/0178/0183

CIRC ACCESSION NO--AP0105646

UNCLASSIFIED

2/2 017 UNCLASSIFIED PROCESSING DATE--16OCT70

CIRC ACCESSION NO--AP0105646

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. NEW MEASUREMENTS OF THE DEPOLARIZATION PARAMETER IN PP SCATTERING AT 635 MEV IN A WIDE ANGLE INTERVAL AND WITH HIGHER STATISTICAL ACCURACY, ARE MADE. THE RESULTS OBTAINED ARE COMPARED WITH THE EXPERIMENTAL RESULTS OF OTHERS, WITH PREDICTIONS OF THE PHASE SHIFT ANALYSIS, AND WITH THE THEORY BASED ON M(12) AND SU(12)SUBL TIMES SYMMETRIES.

UNCLASSIFIED

2/2 014 UNCLASSIFIED PROCESSING DATE--09OCT70

CIRC ACCESSION NO--AP0043589

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. A PHASE SHIFT ANALYSIS OF 640 MEV PP COLLISIONS IS PERFORMED. IN DISTINCTION TO PREVIOUS WORK THE PRESENT ANALYSIS IS CARRIED OUT BY TAKING INTO ACCOUNT THE PIPOSITIVE 0 MESON ANGULAR DISTRIBUTIONS. FOUR APPROXIMATELY EQUALLY PROBABLE SOLUTIONS ARE OBTAINED. MORE PRECISE EXPERIMENTAL DATA ON ELASTIC PP SCATTERING ARE NECESSARY IN ORDER TO MAKE THE ANALYSIS LESS AMBIGUOUS.

UNCLASSIFIED

USSR

UDC 678.675:542.949

STARKOVA, A. N., SHAPIRO, Ye. I., KIRILENKO, Yu. K., MEOS, A. I., VOL'F, L. A., VISHNYAKOVA, T. P., and ZIBEROV, S. R., Leningrad Institute of the Textile and Light Industries imeni S. M. Kirov, and Moscow Institute of the Petrochemical and Gas Industries imeni I. M. Gubkin

"Modification of Capron Fiber With Ferrocenaldehyde"

Leningrad, Zhurnal Prikladnoy Khimii, Vol XLV, No 2, Feb 1972, pp 447-449

Abstract: One of the basic weaknesses of polyamide fibers is low heat-resistance. Chemical methods for remedying this weakness (based mostly on processing with bifunctional compounds and formaldehyde to form intermolecular cross-links in the polymer), but almost nothing has been published on the use of other monoaldehydes which might act as modifying agents to strengthen the resistance of polyamides to thermo-oxidative destruction. The authors studied ferrocenaldehyde (FCA) as a modifier, in the case of the fiber Capron. Phosphoric acid was used to increase reactivity of the aldehyde groups; this acid reacts only slightly with Capron, and not at all with ferrocenaldehyde. Ethanol was the solvent used. It was found that treatment of Capron with FCA substantially increases the heat-resistance of this fiber. This is explained

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USSR

STARKOVA, A. N., et al., Zhurnal Prikladnoy Khimii, Vol XLV, No 2, Feb 1972, pp 447-449

on the basis of decreased concentration of free terminal amino groups during their blocking by an aromatic compound of FCA type, as is suggested by other published data. Graphic data are given on the strength, elongation and thermal properties of Capron, as these are affected by concentrations of FCA and H_3PO_4, and by heating.

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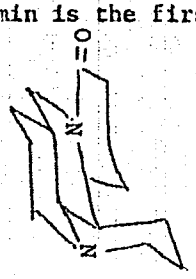
USSR UDC 547.944/945

ZUNNUNZHANOV, A., ISKANDAROV, S., YUNUSOV, S. YU., Order of the Red Banner of Labor Institute of the Chemistry of Plant Substances of the Uzbek SSR Academy of Sciences

"Darvasamin, a New Alkaloid from Leontice Darvasica"

Tashkent, Khimiya Prirodnykh Soyedineniy, No 6, 1971, pp 851-852

Abstract: The separation of the mixture of alkaloids from the above-ground part of Leontice darvasica was continued after separation of taspin, N-methylcytisine and darvasin [S. Iskandarov, et al., KhPS, 132, 1969]. Infrared and nuclear magnetic resonance spectral data are presented for the new alkaloid which was isolated -- darvasamin with a melting point of 102° the composition $C_{15}H_{24}N_2O$, $[\alpha]_D$ + 72°. Darvasamin is the first natural isomer of cis-series matrine:



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USSR UDC 542.91:547.1'118

ABDUVAKHABOV, A. A., ZUPAROVA, K. M., GODOVIKOV, N. N., KABACHNIK, M. I., ASLANOV, Kh. A., and SADYKOV, A. S., Institute of Organoelemental Compounds, Academy of Sciences USSR, and Tashkent State University imeni V. I. Lenin, Tashkent

"The Synthesis of Some O-Ethyl-S-alkyl Alkylthiophosphonates"

Moscow, Izvestiya Akademii Nauk SSSR, Seriya Khimicheskaya, No 7, Jul 73, pp 1659-1661

Abstract: It was established in earlier work by the authors that the anticholinesterase activity of O-alkyl-S-alkyl methylthiophosphonates increases with an increasing length and degree of branching of the alkyls at O and S. However, the effect of the alkyl at P on the physiological activity of compounds of this type had not been studied. To carry out this study, the O-ethyl-S-butyl alkylthiophosphonates EtO(R)P(O)SBu (I; R = Et, n-Pr, n-Bu), O-ethyl-S-(beta-ethyl-mercaptoethyl) alkylthiophosphonates EtO(R)P(O)SC_2H_4SEt (II; R = Et, n-Pr, n-Bu), and methylsulfomethylates of II (III) were synthesized. O,O-Diethyl alkylphosphonates $(EtO)_2P(O)R$, which were prepared starting with diethyl phosphite as 1/2

USSR

ABDUVAKHABOV, A. A., et al, Izvestiya Akademii Nauk SSSR, Seriya Khimicheskaya, No 7, Jul 73, pp 1659-1661

described in earlier work, formed the acid chlorides EtO(R)P(O)Cl (IV on being reacted with PCl_5. IV, on being reacted with butyl-mercaptan and beta-mercaptodiethyl sulfide, yielded I and II, respectively. Compounds III were obtained by reacting II with dimethyl sulfate. The physical properties of the compounds synthesized are listed in tables.

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USSR

UDC 577.133.4

ABDUVAKHAVOB, ZUPAROVA, K. M., GODOVIKOV, N. N., KABACHNIK, M. I., KRASHENYUK, A. I., MIKHAYLOV, S. S., and ROZENGART, V. I., Tashkent State University, Institute of Element-Organic Compounds, USSR Academy of Sciences, and I. P. Pavlov First Leningrad Medical Institute

"New Hydrophobic Areas in the Region of the Esterase Center of Cholinesterases"

Moscow, Doklady Akademii nauk SSR, No 5, 1973, pp 1209-1212

Abstract: The anticholinesterase properties of three series of synthesized organophosphorus inhibitors with alkyl radicals of different lengths were studied in bovine erythrocyte acetylcholinesterase and horse serum butylcholinesterase. In the case of acetylcholinesterase, the compounds in which a methyl group was linked to the phosphorus atom exhibited the maximum inhibitory activity. Lengthening the alkyl radical either diminished their anticholinesterase properties or had no effect. With respect to butylcholinesterase, lengthening the alkyl radical in the inhibitors markedly increased their anticholinesterase activity. Compounds with cationic sulfer had the highest constants of the rate of inhibition because of the interaction of the positively charged sulfer atom with the anionic center of cholinesterase. The changes detected in the anticholinesterase properties

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ABDUVAKHABOV, et al., Doklady Akademii nauk SSR, No 5, 1973, pp 1209-1212

within each series of the inhibitors investigated are attributed to differences in the extent of sorption of the alkyl groups on the corresponding hydrophobic area. The latter appears to be in the region of the esterase center.

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USSR

UDC 547.944.945

ZUPAROVA, K. M., CHOMMADOV, B., YUSUPOV, M. K., SADYKOV, A. S., Tashkent Order of the Red Banner of Labor State University imeni V. I. Lenin

"Alkaloids of Merendera Jolantae"

Tashkent, Khimiya Prirodnykh Soyedinenii, No 4, 1971, pp 487-493

Abstract: A study was made of the alkaloids of Merendera Jolantae in which it was discovered that along with tropolonic compounds it also contains bases with other hydrocarbon rings. By extraction of 48 kg of the above-ground parts of the merendera, 0.39% of the total alkaloids were isolated, including 0.28% of the bases. The compounds β-lumicolchicine, colchicine, 2-dimethylcolchiceine and the unknown lumi-derivative -- MJ-3 alkaloid (melting point 268-270°) and also colchiceine were obtained by chromatography on adsorbent fractions of neutral and phenol compounds. Colchamine, colchaneine and the new bases MJ-1, MJ-2 and MJ-4 isolated from the bases and phenon-basic fractions. The presence of 3-demethylcholchamine and four more unknown, non-tropolonic compounds with R_f 0.40, 0.49, 0.53 and 0.54 was determined by chromatographic methods. The formula $C_{16}H_{16}(OH)(OCH_3)(CO)(NCH_3)$ was proposed for Jolantamine (the base MJ-1) by spectral methods.

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1/2 016 UNCLASSIFIED PROCESSING DATE--30OCT70

TITLE--POLARIZATION FOR CARBON DIOXIDE REDUCTION ON A PLATINUM ELECTRODE IN A SOLID ELECTROLYTE -U-

AUTHOR-(03)-KARPACHEV, S.V., ZUPNIK, A.YE., PERFILYEV, M.V.

COUNTRY OF INFO--USSR

SOURCE--ELEKTROKHIMIYA 1970, 6(4), 577-80

DATE PUBLISHED--------70

SUBJECT AREAS--CHEMISTRY

TOPIC TAGS--PLATINUM ELECTRODE, CHEMICAL REDUCTION, ELECTROLYTE, CARBON DIOXIDE

CONTROL MARKING--NO RESTRICTIONS

DOCUMENT CLASS--UNCLASSIFIED

PROXY REEL/FRAME--1998/1124 STEP NO--UR/0364/70/006/004/0577/0580

CIRC ACCESSION NO--AP0121683

UNCLASSIFIED

2/2 016 UNCLASSIFIED PROCESSING DATE--30OCT70

CIRC ACCESSION NO--AP0121683

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. THE CATHODIC POLARIZATION (ETA) DURING CO SUB2 REDN. ON PT WAS STUDIED AT 900 PLUS OR MINUS 1DEGREE BY USING THE SOLID ELECTROLYTE 0.905 ZRO SUB2 PLUS 0.095 Y SUB2 O SUB3 AND CO PLUS CO SUB2 GAS MIXTS. CHLOROPLATINIC ACID WAS THERMALLY DECOMPD. ON EACH FACE OF THE CERAMIC TABLET AT 600-700DEGREES TO YIELD THE 3 PT ELECTRODES. THE VALUE OF ETA DEPENDED ON THE GAS COMPN. FOR ALL C.DS. UP TO 64 MA-CM PRIME2, ETA WAS A MIN. AT GAS COMPNS. OF 50-70PERCENT CO; THE LOWER C.D. VALUES GAVE A BROADER MIN. THE REASON FOR THE MIN. WAS NOT CLEAR. FURTHER DILN. OF THE CO SUB2 CONCN. CAUSED AN INCREASE IN ETA OWING TO CONCN. EFFECTS. THE POTENTIAL VARIATION WITH TIME FOR DIFFERENT CONCNS. OF CO SUB2 WERE CAUSED BY A STRONG DEPLETION OF THE CO SUB2 REACTION ZONE. FACILITY: INST. ELEKTROKHIM., SVERDLOVSK, USSR.

UNCLASSIFIED

1/3 009 UNCLASSIFIED PROCESSING DATE--23OCT70

TITLE--EMULSION LACQUER NTS 542 -U-

AUTHOR-(03)-LUCHANSKIY, L.N., ZURABAN, K.M., FELDMAN, I.S.

COUNTRY OF INFO--USSR

SOURCE--KOZH-OBUV. PROM. 1970, 12(2), 56-9

DATE PUBLISHED-------70

SUBJECT AREAS--MATERIALS

TOPIC TAGS--LACQUER, LEATHER, EMULSION, POLYETHYLENE, PRYOXYLIN/(U)NTS542 LACQUER

CONTROL MARKING--NO RESTRICTIONS

DOCUMENT CLASS--UNCLASSIFIED

PROXY REEL/FRAME--1997/0558 STEP NO--UR/0498/70/012/002/0056/0059

CIRC ACCESSION NO--AP0119477

UNCLASSIFIED

2/3 009 UNCLASSIFIED

CIRC ACCESSION NO--AP0119477 PROCESSING DATE--23OCT70

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. LACQUER NTS 542, USEFUL FOR COATING LEATHER, IS THE PRODUCT OF EMULSIFICATION OF A SOLN. OF PLASTICIZED COLLOXYLIN IN WATER. CAREGUL TESTING OF MATERIALS, ADDNL. PURIFICATION OF ALIZARIN OIL, AND USE OF DEMINERALIZED WATER ENSURE THE STABILITY OF THE EMULSION FOR 4-6 MONTHS. THE DUMULSION MUST BE STORED AT 5-25DEGREES. REFRIGERATION ALTERS THE SOLY. OF THE EMULSIFIER IN THE DIFFERENT PHASES AND LEADS TO COALESCENCE OF THE EUMULSION ON THAWING. INCREASE IN TEMP. LEADS TO AN INCREASE IN PARTICLE COLLISIONS WHICH DESTROY THE EMULSION. THE PRESENCE OF AN ELECTROLYTE DECREASES THE POTENTIAL OF THE ELEC. DOUBLE LAYER SURROUNDING THE PARTICLES AND DESTROYS THE EMULSION. THE EMULSION FORMED USING WATER WITH A HARDNESS OF 7-9 MG EQUIVS.-1. IS ONLY USABLE FOR 24-48 HR. OILG. THE EMULSION FOR USE MAY UPSET THE BALANCE BETWEEN WATER AND SOLVENT IN THE EMULSION. THE FILM THUS OBTAINED RETAINS WATER, WHICH CAUSES LOSS OF WHITENESS. THIS IS AVOIDED BY ADDING 10 WT. PARTS SOLVENT (CYCLOHEXANONE OR BUOAC) TO 100 WT. PARTS LACQUER, HOMOGENZING THE MIST., AND OILG. WITH 10-11 WT. PARTS DEMINERALIZED OR DISTD. WATER. AN EMULSION OF VISCOSITY 15-18 SEC (AT 20DEGREES IN A VZ-3 FUNNEL), WHICH IS SUITABLE FOR APPLICATION BY A PAINT SPRAY, IS OBTAINED. THE LACQUER IS APPLIED TO LEATHER PRECOATED WITH A COLORING COATING BASED ON A SYNTHETIC FILM FORMING MATERIAL AND AN ALBUMIN BINDER. APPLICATION IS BY PAINT SPRAYING FROM A DISTANCE OF 30-40 CM, WITH AN AIR PRESSURE OF 3 ATM. FOR A JET DIAM. OF 1.1-1.3 MM AND 4.5-6.0 ATM. FOR A DIAM. OF 1.8 MM. THE COATING IS DRIED AT 35-40DEGREES.

UNCLASSIFIED

3/3 009 UNCLASSIFIED PROCESSING DATE--23OCT70

CIRC ACCESSION NO--AP0119477

ABSTRACT/EXTRACT--THE LACQUER SHOULD BE STORED IN POLYETHYLENE BAGS IN 40 1. TIN PLATED FLAGONS OR IN 50 1. POLYETHYLEN BARRELS.

UNCLASSIFIED

USSR UDC: 621.396.9:527.61

ZURABOV, Yu. G.

"Determination of Mutual Correlation Between Measurement Errors in Phase Radio Navigation Systems"

Tr. TsNII Mor. flota (Works of the Central Scientific Research Institute of the Maritime Fleet), 1970, vyp. 124, pp 14-25 (from RZh-Radiotekhnika, No 12, Dec 70, Abstract No 12G89)

Translation: In evaluating the accuracy of determining the position of a ship by means of phase radio navigation systems, account must be taken of a feature which is typical of such systems -- the interdependence between measurement errors in different channels caused by utilizing a common master station. An analysis is made of the results of measurements taken at different seasons of the year at various distances from shore stations in networks of the "Dessa" system and processed on a digital computer to find the function of mutual correlation between errors. Three illustrations, bibliography of eight titles. N. S.

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1/2 022 UNCLASSIFIED PROCESSING DATE--04DEC70

TITLE--WATERPROOFING OF MATERIALS -U-

AUTHOR-(05)-SHANTAROVICH, P.S., LARIONOVA, V.D., POTAPOVA, T.P., ZURABYAN, K.M., MATETSKENE, N.I.

COUNTRY OF INFO--USSR

SOURCE--U.S.S.R. 265,063

REFERENCE--OTKRYTIYA, IZOBRET., PROM. OBRAZTSY, TOVARNYE ZNAKI 1970,

DATE PUBLISHED--09MAR70

SUBJECT AREAS--MATERIALS, CHEMISTRY

TOPIC TAGS--WATERPROOFING, CHEMICAL PATENT, LEATHER, ALKALI METAL, GLYCOL, COPOLYMER, STYRENE, MALEIC ANHYDRIDE

CONTROL MARKING--NO RESTRICTIONS

DOCUMENT CLASS--UNCLASSIFIED

PROXY REEL/FRAME--3007/1753 STEP NO--UR/0482/70/000/000/0000/0000

CIRC ACCESSION NO--AA0136993

UNCLASSIFIED

2/2 022 UNCLASSIFIED PROCESSING DATE--04DEC70

CIRC ACCESSION NO--AA0136993

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. MATERIALS SUCH AS LEATHER ARE WATERPROOFED BY TREATING THEM WITH THE REACTION PRODUCT OF AN ALKALI METAL GLYCOLATE AND A COPOLYMER OF STYRENE WITH MALEIC ANHYDRIDE OR POLY(ACRYLIC ACID). FACILITY: INSTITUT KHIMICHESKOY FIZIKI AN SSSR I TSENTRAL'NYY NAUCHNO-ISSLEDOVATEL'SKIY INSTITUT KOZHEVENNOY PROMYSH LENNOSTI.

UNCLASSIFIED

1/2 015 UNCLASSIFIED PROCESSING DATE--13NOV70

TITLE--THEORETICAL PRINCIPLES OF LEATHER TREATMENT WITH AQUEOUS POLYMER DISPERSIONS -U-

AUTHOR--ZURABYAN, K.M.

COUNTRY OF INFO--USSR

SOURCE--LEDER 1970, 21(2), 17-28

DATE PUBLISHED-------70

SUBJECT AREAS--MATERIALS

TOPIC TAGS--LEATHER, HARDNESS, PLASTIC FILM

CONTROL MARKING--NO RESTRICTIONS

DOCUMENT CLASS--UNCLASSIFIED

PROXY REEL/FRAME--2000/2019 STEP NO--GY/0000/70/021/002/0017/0028

CIRC ACCESSION NO--AP0125607

UNCLASSIFIED

2/2 015 UNCLASSIFIED PROCESSING DATE--13NOV70
CIRC ACCESSION NO--AP0125607
ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. DISPERSIONS OF SYNTHETIC POLYMERS WERE USED TO IMPREGNATE LEATHER AND TO BIND LEATHER FIBERS TO PREP. "LEFA". THE HARDNESS OF THE IMPREGNATED LEATHER INCREASED WITH INCREASING ADHESION OF THE POLYMERS TO THE LEATHER AND WITH INCREASING HARDNESS OF THE SYNTHETIC POLYMER FILM. EMULSIFYING AGENTS IMPROVED THE PENETRATION OF THE SYNTHETIC POLYMERS INTO THE LEATHER.
FACILITY: ZENTRALEN FORSCHUNGSINST. LEDER SCHUHIND, ZNIIKP, MOSCOW, USSR.

UNCLASSIFIED

1/2 029 UNCLASSIFIED PROCESSING DATE--04DEC70

TITLE--THEORETICAL BASIS FOR THE TREATMENT OF LEATHER WITH AQUEOUS POLYMER DISPERSIONS. 3. PHYSICOCHEMICAL PROCESSES INVOLVED IN IMPREGNATION OF

AUTHOR--ZURABYAN, K.M.

COUNTRY OF INFO--USSR

SOURCE--IZV. VYSSH. UCHEB. ZAVED., TEKHNOL. LEGK. PROM. 1970, (1), 73-7

DATE PUBLISHED-------70

SUBJECT AREAS--MATERIALS

TOPIC TAGS--LEATHER, SURFACE TENSION, POLYMER, CHEMICAL DISPERSION, ADSORPTION

CONTROL MARKING--NO RESTRICTIONS

DOCUMENT CLASS--UNCLASSIFIED

PROXY REEL/FRAME--3005/0776 STEP NO--UR/0323/70/000/001/0073/0077

CIRC ACCESSION NO--AT0132874

UNCLASSIFIED

2/2 029 UNCLASSIFIED

CIRC ACCESSION NO--AT0132874 PROCESSING DATE--04DEC70

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. COAGULATION OF POLYMER DISPERSIONS OF THE ANIONIC TYPE DURING IMPREGNATION OF CHROME TANNED LEATHER WAS ELIMINATED BY INCREASING THEIR SORPTION STABILITY AND PH (TO 7.5-9.0). SORPTION STABILITY OF A POLYMER DISPERSION WAS NOT A DEFINITE INDEX OF ITS SUITABILITY FOR IMPREGNATING LEATHER. THE BASIC FACTORS ELIMINATING COAGULATION OF A DISPERSION ON THE SURFACE OF LEATHER AND INFLUENCING THE DEPTH OF PENETRATION WERE THE ELECTROKINETIC POTENTIALS OF THE STRUCTURAL ELEMENTS OF LEATHER AND OF THE PARTICLES OF THE DISPERSION. THE SURFACE TENSION OF THE DISPERSION ONLY AFFECTED ITS COATING CAPACITY FOR AIR DRIED LEATHER. FACILITY: TSENT. NAUCH.-ISSLED. INST. KOZH.-OBUV. PROM., MOSCOW, USSR.

UNCLASSIFIED

1/2 020 UNCLASSIFIED PROCESSING DATE--09OCT70

TITLE--LATEX FOR FINISHING LEATHER -U-

AUTHOR-(04)-LARKINA, T.A., ZURABYAN, K.M., RAKHLIN, P.I., LEBEDEV, A.V.

COUNTRY OF INFO--USSR

SOURCE--KOZH. OBUV. PROM. 1970, 12(2) 17-21

DATE PUBLISHED--------70

SUBJECT AREAS--MATERIALS

TOPIC TAGS--LATEX, SPECIALIZED COATING, BUTADIENE, ACRYLATE, COPOLYMER, ACRYLAMIDE, LEATHER, THERMAL STABILITY/(U)DMMA65 IGP LATEX

CONTROL MARKING--NO RESTRICTIONS

DOCUMENT CLASS--UNCLASSIFIED

PROXY REEL/FRAME--1989/0264 STEP NO--BU/0030/70/012/002/0017/0021

CIRC ACCESSION NO--AP0106920

UNCLASSIFIED

2/2 020 UNCLASSIFIED

CIRC ACCESSION NO--AP0106920 PROCESSING DATE--09OCT70

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. A BUTADIENE ME METHACRYLATE COPOLYMER CONTG. 0.75PERCENT METHACRYLAMIDE WAS DEVELOPED FOR FINISHING LEATHER. THE LATEX FILMS HAD HIGH THERMAL STABILITY AND LOW SWELLING H IN SUB2 O, WHICH MADE THEM EXCELLENT SUBSTITUTES FOR DMMA-65-1-GP LATEX (PRESENTLY USED FOR FINISHING LEATHER).

UNCLASSIFIED