

USSR

VINOGRADSKIY, A. S.

"Control in Networks with Fixed Degree of Uncertainty of Arcs"

Probl. Peredachi Inform. [Problems of Information Transmission], 1972, Vol 8, No 4, pp 74-81 (Translated from Referativnyy Zhurnal Kibernetika, No 4, 1973, Abstract No 4V10, by the author).

Translation: This article is dedicated to certain problems of optimization in stochastic networks. With rather strong limitations on the network, theorems are produced for the existence and uniqueness of a minimal path and a maximal flow. The problem is also studied of constructing a flow minimizing a special type of penalty function.

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USSR

UDC 614.449.57

VINOGRADSKOY, O. N., Editor

Moscow, Rukovodstvo po bor'be s nasekomyai i klechchami -- perenoschikami  
vozbudite bolezney cheloveka (Handbook on the Control of Insects and Ticks --  
Carriers of Human Disease), Meditsina, 1972, 248 pp.

Translation: The spread of a number of infections in the territory of the USSR carried by insects and ticks makes it necessary to attract the attention of a broad class of medical workers and the population to these problems. The purpose of this edition of the "Handbook on the Control of Insects and Ticks -- Carriers of Human Diseases" -- is to familiarize the medical workers of various specialties and the population with the insects and ticks having medical significance so that when necessary these people can report the danger of the spread of infections to the corresponding medical institutions (sanitary-epidemiological stations). In addition, in many cases the basic health of an area and also the preventive and control measures can be handled by the forces of the population with the participation of social and economic organizations. Students under the direction of biology teachers can be of great assistance in solving the stated problems. Therefore, methods of controlling insects and ticks having medical significance are presented in the handbook.

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USSR

VINOGRADSKOY, O. N., Rukovodstvo po bor'be s nasekomymi i kleshchami -- perenoschikami vozбудiteley bolezney cheloveka, Meditsina, 1972, 248 pp

This handbook orients the readers in the distinguishing features of insects and ticks which are dangerous to man, where they live, what their basic biological characteristics are, what their role is in the spread of infectious diseases in various natural zones of the Soviet Union and the basic methods of controlling them.

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VINOGRADSKOY, O. N., Rudovodstvo po bor'be s nasekomymi i kleshchami -- perezanoschikami vzbuditeley bolezney cheloveka, Meditsina, 1972, 248 pp

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VINOGRADSKOY, O. N., Rudovodstvo po bor'be s nasekomymi i kleshchami -- perenoschikami vozbuditeley bolezney cheloveka, Meditsina, 1972, 248 pp

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Miscellaneous

USSR

UDC 669.15'26-194:621.787.7

VINOKUR, B. B., GRAUN, M. P., KHIL'CHEVSKAYA, T. V., GELLER, A. L., KULICHENKO, V. P., and SHIYANOVSKIY, V. I., Institute of Casting Problems, Academy of Sciences, Ukrainian SSR

"Carbide Transformations in Complexly Alloyed Steel Containing One Percent Chromium"

Moscow, Izvestiya VUZ, Chernaya Metallurgiya, No 10, 1973, pp 104-108

Abstract: On the basis of studying carbide deposition by chemical and x-ray structural methods the authors concluded that a special chromium carbide  $Me_7C_3$  is formed. The methods used include microdiffraction of carbides extracted into a replica, distortions of the second and third type, modifications in the electrical resistance, coercive forces, microhardness, expanding the steel in the state of quenching and annealing at temperatures of 400-650° C. Under ordinary an-

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VINOKUR, B. B., et al., Izvestiya VUZ, Chernaya Metallurgiya, No 10, 1973, pp 104-108

nealing conditions this carbide is formed by a gradual restructuring of the iron carbide in proportion to how much it is doped with chromium, manganese, and tungsten. A coherent bond is retained between the lattices. Lengthy annealing at 650° C will result in a separation of trigonal chromium carbide.

Table 1 compares the chemical composition of the carbide phase as a function of annealing temperature; Table 2 identifies the carbide phases after different annealing conditions. Figure 1 shows the influence of annealing temperature on change in the fine crystal structure and certain physical characteristics of a steel. Figure 2 is an electron diffraction pattern of the carbides and an identification of the carbide phases following annealing at 650° C for a period of four hours.

The article contains 2 illustrations, 2 tables, and 9 bibliographic references.

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USSR

UDC 620.17.172

BRAUN, M. P., VINOKUR, B. B., KHAUSTOVA, L. V., and GELLER, A. L.,  
Kiyev, Institute of the Problems of Casting of the Academy of  
Sciences of the Ukrainian Soviet Socialist Republic

"On the Tendency to Brittle Failure of Compositely Alloyed Steels"

Kiyev, Problemy Prochnosti, No. 9, Sep 71, pp 79 -83

Abstract : The tendency to brittle failure was experimentally investigated on a great number of compositely alloyed steels which contained Cr, Cr and Mn, Cr and Mn and additional alloying with Ni or Si, and on standard industrial steels 40KhN, 30KhGSA, 35KhNM, and 34KhN3M. A reduced softness coefficient in testing notched specimens is considered a brittleness criterion and the tendency of steel to brittle failure is rated by a coefficient  $\beta$  characterizing the notch effect and determined by a method of Davydenkov-Belyayev. The investigation results are discussed by reference to tabulated data and diagrams showing the character of tested specimens and effects of the notch form and depth on the brittleness of steel. Five illustr., three tables, ten biblio. refs.

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USSR

UDC 621.791.011:669.15-194

ERAUN, M. P., VINOKUR, B. B., BONDAR', V. T., Institute of Casting Problems, Academy of Sciences Ukrainian SSR, GELLER, A. L., Donets Scientific Research Institute of Ferrous Metallurgy, KONDRASHEV, A. I., PILYUSHENKO, V. L., TKACHEV, V. V., New Kramatorsk Machinery Plant imeni V. I. Lenin

"Strength and Embrittlement of Welded 25Kh2GMT Steel in Large Cross Sections"

Kiev, Avtomaticheskaya Svarka, No 3, Mar 71, pp 18-22

Abstract: A study was made of the tendency of 25Kh2GMT steel toward temper brittleness, cold brittleness, and notch sensitivity in various parts of the cross section of a large sample 1,000 mm in diameter. The relation of these characteristics to the metallurgical nature and structural conversions in the steel during heat treatment of large products was established. The tests showed the possibility of safe utilization of 25Kh2GMT steel in large cross sections.

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UDC 621.791.756:621.785

BRAUN, M. P., ABRAMOVA, E. P., VINOGRAD, B. B., MARIANSON, M. D., IVANOVA, R. K.,  
KHIL'CHEVSKAYA, T. V., and MALAY, A. Ya., Institute of Casting Problems, Academy  
of Sciences UkrSSR

"Seam Zone Phase Composition of Complex Alloyed Steel"

Kiev, Avtomaticheskaya Svarka, No 10, Oct 70, pp 1-5

Abstract: A description is given of experiments performed to clarify the nature of the processes responsible for the embrittlement of the material near a welding seam. These experiments involved quantitative chemical analysis of the carbide deposit precipitated after welding, as well as other products of thermal treatment. Specimens 10 mm in diameter and 100 mm in length were dissolved in the course of an hour in an electrolyte made up of 50 g of glucose and 100 g of ammonium chloride in 800 ml of water. The current density for the electrolysis was 0.03 a/cm<sup>2</sup>. The composition of the precipitate was determined by x-ray diffraction with direct photography in cobalt or chromium radiation, checked by the microdiffraction method, and subjected to chemical analysis. For the detection of titanium carbide, the precipitate was boiled in a 0.05% solution of hydrochloric acid for five hours. Other details are given. It is concluded that the titanium and molybdenum carbides are not responsible for the embrittlement of the steel.

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1/2 022 UNCLASSIFIED PROCESSING DATE--16OCT70  
TITLE--MICROALLOYING OF STEEL 25KH2GML -U-  
AUTHOR--(03)-BRAUN, M.P., DENISEVICH, YE.A., VINOKUR, B.B.  
COUNTRY OF INFO--USSR  
SOURCE--LITEINOE PROIZVOD. 1970, (1), 15-17  
DATE PUBLISHED-----70  
SUBJECT AREAS--MATERIALS  
TOPIC TAGS--ALLOY DESIGNATION, MICROALLOYING, IMPACT STRENGTH, LOW ALLOY  
STEEL, CHROMIUM STEEL, MANGANESE STEEL, MOLYBDENUM STEEL, TITANIUM  
CONTAINING STEEL, ZIRCONIUM CONTAINING STEEL, VANADIUM CONTAINING STEEL,  
NIOBIUM CONTAINING STEEL/(U)25KH2GML LOW ALLOY STEEL  
CONTROL MARKING--NO RESTRICTIONS  
DOCUMENT CLASS--UNCLASSIFIED  
PROXY REEL/FRAE--1995/1332 STEP NO--UR/0128/70/000/001/0015/0017  
CIRC ACCESSION NO--AP0116792  
UNCLASSIFIED

2/2 022

UNCLASSIFIED

PROCESSING DATE--16OCT70

CIRC ACCESSION NO--AP0116792

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. THE EFFECT WAS STUDIED OF MICROAMTS. OF TI, ZR, V, AND NB ON THE STRUCTURE AND IMPACT STRENGTH OF STEEL 25KH2GML (C 0.26-0.29, SI 0.18-0.29, MN 1.35-1.60, CR 1.70-2.00, MO 0.58-0.70, S 0.016-0.022, AND P 0.017-0.023 WT.PERCENT). THE STEEL WAS MELTED IN AN INDUCTION FURNACE, DEOXIDIZED WITH FE-SI (500G-100KG) AND WITH AL (80G-100KG), AND ALLOYED WITH 0.05-0.5PERCENT OF ONE OF EACH OF THE ABOVE MENTIONED ELEMENTS. STEEL WAS NORMALIZED FOR 4 HR AT 920DEGREES, TEMPERED AT 650DEGREES, AND COOLED IN AIR. TI FORMED OXIDES, SILICATES, NITRIDES, AND SULFIDES AS WELL AS (FE, MN, TI) SULFIDES AND OXYSULFIDES TIS-TIO SUB2. ZR BEHAVED SIMILARLY TO TI EXCEPT THAT IT REACTED MORE ACTIVELY WITH S. NB FORMED SULFIDES, SILICATES, NITRIDES, AND CARBOSULFIDES, AND AFFECTED DISTRIBUTION OF CARBIDES. AT SMALLER THAN OR EQUAL TO 0.15PERCENT NB CARBIDES FORMED A NETWORK ALONG GRAIN BOUNDARIES, AND SMALLER THAN 0.35PERCENT NB CARBIDES BECAME COARSER WITH SIMULTANEOUS DECREASE OF IMPACT STRENGTH. AT 0.15-0.4PERCENT NB THE IMPACT STRENGTH WAS FAIRLY HIGH (5.5 KG,M-CM PRIME2). THE MOST FAVORABLE ADDITIVE WAS V, WHICH AT 0.15PERCENT SHOWED HIGHEST IMPACT STRENGTH OF ALL ADDITIVES (6.5 KG,M-CM PRIME2) AND UP TO 0.2-0.3PERCENT DID NOT AFFECT UNFAVORABLY THE STRUCTURE. THE ADDN. OF V 0.1-0.2PERCENT IS RECOMMENDED.

UNCLASSIFIED

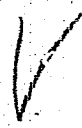
1/2 : 009

UNCLASSIFIED

PROCESSING DATE--11SEP70

TITLE--HARDENABILITY OF STRUCTURAL STEELS --U-

AUTHOR--VINOKUR, B.B., PILYUSHENKO, V.L.



COUNTRY OF INFO--USSR

SOURCE--HARDENABILITY OF STRUCTURAL STEELS (PROKALIVAYEMOST' KONSTRUKSIONNYKH STALEY) KIEV, NAUKOVA DUMKA, 1970, 106 PP

DATE PUBLISHED-----70

SUBJECT AREAS--MATERIALS

TOPIC TAGS--BIBLIOGRAPHY, STEEL HARDENING

CONTROL MARKING--NO RESTRICTIONS

DOCUMENT CLASS--UNCLASSIFIED

FROXY PEEL/FAME--1986/1995

STEP NO--UR/0000/70/000/000/0001/0106

CIRC ACCESSION NO--AM0103696

UNCLASSIFIED

2/2 . 009

CIRC ACCESSION NO--AM0103696

UNCLASSIFIED

PROCESSING DATE--11SEP70

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. TABLE OF CONTENTS: INTRODUCTION  
 3. EXPERIMENTAL METHODS OF DETERMINING HARDENABILITY TEMPERABILITY AND  
 HARDENABILITY. 5. VOLUMETRIC HARDENING METHOD. 8. END HARDENING  
 METHOD AND ITS VARIETY. 39. NEMCHINSKIY METHOD. 45. CALCULATED  
 METHODS OF DETERMINING HARDENABILITY METHOD OF COEFFICIENTS MULTIPLIERS  
 55. DETERMINING HARDENABILITY BY DIAGRAMS OF CONVERSION OF SUPERCOOLED  
 AUSTENITE. 61. METHODS OF MODELING HARDENING PROCESSES GENERAL  
 DESCRIPTION. 83. NEW METHOD OF MODELING. 86. LITERATURE. 104.  
 ...THE BOOK WAS INTENDED FOR SCIENTIFIC AND ENGINEERING AND TECHNICAL  
 WORKERS OF METALLURGICAL AND MECHANICAL ENGINEERING SPECIALTIES, AND  
 ALSO FOR TEACHERS AND STUDENTS OF COLLEGES OF CORRESPONDING SPECIALTIES.

UNCLASSIFIED

USSR

UDC 628.315.2

VINOKUR, E. A., GRIGORYAN, KH. A., and STEPANYAN, I. S., Kirovokan

"Purification of Sewage From the Production of Ion Exchange Resins"

Moscow, Vodosnabzheniye i Sanitarnaya Tekhnika, No 2, 1972, pp 13-14

Abstract: A study was carried out on the purification of sewage from the production of ion exchange resins KU-2, AV-17 and AN-18. Principal impurities in sewage from KU-2 are dichloroethane and sulfo-acids. Sewage from AV-17 and AN-18 contains methanol, benzene and various amines. Ozonization, chlorination and absorption methods proved to be inadequate for purification purposes. A very successful method was based on incineration, passing sewage through a temperature zone of 900-1000°C. Since KU-2 sewage could not be purified by biological oxidation (dichloroethane is toxic towards the microorganisms), it had to be distilled first through a column with 18 theoretical plates. The distillate collected the dichloroethane, and the residue could then be purified biologically. Sewage from the anions AV-17 and AN-18 could be purified by biological oxidation, using a two stage aeration.

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USSR

UDC 536.248.2+536.433

VISHNEV, I. P., VINOKUR, Ya. G., SHAPOSHNIKOV, V. A., GOROKHOV, V. V.

"Influence of Pressure on Bubble Boiling Crisis of Helium-1 in Vertical Channels"

Moscow, Doklady Akademii Nauk SSSR, Vol 206, No 5, 1972, pp 1,090-1,092.

Abstract: The purpose of this work was to determine the first critical heat flux for helium boiling in vertical channels under conditions of natural circulation and on the surface of a vertical cylinder in a large volume at other than atmospheric pressures. During each experiment, the heat flux was increased until the wall temperature began to rise sharply. The heat flux corresponding to this moment was taken as the critical heat flux. The author's found that the first critical heat flux in liquid helium depends on vapor content and flow rate, and also on the ratio of absolute dimensions of the channel within the limits  $0 < L/d < 15$ , and suggests an equation for the calculation of  $q_{cr1}$  at distance  $x$  from the entry to a vertical channel at atmospheric pressure. When the pressure is other than atmospheric, the factors above must be supplemented by the density of helium vapor and heat of evaporation at the pressure used. A formula is presented which can describe the process at various pressures. Experimental and calculated data agree satisfactorily.

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1/2 042

UNCLASSIFIED

PROCESSING DATE--30OCT70

TITLE--KINETICS OF THE THERMAL DECOMPOSITION OF DINITROXYDIETHYLNITRAMINE  
IN THE ABSENCE OF GAS EXHAUST FROM THE REACTION ZONE -U-  
AUTHOR-(04)-SAMOYLENKO, N.G., VINOKUROV, A.A., ABRAMOV, V.G., MERZHNOV,  
A.G.



COUNTRY OF INFO--USSR

SOURCE--ZH. FIZ. KHIM. 1970, 44(1), 39-42

DATE PUBLISHED-----70

SUBJECT AREAS--CHEMISTRY, PROPULSION AND FUELS

TOPIC TAGS--THERMAL DECOMPOSITION, EXHAUST GAS, ORGANIC NITRO COMPOUND,  
CHEMICAL REACTION KINETICS, ACTIVATION ENERGY, AMINE

CONTROL MARKING--NO RESTRICTIONS

DOCUMENT CLASS--UNCLASSIFIED

PROXY REEL/FRAME--1995/1406

STEP NO--UR/0076/70/044/001/0039/0042

CIRC ACCESSION NO--AP0116853

UNCLASSIFIED

2/2 042

UNCLASSIFIED

PROCESSING DATE--30OCT70

CIRC ACCESSION NO--AP0116853

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. A CALORIMETRIC METHOD IS DESCRIBED FOR DETN. OF KINETICS OF THE THERMAL DECOMP. OF DINITROXYDIETHYLNITRAMINE WHEN REACTION PRODUCTS ARE NOT BEING REMOVED FROM THE REACTION ZONE. THE PRODUCTS ACT AUTOCATALYTICALLY, INCREASING THE REACTION RATE BY A FACTOR OF 100 AND DECREASING THE ACTIVATION ENERGY OF DECOMP. FROM 45 TO 32 KCAL-MOLE. THE HEAT OF REACTION INCREASED 1.5 TIMES IN COMPARISON WITH THAT OBTAINED IN AN OPEN SYSTEM. THE TIME DEPENDENCE OF HEAT EVOLUTION SHOWS TWO MAX. FACILITY: INST. KHIM. FIZ., CHERNOGOLOVKA, USSR.

UNCLASSIFIED

USSR

UDC 534.222.2

VINOKUROV, A. YA., KUDRYAVTSEV, YE. M., MIRONOV, V. D., TREKHOV, YE. S.  
"Study of Oscillatory Relaxation of Carbon Monoxide"

V sb. 3-y Vses. simpozium po goreniyu i vzryvu, 1971 (Third All-Union Symposium on Combustion and Explosion, 1971--collection of works), Chernogolovka, 1971, pp 282-284 (from RZh-Mekhanika, No 11, Nov 71, Abstract No 11B123)

Translation: The distribution of the density  $\rho$  in the relaxation zone of a shock wave and the time  $\tau$  of oscillatory relaxation of CO in the 2,200-3,500°K temperature range are found by measuring the radiation intensity of the valence band of the CO molecule (wavelength 4.76 microns). The dependence of  $\tau$  on  $T$  is described by the formula

$$\rho\tau = \exp(194T^{-1/3} - 10.7) \{1 - \exp(1 - 3080/T)\}^{-1} \text{microseconds} \cdot \text{at} \quad (1)$$

The existing divergence of the values of  $\tau$  found from the data of other authors is possibly connected with the fact that, in contrast to (1), the other authors represent the result of averaging  $\tau$  over the relaxation zone.

1/1

172 008

TITLE--FLOTATION OF BARITE FROM A DESLIMED SLURRY AT THE SALAIR PROCESSING DATE--19SEP70

CONCENTRATING MILL -U-

AUTHOR--(04)-VINOKUROV, F.P., KALMYKOV, N.N., SHAKHMATOV, V.N., DENISENKO, Z.I.

COUNTRY OF INFO--USSR

SOURCE--TSVET. METAL. 1970, 43(1), 86-7

DATE PUBLISHED-----70

SUBJECT AREAS--MATERIALS, EARTH SCIENCES AND OCEANOGRAPHY

TOPIC TAGS--FLOTATION, BARIUM MINERAL, SLIME

CONTROL MARKING--NO RESTRICTIONS

DOCUMENT CLASS--UNCLASSIFIED

PROXY REEL/FRAME--1986/0762

CIRC ACCESSION NO--AP0102727

STEP NO--UP/0136/70/043/001/0086/0087

UNCLASSIFIED

2/2 008

CIRC ACCESSION NO--AP0102727  
ABSTRACT/EXTRACT--(U) GP-0-

UNCLASSIFIED

PROCESSING DATE--18SEP70

ABSTRACT. AN ATTEMPT WAS MADE TO DECREASE THE AMT. OF SLURRIES IN THE FEEDING OF THE BARITE FLOTATION. WHEN DESLIMED SLURRY IS USED THE FLOTATION OF THE BARITE IMPROVES CONSIDERABLY, THE EXTN. INCREASES, THE QUALITY OF THE BARITE CONCS. ALSO IMPROVES. THE DESLIMING OPERATION WAS INVESTIGATED IN SOME DETAIL. THE TECHNIQUE USED AND DESCRIBED HEREIN HAS MANY ADVANTAGES AND IS TO BE PREFERRED OVER THE PRESENT TECHNOL.

UNCLASSIFIED

USSR

UDC 621.375.82

SHERSTOBITOV, V. YE., VINOKUROV, G. N.

"Properties of Unstable Resonators with a Large Equivalent Fresnel Number"

V sb. Kvant. elektronika (Quantum Electronics--collection of works), No 3, Moscow, Soviet Radio, 1972, pp 36-44 (from RZh-Fizika, No 12, Dec 72, Abstract No 12D909)

Translation: Results are presented from numerical calculations of modes in unstable resonators. It is demonstrated that insignificant smoothing of the edge of the mirrors leads to significant improvement of the selected properties of the resonator. The conclusion is drawn that in spite of the predictions of the theory of unstable resonators with a sharp mirror edge, real resonators with a large equivalent Fresnel number must insure oscillation in the lower transverse mode described by the geometric approximation. The bibliography has 14 entries.

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USSR

UDC 629.78.015.4

VINOKUROV, L. P. and GERINSHEYN, V. R.

"Determination of Critical Load for a Central Compressed Rod for Calculation of Strain Nonlinearity"

Samoletostr. i Tekh. Vozd. Flota--Nauchn.--Tekhn. Sb. (Aircraft Construction and Air Fleet Technology--Scientific and Technical Collection of Works), No 30, 1973, pp 54-58 (from Referativnyy Zhurnal--Raketostroyeniye, No 5, May 73, Abstract No 5.41.207 by the authors)

Abstract: A method is proved and proposed for calculating the strain nonlinearity, associated with the introduction of a nonlinear degree of strain, suggested by Sveynger and Kerber for tension and developed by the authors for other types of strain. Equations for determining the critical load of a central compressed rod are solved by the proposed "inverse" method which consists of finding a load according to an assigned magnitude of displacement. 2 figures, 1 table.

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USSR

UDC 669.71'721'5.018.9.4

BABICHEV, B. I., ~~VINOKUROV, M. K.~~, RYAZHSKAYA, T. K.

"Influence of Heating Following Homogenization on Properties of Ingots of Al-Mg-Zn System Alloy"

Metallurgiya [Metallurgy -- Collection of Works], No 14, Leningrad, Sudostroyeniye Press, 1971, pp 52-54, (Translated from Referativnyy Zhurnal, Metallurgiya, No 5, 1972, Abstract No 5 G235 by the authors).

Translation: The influence of modes of homogenization and heating for rolling on mechanical properties and microstructure of ingots in the Al-Mg-Zn alloy system are studied with a ratio Mg/Zn = 2. Increasing heating time before rolling at 410° from 1 to 10 hours results in separation of chromium and other refractory phases within the grains of the solid solution. 1 Figure; 1 Table; 2 Biblio. Refs.

1/1



USSR

UDC 669.71.018.9.4

TSABROV, N. D., VINOKUROV, N. D., MARCHENKO, A. M., PECHENEV, V. S., KOPYTOV, G. A., VOL'KHIN, G. D., BERNSHTEYN, G. G.

"Experiment in Operating a Vacuum Mixer"

Tekhnol. legkikh splavov. Nauchno-tekhn. byul VILSa (Light Alloy Technology. Scientific and Technical Bulletin of the VILS), 1970, No 5, pp 26-31 (from RZh-Metallurgiya, No 4, Apr 71, Abstract No 4G206)

Translation: The application of a vacuum mixer for evacuating liquid alloys based on aluminum is expedient and has a number of advantages over the methods used earlier: the gas saturation of the metal is reduced appreciably; the technological plasticity of the ingots is increased; an increase in the casting rate by 10-15% is possible; and the number of defects during ultrasonic control of the products is reduced sharply. The schematic of the mixer and its operation are described. There are 4 illustrations and 1 table.

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1/2 044

TITLE--PROPERTIES AND USE OF AN ALUMINUM POWDER  
ATMOSPHERE -U-  
AUTHOR--(05)--LITVINTSEV, A.I., TSABROV, N.D., VINOBUROV, N.D., TITOV, V.V.,  
BORZUNOV, A.A.  
COUNTRY OF INFO--USSR

UNCLASSIFIED

PROCESSING DATE--02OCT70  
DEGASSED IN AN INERT

SOURCE--TSVET, METAL. 1970, 43(2), 62-4

DATE PUBLISHED-----70

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

TOPIC TAGS--ALUMINUM POWDER, POWDER METAL PRODUCTION, POWDER METAL  
PROPERTY, METAL DEGASSING, INERT GAS, INDUSTRIAL FURNACE, HOT ROLLING,  
COLD ROLLING, DUCTILITY, HEAT RESISTANCE

CONTROL MARKING--NO RESTRICTIONS

DOCUMENT CLASS--UNCLASSIFIED

PROXY REEL/FRAME--1989/1919

STEP NO--UR/0136/70/043/002/0062/0064

CIRC ACCESSION NO--AP0108248

UNCLASSIFIED

2/2 044

CIRC ACCESSION NO--AP0108248

UNCLASSIFIED

PROCESSING DATE--02OCT70

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. THE HIGH TEMP. DEGASSING OF LARGE VOLS. OF AL POWDERS ON INDUSTRIAL SETUP WAS TESTED. UP TO 1600 KG OF AL POWDER WAS PURED INTO THE USEFUL VOL. OF THIS SETUP, WHICH WAS THEN PLACED INTO A COLD FURNACE, WHEREUPON AN AR ATM. WAS INTRODUCED. THE TEMP. WAS MEASURED AT THE UPPER, MIDDLE, AND LOWER PORTIONS OF THE DEGASSING CONTAINER. A 4TH THERMOCOUPLE WAS PLACED INSIDE THE CONTAINER. THE TEMP. DROP BETWEEN THE UPPER AND THE LOWER ZONES WAS SIMILAR TO 50DEGREES. THE RESULTS OF THE GAS ANAL. INDICATE THAT THE GAS CONTENT OF THE AL POWDER IS DETD. BY THE TOTAL CONTENT OF THE FRAGMENTS OF THE HYDROXY BOUNDARIES IN CONGLOMERATES OF CLUMPED PARTICLES. THE EFFECTIVENESS OF THE DEGASSING WAS THEN STUDIED IN ORDER TO BE ABLE TO EMPLOY THE POWDER IN THE PRODUCTION OF SEMIFINISHED PRODUCTS. BASED ON THE RESULTS OF THE MECH. PROPERTIES MEASUREMENTS IT CAN BE SEEN THAT HOT ROLLED STRIPS ACQUIRE INCREASED PLASTICITY, WHEREAS THE COLD ROLLED STRIPS ARE STABLE RELATIVE TO THE STRENGTH, PLASTICITY, AND HEAT RESISTANCE.

UNCLASSIFIED

USSR

VINOKUROV, P. S.

UDC 681.327.45'18(02)

"Collators: RPM80-2M, RPM80-2MS, SE80-3"

Mashiny raskladochno-podborochnyye i sortiroval'nyye (RPM80-2M, RPM80-2MS, SE80-3) (cf. English above), Moscow, "Statistika", 1972, 248 pp, ill., 1 r., 23 k (from RZh-Avtomatika, Telemekhanika i vychislitel'naya tekhnika, No 11, Nov 72, Abstract No 11B345 K)

Translation: The book consists of three parts. I. On certain aspects of automation: relay circuits and their elements. II. Methods for testing and adjusting the operation of RPM80-2M and RPM80-2MS collators: general information on collators; testing and adjusting the drive operation; testing and adjusting the operation of the device for supplying and carrying punched cards; testing and adjusting the operation of recognition and control units. III. Methods of testing and adjusting the SE80-3 collator: general information on the machine; startup and operating principles of the machine in digital sorting; operating principles of the control and card selection unit; operating principles of the alphabetical sorting unit; testing and adjustment of the functional elements of the SE80-3 machine. The book is intended for use in training personnel in servicing the machines. I. Sh.

1/1

USSR

UDC: 621.791.052:539.4-974

VINOKUROV, V. A., Professor, Doctor of Technical Sciences

"Computing the Durability of Welding Alloys Operating at Low Temperatures"

Moscow, Vestnik mashinostroveniya, No. 11, 1970, pp 21-25

Abstract: One of the chief requirements of welding alloys and low-carbon, low-alloy steels under low-temperature conditions is resistance to destructive effects. This article considers a general methodological approach to the problem of studying such effects in welded joints using stretchable joints with non-fusion as an example. Eight factors affecting the average deformation of the weak joint cross section are listed. Since the theory of plasticity can as yet offer a solution for this problem of resisting destructive effects in only the simplest cases, the author proposes an approximate experimental-theoretical method for determining the plasticity limit in the cross section, and considers some practical

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USSR

VINOKUROV, V. A., Vestnik mashinostroyeniya, No 11, 1970, pp  
21-25

examples in which this method can be applied. It is asserted that this method and specially developed measuring devices permit making tests of various welded joints with different types of seam. A curve is plotted showing the criterion of material sensitivity as a function of the temperature.

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Welding

USSR

VINOKUROV, V. A.

"Annealing Welded Structures for Reducing Stress"

Moscow, Otpusk Svarnykh Konstryktsiy Ilya Snizheniya napryazheniy, Mashinostroyeniye, 1973, 213 pp

Translation of Introduction: The process of welding exerts a complicated effect on the metal of a structure. As a result of recrystallization of the metal during heating and subsequent rapid cooling, tempering structures are formed. Because of the nonuniform heating and cooling, plastic deformations are generated which take place in the entire range of temperatures from  $T_{room}$  to  $T_{melt}$ . There occurs cold hardening of the metal and in combination with temperatures of 200-250° C, its aging. As a consequence of these processes we see an increase in hardness and reduced ductility and plasticity of the metal. Significant permanent stresses are formed which usually reach yield stress. In the welding of large parts and their subsequent cooling, high triaxial permanent stresses arise. Analogous phenomena are generated during the heat treatment of large forgings and castings as well as monolithic

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VINOKUROV, V. A., *Otpusk Svarnykh Konstruktsiy Ilya Shizheniya napryazheniy, Mashinostroyeniye, 1973, 213 pp.*

welded billets. The necessity of reducing the high permanent stresses causes us to use annealing of structures, which is practically the only way of decreasing the internal stresses in large parts. Heat treatment of welded structures after welding, including heating to temperatures no higher than the temperature corresponding to the point  $A_1$  and to the holding time, is called annealing of welded structures. According to the terminology used in physical metallurgy, this heat treatment may be examined as annealing if we are speaking about the effect on the quenched segments of the metal or as annealing of the first kind if we are concerned with the reduction of the metal to a more balanced state after plastic deformation (cold working) or the removal of natural stresses. The individual annealing of quenching structures on the one hand and the recrystallization annealing and annealing to remove stresses on the other hand in welded structures is difficult and is in no way necessary. Therefore in the future by change in the properties of the metal during annealing we shall mean both the processes of annealing the quenching structures and changes in the cold-deformed metal. Depending  
2/13.



USSR

VINOKUROV, V. A., Otpush Svarnykh Konstriksiy Ilya Shizheniya napryazheniy, Mashinostroyeniye, 1973, 213 pp

on the temperature, the annealing may be low (to 300° C), average (300-400° C), and high (400-650° C and higher). Change in the properties of the quenched carbon steel during annealing depends on the annealing temperature and the holding time. During low annealing the hardness is reduced very little but the brittleness is reduced. After quenching and high annealing the steel assumes a high ductility and plasticity with significant hardness. The completeness of carrying out the processes of change in the properties of the quenched metal after annealing depends on its duration. The initial period is characterized by the greatest change in the properties. A. P. Gulyayev generalized the recommendations on determining the properties of quenched carbon steel after annealing (47). Identical values of hardness (independent of how the hardness was produced, by lengthy holding time or by annealing temperature) are represented by fully edetermined values of  $\sigma_v$ ,  $\sigma_t$ ,  $\delta$ ,  $\psi$ , and  $\alpha_n$ . A substantial influence is exerted by the annealing on the properties of steels which have undergone cold deformation or deformation aging. In carbon weldable steels the plasticity may be increased by annealing to the original level corresponding to the

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USSR

VINOKUROV, V. A., *Otpusk Svarnykh Konstriksiy Ilya Shizheniya napryazheniy, Mashinostroyeniye, 1973, 213 pp.*

state of the hot-rolled metal. In several brands of alloyed steel during annealing to determined temperatures the impact strength is reduced. An irreversible annealing brittleness appears at an annealing temperature near 300° C. An irreversible brittleness is generated during slow cooling at temperatures of 500-650° C. Repeated heating up to these temperatures and rapid cooling allows the brittleness to be removed. Chroma-nickel and chrome-manganese steels were subjected to reversible brittleness. In the carbon steels the annealing brittleness does not appear distinctly. If significant achievements are reached in the investigation of the processes of change in the properties of metals during annealing, then this can never be said with respect to studying the relaxation of stresses. Research work on reducing stresses during the annealing of welded structures is mainly experimental and does not answer the question as to how the reduction of stresses depends on the initial field of stresses and shape of the part. Specific results obtained on individual objects do not permit establishing any law on the basis of which we could denote the necessary duration of annealing in different cases. The practice of denoting annealing conditions

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VINOKUROV, V. A., Otpusk Svarnykh Knostriksiy Ilya Shizheniya napryazheniy, Mashinostroyeniye, 1973, 213 pp

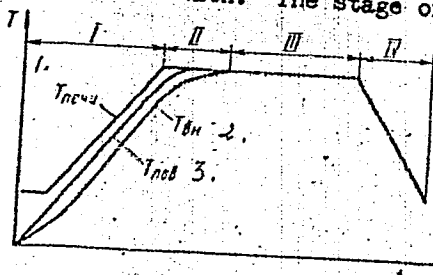
based on the investigations in the field of physical metallurgy, on experience and traditions of plants, was transferred to the welded structures. High annealing is an effective means of reducing the permanent stresses in all points of the welded structure, which advantageously distinguishes it from the other methods of reducing stresses for which change in stresses has a non-uniform character and is accompanied by additional plastic deformation of the metal. There are numerous results of tests for creep of metals at temperatures corresponding to the annealing temperatures. However, these tests were conducted under conditions of constant temperature in the course of hundreds and thousands of hours. The initial segment of non-steady-state creep was usually not registered; therefore, as a rule it is impossible to use these results. Furthermore, during annealing the reduction of stresses takes place to a significant degree at the stage of heating, that is, the process of stress relaxation is accomplished not at a constant temperature but at a variable one. Annealing may be divided into several stages (Fig. 1): heating I, balancing of temperature both in length and in cross section of the part II, holding time III, and cooling IV. Each of the annealing stages has its own features. Let us mention the major ones. In the process of heating in large parts there arises a difference in temperatures by cross

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USSR

VINOKUROV, V. A., *Otpusk Svarnykh Konstriksiy Ilya Shizheniya napryasheniy, Mashinostroyeniye, 1973 213 pp*

section: in the depth of the metal the temperature  $T_{inside}$  is lower than the surface  $T_{surf}$ . The difference in temperatures depends on the rate and conditions of heating. Much of the special literature (130) has been devoted to questions of heating parts and balancing of temperatures in them. Certain data are given in Chapter Five which are necessary for a justified determination of the time for balancing the temperatures. The duration of holding time must begin as a function of the necessary fullness of occurrence of these of other processes, one of which is the reduction of stresses which this monograph is basically concerned with. The stage of cooling



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VINOKUROV, V. A, Otpusk Svarnykh Konstriksiy Ilya Shizheniya napryasheni, Mashinostrcyeniye, 1973, 213 pp

Figure 1. Basic Stages of Annealing:  $T_{furn}$  is the temperature in the furnace;  $T_{surf}$  is the temperature on the surface of the part;  $T_{inside}$  is the temperature inside the part.

1.  $T_{furn}$
2.  $T_{inside}$
3.  $T_{surf}$

is characterized by the rate of change in temperature which influences the properties of the metal and the formation of additional permanent stresses. They are formed at high rates of cooling of large parts when a temperatures difference arises between the surface and the deep layers, which in turn leads to the formation of temporary stresses. If the temporary stresses are found to be so significant that plastic deformation takes place, then after complete cooling of the structure additional permanent stresses appear in it. Therefore, the rate of cooling of large parts is limited although in certain instances this is negatively expressed in the properties of the metal.

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VINOKUROV, V. A., Otpusk Svarnykh Konstriksiy Ilya Shizheniya napryasheniy, Mashinostroyeniye, 1973, 213 pp

High annealing sometimes is used as a method of removing displacements which arise in the structures after welding. By creating elastic and plastic deformations, after welding, the part is given a shape, by attaching it in a rigid adaptor and then subjecting it to annealing along with the adaptor. Due to the processes of creep the lastic deformations are converted into plastic ones. After annealing the part retains that shape which it had, being attached in the adaptor. A brief survey of the features of annealing and the processes taking place in the metal shows that the main ones are: (a) change in the properties of the metal and (b) reduction in the permanent stresses. In certain instances the basic role is assigned to change in the properties of the metal, but often as the decisive factor we have the level of the permanent stresses. It is obvious that in each specific case the conditions of annealing must be as a function of the completeness of carrying out the basic process or both process of directly. The purpose of this book is to discuss the laws of relaxation of natural stresses during annealing on the basis of a computational method of determining relaxation of stresses based on the premises of the theory of elasticity, plasticity and creep.

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USSR

VINOKUROV, V. A., Otpusk Svarnykh Konstriksiy Ilya Shizheniya napryasheniy, Mashinstroyeniye, 1973, 213 pp

The results of the investigations permit us to recommend rational conditions of annealing, show ways of reducing its duration, as well as helping in a number of cases to justify not doing it in general. The obtained data on relaxation of permanent stresses are valid not only for welded structures but also for parts subjected to annealing for removal of stresses after quenching or normalization. Change in the properties of the metal during annealing has not been examined in detail since this question has been discussed sufficiently in the special literature (47). The book has been written mainly from materials of the author's investigations as well as references to many works of other investigators. A significant part of the experimental data was obtained in collaboration with Candidate of Technical Sciences V. V. Nikolayev at the Department of Welding of the Moscow Higher Technical School imeni N. E. Bauman. Several investigations on full-scale parts were done at the Novokramatorsk Machine Construction Plant imeni Lenin.

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USSR

VINOKUROV, V. A., Otpusk Svarnykh Konstriksiy Ilya Shizheniya napryasheniy, Mashinostroyeniye, 1973, 213 pp

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VINOKUROV, V. A. Otpusk Svarnykh Konstritksiy Ilya Shizheniya napryasheniy, Mash nostroyeniye, 1973, 213 pp

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USSR

VINOKUROV, V. A., Otpusk Svarnykh Konstritksiy Ilya Shizheniya napryasheniy,  
Mashinostroyeniye, 1973, 213 pp

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VINOKUROV, V. G., DIMITRIYEV, Yu. K., YEVREINOV, E. V., KOSTELYANSKIY, V. M.,  
LEKHNOVA, G. M., MIRENKOV, N. N., REZANOV, V. V., KHOROSHEVSKIY, V. G.

"A Homogeneous Computer System of Minicomputers"

Vychisl. Sistemy [Computer Systems -- Collection of Works], No 51, Novosibirsk,  
1972, pp 127-145 (Translated from Referativnyy Zhurnal Kibernetika, No 6,  
1973, Abstract No 6V600, by the authors).

Translation: The expediency is demonstrated of constructing homogeneous com-  
puter systems (HCS) of minicomputers. A two-dimensional computer system, the  
MINIMAKS is described. The elementary machines of this system are based on  
ASVT-M modules. The composition of typical HCS software is presented. 20  
biblio. refs.

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USSR

VINOKUROV, V. G., ZASTEVA, V. V., KOSTELYANSKIY, V. M., NOVOKHATNIY, A. A.

"Use of Minicomputers as Centers for Processing of Data of Remote Automatic Queueing Systems"

Vychisl. Sistemy [Computer Systems -- Collection of Works], No 51, Novosibirsk, 1972, pp 146-156 (Translated from Referativnyy Zhurnal Kibernetika, No 6, 1973, Abstract No 6V601, by the authors).

Translation: Methods of utilization of minicomputers in remote automatic queueing systems (RAQS) are studied. The range of jobs performed by these systems is defined. The expediency is demonstrated of using minicomputers at various levels of RAQS hierarchy, including at the level of the data processing center. In the last case, the data processing center uses a system of minicomputers in place of one or a few large computers. The structure of the data processing center of an airline ticket reservation system is presented.

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Pharmacology and Toxicology

USSR

UDC 612.018:547.756]:577.23

VINOKUROV, V. G., and PIDEVICH, I. N., Laboratory of Organic Synthesis and Laboratory of Pharmacology of the Cardiovascular System, Institute of Pharmacology, Academy of Medical Sciences USSR, Moscow

"The Energy of the Highest Filled Molecular Orbit and Antiserotonin Activity of Certain Drugs"

Moscow, Byulleten Eksperimentalnoy Biologii i Meditsiny, Vol 71, No 2, Feb 71, pp 51-54

Abstract: The energy coefficients  $K_i$ , which serve as a measure of electron-donor properties, of the outer filled molecular orbits of several serotonin antagonist were calculated by the simplified Hückel theory with LCAO approximation. The lower the  $K_i$  value, the higher the electron-donor activity of chemical compounds. It had been proposed that serotonin and its antagonists form charge-transfer complexes with tissue receptors, which is of significance for their pharmacological effect. A number of new indole derivatives with D-, M-, and T-antiserotonin activity were included in this study: cyproheptadine ( $K_i = 0.327$ ), dialkylindoles ( $K_i = 0.5-0.53$ ), and thiopyranoindole derivatives ( $K_i = 0.091, 0.057$ ). No relationship between D-, M-, and T-antiserotonin activity and the  $K_i$ -values of the individual compounds was found.

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USSR

VINOKUROV, V. G., et al, Byulleten Eksperimentalnoy Biologii i Meditsiny,  
Vol 71, No 2, Feb 71, pp 51-54

This indicates that other factors, such as the total-charge values and the geometry of individual atoms, the existence of hydrogen bonding, must also play a role in the above complex formation. Thus, the results of this study did not indicate whether the electron-donor properties of these drugs are of significance for complex formation. Additional studies of the above serotonin antagonists are proposed, which should include other quantum-chemical characteristics such as bond orders, atomic charges, free valences, and other parameters.

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1/2 027

UNCLASSIFIED

PROCESSING DATE--18SEP70

TITLE--PYRAZOLES. LXIV. PROTONATION OF ANTIPYRINE ANALOGS -U-  
AUTHOR--(05)-GRANDBERG, I.I., VINOKUROV, V.G., TROYSKAYA, V.S., IVANOVA,  
T.A., MOSKALENKO, V.A.

COUNTRY OF INFO--USSR

SOURCE--KHM. GETEROTSIKL. SOEDIN. 1970, (2), 202-8

DATE PUBLISHED-----70

SUBJECT AREAS--CHEMISTRY

TOPIC TAGS--PYRAZOLE, IR SPECTRUM, UV SPECTRUM, IONIZATION, PROTON,  
HETEROCYCLIC NITROGEN COMPOUND

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CIRC ACCESSION NO--APO104508

UNCLASSIFIED

PROCESSING DATE--18SEP70

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. IR SPECTRA IN CHCL SUB3 OR IN  
 CRYST. STATE, UV SPECTRA IN H SUB2 O, MECH, OR CONCD. HCL, AND EPR  
 SPECTRA IN ME SUB2 SO OR IN 3:1 D SUB2 O-D SUB2 SO SUB4 WERE RECORDED OF  
 ANTIPYRINE ANALOGS (I, II). IONIZATION CONSTS. (PK SUBA) IN WATER WERE  
 MEASURED FOR (I, II, R PRIME1 EQUALS PH, R PRIME2 EQUALS ME) (R PRIME 3,  
 R PRIME5, X AND PK SUBA GIVEN): H, -, O, 2.42; -, H, O, 2.40; ME, -, O,  
 2.85; ME, -, S, 2.49; ME, -, SE, 2.64; ME, -, NH, 10.4; -, ME, NH, 10.6;  
 -, ME, S, 2.29; -, ME, SE, 2.42, -, ME, O, 2.49.

UNCLASSIFIED

USSR

BELOV, A. F., ~~VINOKUROV, YU. S.~~, NIKOLAYEV, G. N.

UDC 681.3

"Device for Storing Stationary Electric Signals"

USSR Author's Certificate No 310253, filed 22 Jul 69, published 1 Oct 71 (from RZh --Avtomatika, Telemekhanika i vychislitel'naya tekhnika, No 4, Apr 72, Abstract No 4A528P)

Translation: A device proposed for storing stationary electric signals contains a storage unit, a number register, an address register, a coding unit, a programming unit, a generator, and an output unit. There is 1 illustration.

1/1

USSR

UDC 541.127 + 542.938 + 661.718.1

BEL'SKIY, V. YE., ANDREYEVA, L. S., ALEKSANDROVA, I. A.,  
VINOKUROVA, G. M., Institute of Organic and Physical Chemistry  
Imeni A. Ye. Arbutov, Academy of Sciences USSR

"Kinetics of the Hydrolysis of Alkyl-bis-( $\gamma$ -chloropropyl)-  
phosphinates"

Moscow, Izvestiya Akademii Nauk SSSR, Seriya Khimicheskaya, No 6,  
Jun 70, pp 1418-1419

Abstract: The kinetics of hydrolysis in water and sodium hydroxide solution of several bis-( $\gamma$ -chloropropyl)-phosphinic acid esters was studied and compared with corresponding bis-(chloromethyl)-phosphinates. It was determined that the  $\gamma$ -chloropropyl compounds are hydrolyzed faster in water and much slower in alkaline medium in comparison to their chloromethyl counterparts. The ratio of rate constants for these esters decreases with an increase in the length and branching of the alcohol radical during alkaline hydrolysis, while the opposite is true for aqueous hydrolysis. This phenomenon agrees with the assumption that the chlorine in the  $\gamma$ -position catalyses intramolecularly the reaction with water.

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USSR

UDC 612.172:612.5927.014.426

SMIRNOV, A. I., and VINOKUROVA, I. YU., Physiology Group, Academy of Medical Sciences USSR, Institute of Normal and Pathological Physiology, USSR Academy of Medical Sciences

"The Functional Relationship between Specific Musculature and Myocardium of Ventricles of Isolated Hearts from Warmblooded Animals After Cooling to  $-4^{\circ}\text{C}$  and  $-10^{\circ}\text{C}$  in an Electromagnetic Field"

Moscow, Byulleten' Eksperimental'noy Biologii i Meditsiny, Vol 71, No 3, Mar 71, pp 3-6

Abstract: To study the ability of the heart to resume its intrinsic rhythm after exposure to deleterious factors, 52 hearts isolated from rabbits and white rats were cooled with carbon dioxide to  $-4^{\circ}\text{C}$  and  $-10^{\circ}\text{C}$ . During the 15-20 min of exposure to cold, a 50 HZ, 360-600<sup>0</sup> ersted magnetic field was maintained in the chamber with 32 experimental hearts, while no such field was created in the chamber with the remaining 20 control hearts. The organs were then warmed to  $38-39^{\circ}\text{C}$  with Ringer-Locke solution, and electrograms and mechanograms were recorded. None of the control hearts resumed beating; tissue death was presumably caused by crystallization of intra- and extra-cellular water. Five of the 32 experimental hearts did not survive the test.

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USSR

SMIRNOV, A. I., and VINOKUROVA, I. YU., Byulleten' Eksperimental'noy Biologii i Meditsiny, Vol 71, No 3, Mar 71, pp 3-6

Rhythmic contractions of the specific musculature (conductive system) were observed in nine hearts, while myocardial contractions of various degrees were recorded in 18 hearts. In the six hearts which resumed complete activity, the first to recover were the two atria, then the right ventricle, and finally the left ventricle. It was concluded that the synaptic connection between the pacemaker and the atrial myocardium was relatively most stable, while that between the left bundle branch and the left ventricular myocardium was most susceptible to injury.

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USSR

UDC: 612.172.5.014.43

SMIRNOV, A.I. and VINOKUROVA, I.YU., Physiology Group, Academy of Medical Sciences SSSR Institute of Normal and Pathological Physiology, Academy of Medical Sciences USSR

"Automatism of the Specific Muscles of the Ventricles in Isolated Dog Heart After Prolonged Cooling to 0-4°C"

Moscow, Byulleten' Eksperimental'noy Biologii i Meditsiny, No 2, 1970, pp 7-9

Abstract: Experiments on isolated dog hearts kept in the cold (0-4°C) for 7-10 days and periodically heated for 2-3 hours showed that the different portions of the specific muscles vary in functional resistance. Between the 5th and 7th days, irreversible fibrillation of the terminal branches of the left stalk of the bundle of his set in, with arrhythmic contractions of the higher lying branches, and rhythmic contractions of the stem part. Extinction of the automatism of the specific muscles began in the small branches of the stalk at the apex of the heart, and gradually extended to the base. The last manifestation of automatism was irreversible fibrillation of the base of the left stalk. Thus, the specific muscles characterized by automatism exhibit all the forms of muscular activity: rhythmic contraction, arrhythmia, and fibrillation.

1/1

Acc. Nr: **AP0051943**

Ref. Code: **UR0219**

PRIMARY SOURCE: Byulleten' Eksperimental'noy Biologii i Meditsiny, 1970, Vol **69**, Nr **2**, pp **79**

**ON THE AUTOMATISM OF SPECIFIC MUSCLES IN THE VENTRICLES OF AN ISOLATED HEART OF DOGS UNDER A LONG-TERM COOLING DOWN TO 0+4°**

A. I. Smirnov, I. Yu. Vinokurova

Institute of Normal and Pathological Physiology of the AMS of the USSR, Moscow

A total of 40 tests were carried out on isolated hearts of dogs kept at a temperature of 0-4° for 7-10 days. Specific muscles in the left His's bundle branch were studied daily after being heated for 2-3 hours. Observations were effected through an incision in the wall of the left ventricle above the interventricular septum, with the aid of a binocular microscope. ECG, along with electro- and mechanograms of the specific muscles were registered. The latter were shown to display the function of automatism, with all forms of the muscular activity, including rhythmic contractions, arrhythmia and fibrillation. A regular alteration of these forms, both in restoration of the cardiac function during heating and in extinction of vital manifestations after lengthy storage of the organ were recorded. The last manifestation of the function of automatism was irreversible fibrillation of the bundle branch base (7-10th day).

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**19820426**

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USSR

VINOKUROVA, S., News Press Agency Correspondent

"The Brain: Problems and Solutions"

Moscow, Leninskoye Znamya, 11 Sep 71, p 3

Translation: In an interview, prominent Soviet physiologist Academician Petr Anokhin discussed the most important problems in physiology, the progress made by the Soviet school of physiology, and the social foundation of man's psychic health.

Question: In a recent paper you presented to an audience of scientists, you mentioned a worldwide crisis in the science of physiology. Of what does the crisis consist?

Answer: Modern physiology has accumulated an enormous volume of facts. However, it is not the nature of physiology to be merely a storage box of facts: it lacks a theory able to unite and explain the facts and to give them a practical meaning. Famous American scientist and Nobel Prize Winner John Eccles once said that about 90% of publications were of no value for establishing a major theory.

The main objective of physiology is to find a key to generalization of separate bits of information.

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USSR

VINOKUROVA, S., Leninskoye Znamya, 11 Sep 71, p 3

Question: You and your students have developed the theory of the functional system. What is the essence of this "system approach" to the living organism, and what results has this approach yielded?

Answer: Before answering your question, I will indulge in a brief historical digression. Though it is difficult to believe it now, it was for a long time denied that a living organism could have organizational principles characteristic of it only as a whole. Actually, this problem concerned not just biologists. We may recall the very interesting discussion which flared up between Niels Bohr and Albert Einstein. Bohr believed that an integrated approach would reveal to the researcher the individual properties of the object under investigation. Einstein, on the other hand, always tried to present an empirically found law as a logical necessity.

In the '30s, having become convinced in the futility of all attempts to establish the concept of a system on a purely theoretical basis, we placed our hopes on experiment. At that time, we studied the mechanism by which functions disturbed by surgery were restored. Thus, we discovered that the compensation was governed by the whole organism -- a complex functional formation able to modify the result of its activity and to bring it back to the normal state. We called this formation the functional system.

Even in the initially formulated statements, it was pointed out that the system has a dynamic organization and that one of its main key mechanisms is

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VINOKUROVA, S., Leninskoye Znamya, 11 Sep 71, p 3

delivery of information on the result attained.

Question: In what way does the theory of the functional system aid medicine, particularly in elucidating the mechanism of and preventing cardiovascular diseases?

Answer: The main, valuable effect it has produced is a change in the attitudes of millions of physicians. Every medical student thoroughly studies the neuron -- the individual nerve cell. But when he begins clinical work, he is unable to put the separate pieces of information together, and therefore he does not understand how the whole organism functions as a unit. The theory of the functional system creates a bridge across an abyss extending from exact experiments and investigations of the separate cells or organs to the whole organism, and it suggests a new approach to the prevention of diseases. This is an unquestionable step forward taken by Soviet physiology, and I am very pleased that the basic theses of the theory are used as constructive factors by western scientists.

The theory of the functional system imposes new tasks on medicine: to study the principles and mechanisms determining the reliability of the living system and guaranteeing its survival, and to learn to preserve them. The tasks of physiology have also become somewhat different. Its traditional objective was to understand how the organism functions. Now, to satisfy the

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VINOKUROVA, S., Leninskoye Znamya, 11 Sep 71, p 3

needs of preventive medicine, physiology must answer the question: Why does the organism remain healthy in spite of the continuous action of thousands of factors deflecting it from the norm? This will bring us closer to the control of the system's stability and will enable us to develop preventive medicine on scientific foundations.

Physiology is now closer to clinical work than it ever was before. It is interested in the mechanisms which adjust the organism to new circumstances, to emotional stress and confusion, and to the action of unusual agents -- in brief, to all the factors which precede many cardiovascular diseases.

Physiology has clearly established why stress causes hypertension and therefore it has made it possible to search for methods of controlling this process at its very beginning.

The brain has its own "bicepses". Consequently, it also needs "dumb-bells," "weights," and "bars". Let me give you a clear-cut example. A new system of teaching in schools is now being developed in the Soviet Union. Formerly, the first grade teaching program included two arithmetical operations: addition and subtraction. Division and multiplication were taught in the second grade. However, some multiplications can be reduced to additions.

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- USSR

VINOKUROVA, S., Leninskoye Znamya, 11 Sep 71, p 3

To understand this, the child must gain mastery over one case of logical thinking. The fact is that logical operations are the best training for the brain as well as an antidote against mental overtaxation in the future.

5/5

172 015

UNCLASSIFIED

PROCESSING DATE--11SEP73

TITLE--AN EXPERIMENTAL INVESTIGATION OF THIMBLE IONIZATION CHAMBERS FOR ROENTGEN AND GAMMA RADIATION -U-  
AUTHOR--ARCHAKOV, A.A., VINOKUROVA, Z.A., LAPCHUK, T.V.

COUNTRY OF INFO--USSR

SOURCE--MEDITSINSKAYA RADIOLOGIYA, 1970, VOL 15, NR 3, PP 60-65

DATE PUBLISHED-----70

SUBJECT AREAS--BIOLOGICAL AND MEDICAL SCIENCES

TOPIC TAGS--IONIZATION CHAMBER, PLASTIC, RADIATION DOSIMETER, X RAY MEASUREMENT, GAMMA SURVEY METER

CONTROL MARKING--NO RESTRICTIONS

DOCUMENT CLASS--UNCLASSIFIED

PROXY REEL/FRAME--1985/1678

STEP NO--UR/0241/70/015/003/0060/0055

CIRC ACCESSION NO--AP0101733

UNCLASSIFIED

2/2 015

UNCLASSIFIED

PROCESSING DATE--11SEP70

CIRC ACCESSION NO--AP0101733

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. THE ARTICLE DEALS WITH THE RESULTS OF EXPERIMENTAL INVESTIGATION OF THIMBLE IONIZATION CHAMBERS (VOLUME OF 2 CM. PRIME3) PREPARED FROM DIFFERENT PLASTICS. IT IS SHOWN THAT THE RELATION BETWEEN THE SENSITIVITY OF THE CHAMBERS AND THE QUALITY OF RADIATION IS DETERMINED BOTH BY THE MATERIAL FROM WHICH THE CHAMBER (EXTERNAL ELECTRODE) IS MADE AND THE MATERIAL OF THE INTERNAL ELECTRODE. THIS ENABLES TO DECREASE MARKEDLY THE ENERGY DEPENDENCE BY SPECIAL CHOICE OF THE DESIGN. SIMILARLY, ONE COULD DESIGN INDIVIDUAL DOSIMETERS BASED ON THE REDISTRIBUTION OF THE CHARGE ON TWO CONDENSERS THROUGH THE IONIZATION VOLUME, FOR A WIDE RANGE OF EXPOSURE DOSES, WITH A SIGNIFICANT MECHANICAL RESISTANCE AND ENERGY DEPENDENCE ERROR OF 10PERCENT. THEORETICAL CALCULATION OF THE CHARACTERISTICS OF THE CHAMBERS IS VERY DIFFICULT, IN VIEW OF WHICH WHEN DESIGNING THE DEVICES THE CHOICE OF ELEMENTS OF THE DETECTOR IS EXPEDIENT TO CARRY OUT ON THE BASIS OF EXPERIMENTAL DATA.

UNCLASSIFIED

USSR

UDC: 621.643+620.193

VINOGRATSEV, G. G., Administration of Gas Mains, Tashkent

"Determining the Danger of Corrosion in Gas Pipes"

Moscow, Stroitel'stvo truboprovodov, No. 10, 1970, pp 12-13

Abstract: The results of observations of corrosion effects on pipes laid in the soil of Central Asia are discussed in this article. The difference in potential between the pipe and the ground as well as the resistivity of the soil were measured, and the effects of corrosion on the pipes were visually observed through holes bored in the ground. Soil resistance measurements are valuable in determining corrosion characteristics since they take into account the dampness of the soil, the extent of its salinity, and other relevant factors. However, these characteristics are not always dependable in semi-arid regions; even with a high salt content, the soil resistance may be substantial because of the low moisture level in the soil. The article presents

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USSR

VINOKURTSEY, G. G., Stroitel'stvo truboprovodov, No 10, 1970,  
pp 12-13

experimental data obtained from these observations of gas piping in Dzharkak, Bukhara, Samarkand, and Tashkent. A table is presented giving the number of damages and the corrosion rate, in millimeters per year, correlated with the soil resistivity. Photographs of damage done by macrocells are also shown.

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- 57 -



USSR

UDC: 539.22

VINTAYKIN, YE. Z., LITVIN, D. F. and UDOVENKO, V. A., Institute of General Metallurgy and Physics of Metals, Central Scientific Research Institute of Ferrous Metallurgy imeni I. P. Bardin

"Certain Characteristic Features of Phase Transformations in Nickel-Manganese Alloys"

Sverdlovsk, Fizika metallov i metallovedeniye, Vol 33, No 1, Jan 72, pp 77-85

Abstract: Neutron diffraction and narrow-angle scattering studies of phase transformation in nickel-manganese alloys are described. The five alloys involved were of various compositions with 22.7 to 38 at. % Mn at 400-535°C. All specimens exhibited concentrated lamination. The critical ordering temperature and the comparison of the ordering kinetics with that of lamination of the alloy of a composition close to the stoichiometry of  $Ni_3Mn$  within the testing temperatures suggests the metastable nature of the ordered  $Ni_3Mn$  phase. The transformation of a hardened solid solution in the process of low-temperature annealing proceeds along two sides, one conforming to  $L1_2$ -type ordering and the other -- to the separation of

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USSR

VINTAYKIN, YE. Z., et al, Fizika metallov i metallovedeniye, Vol 33, No 1, Jan 72, pp 77-85

Ni<sub>3</sub>Mn intermetallide. Annealing for ordering produces a complex fine Ni<sub>3</sub>Mn structure which may explain the rather uncommon magnetic and other physical properties of these alloys. The study involved the use of "UNSA" and "Rawar" neutron diffractometers. (6 illustrations, 14 bibliographic references).

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USSR

UDC 669.15-194:669.26

VINTAVKIN, Ye. Z., ZVIGINTSEV, N. V., KOLONTSOV, V. Yu. and MOGUINOV, B. M.,  
Central Scientific Research Institute of Ferrous Metallurgy imeni I. P.  
Bardin, Institute of Metal Studies and Physics of Metals, Ural Polytechni-  
cal Institute imeni S. M. Kirov

"Stratification in the Martensite of Kh13N10 and Kh13N8Yu Steels"

Sverdlovsk, Fizika Metallov i Metallovedeniye, Vol 30, No 6, Dec 70, pp 1245-  
1249

Abstract: Aging of martensite was investigated in Fe-Cr-Ni steels by measur-  
ing the electrical resistance, thermal emf, specific volume, hardness, and  
low-angle neutron scattering. The existence of stratification in the in-  
vestigated steels was established. Low-temperature aging of the Fe-Cr-Ni  
martensite causes stratification of the solid solution. Nickel and aluminum  
intensify the stratification process, and strengthening of Kh13N8Yu maraging  
steel is due to stratification of the Fe-Cr-Ni matrix and the formation of  
intermetallic compounds.

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Acc. Nr:

AP 0046699

Abstracting Service: 5/70  
INTERNAT. AEROSPACE ABST.

Ref. Code:  
UR 0185

A70-23196 # Neutron diffraction study of atom ordering in alloys nickel-chromium (Neitronografichni doslidzhennia vporiadkuvannia atomiv u splavakh nikel'-khromi). E. Z. Vintekin, and G. G. Urushadze (Tsentral'nyi Nauchno-Issledovatel'skii Institut Chernoi Metallurgii, Moscow, USSR). *Ukrains'kii Fizichnyi Zhurnal*, vol. 15, Jan. 1970, p. 132-134. In Ukrainian.

The temperatures of the order-disorder transition are determined by the neutron diffraction method for the alloys nickel-chromium. The temperature dependence is determined and the ordering kinetics is investigated on the alloy of stoichiometric composition Ni<sub>2</sub>Cr. Considering the data on kinetics, a conclusion is drawn on a homogeneous ordering of atoms in the alloys nickel-chromium.

(Author)

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USSR

UDC 661.183.9 : 546.831'776'185

VINTER, I. K., BOYCHINOVA, YE. S., and DENISOVA, N. YE.

"Effect of Synthesis Conditions on Ion-Exchange Properties of Zirconium 'Molybdophosphates'"

Leningrad, Zhurnal Prikladnoy Khimii, Vol 43, No 8, Aug 70, pp 1678-1682

Abstract: The article describes results of a study of the ion-exchange properties of zirconium "molybdophosphates" as affected by (1) the anion : zirconium ratio [(Mo + P) : Zr] in the initial solutions with a constant Mo : P ratio, (2) the Mo : P ratio with a constant (Mo + P) : Zr ratio in the initial solution, (3) the pH value of the precipitation. It was found that the static exchange capacity of the specimens increases with an increase in the (Mo + P) : Zr ratio. The optimal static exchange capacity is found in specimens with the (Mo + P) : Zr ratio in the initial solution equal to 10 : 1. Given a constant (Mo + P) : Zr ratio, the capacity drops with an increase in the molybdate and a decrease in the phosphate. The optimal conditions

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VINTER, I. K., et al., Zhurnal Prikladnoy Khimii, Vol 43, No 8, Aug 70, pp 1678-1682

for obtaining granulated zirconium "molybdophosphate" specimens are Mo : P : Zr ratios in the initial solutions of 6 : 4 : 1 and 7 : 3 : 1 and pH values at the end of precipitation of 1.65 and 3.70 respectively.

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1/2 022 UNCLASSIFIED PROCESSING DATE—30OCT70  
TITLE—PENETRATION OF DEOXYRIBONUCLEASES INTO INTACT CELLS OF EHRLICH  
CARCINOMA AND THEIR INFLUENCE ON NUCLEIC ACID SYNTHESIS —U—  
AUTHOR—(03)—NUZHINA, A.M., VINTER, V.G., GAREYSHINA, A.Z.  
COUNTRY OF INFO—USSR  
SOURCE—VOP. CAKGL, 1970, 16(4), 99-103  
DATE PUBLISHED—70  
SUBJECT AREAS—BIOLOGICAL AND MEDICAL SCIENCES  
TOPIC TAGS—CARCINOMA, RNA, DNA, PANCREAS, BACTERIA, RIBONUCLEASE,  
BIOSYNTHESIS  
CONTROL MARKING—NO RESTRICTIONS  
DOCUMENT CLASS—UNCLASSIFIED  
PROXY REEL/FAME—3002/0486 STEP NO—UR/0506/70/016/004/0099/0103  
CIRC ACCESSION NO—AP0128055  
UNCLASSIFIED

2/2 022

UNCLASSIFIED

PROCESSING DATE--30OCT70

CIRC ACCESSION NO--AP0128055

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. PANCREATIC OR SERRATIA MARCESCENS DNASE PENETRATED INTACT EHRlich CARCINOMA CELLS, APPARENTLY IN 2 STAGES INVOLVING ADSORPTION ON THE CELL MEMBRANE SURFACE AND DIRECT PERMEATION INTO THE CYTOPLASM. IN SMALL CONCNS. (10 MUG-ML) EXOGENOUS DNASE STIMULATED AND AT LARGE CONCNS. (30-50 MUG-ML) SHARPLY INHIBITED THE SYNTHESIS OF DNA AND RNA. FACILITY: STATE KAZAN UNIV., KAZAN, USSR.

UNCLASSIFIED



USSR

UDC: 621.396.69:621.372.412

AKSHIN, A. I., VINTOVKIN, S. I., TITOV, V. I., TOKAREV, G. A.

"Effect of Ionizing Radiation on the Piezoelectric Properties of Quartz Plates"

V sb. Radiatsion. fiz. nemet. kristallov (Radiation Physics of Nonmetallic Crystals--collection of works), Minsk, "Nauka i tekhn.", 1970, pp 220-229 (from RZh-Radiotekhnika, No 2, Feb 71, Abstract No 2V483)

Translation: An investigation was made of the change in fundamental piezoelectric properties of AT- and DT-cut quartz plates at room temperature over a broad frequency range (300 kHz-10 MHz) exposed to X-radiation ( $E \approx 400$  keV), gamma radiation (Co-60), a stream of electrons with energies of 0.2-1.0 and 2 MeV, protons (6.3 MeV) and alpha particles (25 MeV). It is shown that X-rays and gamma rays have an identical effect on the one hand, as do electrons of various energies on the other hand on changing the natural frequency of AT-cut quartz plates at doses of  $\sim 2 \cdot 10^6$  rad. Four illustrations, bibliography of one title. N. K.

1/1

USSR

UDC: 538.69:539.124

ARIYA, S. M., VINTRUFF, V., LUKINYKH, N. L.

"EPR Spectra of MnO-MgO, CoO-MgO, and NiO-MgO Solid Solutions"

Vestn. Leningr. Un-Ta [Herald of Leningrad University], No 22, 1969, pp 87-91  
(translated from Referativnyy Zhurnal Fizika, No 7, 1970, Abstract No 7D574,  
unsigned)

Translation: EPR studies of the solid solutions MnO-MgO (I), CoO-MgO (II), and NiO-MgO (III) of various compositions are performed at room temperature and at liquid nitrogen temperature. The EPR spectra of all specimens of I consist of a single intensive line with  $g = 2.0017 \pm 0.0005$ . In the specimen with minimum concentration of Mn ( $Mn_{0.009}Mg_{0.991}O$ ) a hyperfine structure sextet with constant  $A = (86 \pm 1) \text{ e}$  was observed. The spectra of specimens II at 77°K contain only one broad line with  $g = 4.324 \pm 0.002$ . The spectra of specimens of III contain one line with  $g = 2.225 \pm 0.001$ . In I, a correlation was determined between the number of paramagnetic centers and the paramagnetic component of static susceptibility. In the case of II and III, this correlation was not observed; this is attributed to the formation in II and III of aggregates of Co and Ni atoms bonded by exchange interaction, leading to a decrease in the effective number of paramagnetic centers. Studies of the form of the lines indicate the correctness of the assumption of the formation of aggregates of Co and Ni atoms in II and III respectively.

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Acc. Nr.: AP0042363



Ref. Code: UR 0203

JPRS 50162

Method for Computing Earth's Magnetic Field Upward in Space

(Abstract: "Method for Computing the Earth's Magnetic Field Upward in Near-Earth Space," by E. D. Viats, V. I. Pochtarev and R. Sh. Rakhmatulin, Leningrad Division, Institute of Terrestrial Magnetism, Ionosphere and Radio Wave Propagation; Moscow, Geomagnetizm i Aeronomiya, Vol X, No 1, 1970, pp 119-128)

In the compilation of high-altitude maps of the earth's magnetic field in near-earth space the errors arising in scaling are accompanied by errors arising due to inaccuracies in the initial material, that is, in ground, sea and aeromagnetic measurements. By application of the theory of random fields it is demonstrated in this article that with an increase in altitude the influence of errors in initial materials on the accuracy of high-level maps is substantially reduced.

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Reel/Frame  
19760310

VINTSYUK, T. K.

"Statement and Method of Solution of the Problem of Phoneme-by-Phoneme Recognition of Speech Signals"

VI Vses. Seminar "Avtomat. Raspoznavaniye Slukhovykh Obrazov (ARSO VI) Dokl. i Soobshch. [Sixth All-Union Seminar "Automatic Recognition of Auditory Patterns (ARSO VI), Reports -- Collection of Works], Tallin, 1972, pp 41-48 (Translated from Referativnyy Zhurnal, Kibernetika, No 1, 1973, Abstract No 1 V914 by the author).

Translation: A mathematical model is constructed of speech signals, in which the standard signals of coherent speech are made up according to certain rules from standard signals of phonemes which, in turn, are made up according to certain rules from elementary standard signals which are parts of phonemes. The rules used allow various standard signals of coarticulated coherent speech to be synthesized, differing in their non-linear rate of pronunciation and nonlinear change of stress. The problem of recognition of an unknown signal consists in synthesis of the most likely standard signal of coherent speech for it and indication of the phoneme structure of the latter. This problem is solved using a new dynamic computer programming plan which, in comparison with the ordinary plan, provides a memory savings by a factor of more than 100. 7 Biblio. Refs.  
1/1

USSR

VINTSYUK, T. K.

"Phoneme Recognition of Coherent Speech, Part II. Algorithm for Recognition, Learning and Self-Teaching"

Avtomatika [Automation], 1973, No 1, pp 63-72 (Translated from Referativnyy Zhurnal Kibernetika, No 6, 1973, Abstract No 6V775, by the author).

Translation: It is demonstrated that the problem of phoneme-by-phoneme recognition of coherent speech (see also Part I, Avtomatika, 1972, No 6) can in principle be solved using a standard procedure of dynamic programming. However, this procedure is practically inapplicable, since it requires a large memory volume. An algorithm is therefore suggested, allowing these requirements to be reduced by two orders of magnitude. The algorithm is a computational plan of dynamic programming in which, in addition to the concept of the potentially optimal control, the concept of the potentially optimal index and recognition response are used. The learning task for phoneme-by-phoneme recognition is formulated as definition of elementary standards (parts of phonemes), of which coherent speech is made, according to the length of the learning sample. Learning is analyzed, depending on whether

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USSR

Vintsyuk, T. K., *Avtomatika*, 1973, No 1, pp 63-72.

the teacher gives an indication of the sequence of phonemes contained in the learning sample or their number. It is demonstrated that the problem of learning is essentially a problem of self-teaching, since the teacher does not indicate the boundaries of phonemes in the learning sample. An iterative self-teaching algorithm with a finite number of steps is suggested.

1/2 041 UNCLASSIFIED PROCESSING DATE--30OCT70  
TITLE--EFFECT OF THE MUTUAL DIFFUSION OF ACCEPTORS ON THE STRUCTURE OF  
DIFFUSED P N JUNCTIONS IN SILICON CARBIDE -U-  
AUTHOR--(03)--VIOLIN, E.YE., KOVANKO, V., V., KHOLUYANDV, G.F.  
COUNTRY OF INFO--USSR  
SOURCE--FIZ. TEKH. POLUPROV. 1970, 4(1), 231  
DATE PUBLISHED-----70  
SUBJECT AREAS--PHYSICS  
TOPIC TAGS--PN JUNCTION, SILICON CARBIDE, PHYSICAL DIFFUSION,  
SEMICONDUCTOR BAND STRUCTURE, IMPURITY LEVEL, BORON, ETCHED CRYSTAL,  
THERMAL EMF, PHOTO EMF  
CONTROL MARKING--NO RESTRICTIONS  
DOCUMENT CLASS--UNCLASSIFIED  
PROXY REEL/FRAE--1987/1993 STEP NO--UR/0449/70/004/001/0231/0231  
CIRC ACCESSION NO--AP0105067  
UNCLASSIFIED

2/2 041

UNCLASSIFIED

PROCESSING DATE--30OCT70

CIRC ACCESSION NO--AP0105067

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. THE INFLUENCE OF REVERSE DIFFUSION OF THE ORIGINAL COMPENSATING ACCEPTOR ON THE STRUCTURE OF P N JUNCTIONS WAS STUDIED ON 6H, N TYPE SIC CRYSTALS. AN ELONGATED TRANSITION REGION OF HIGH RESISTIVITY MAY BE PRODUCED WITHIN THE P N JUNCTION STRUCTURE. EXPTL. WRK WAS CARRIED OUT ON P N JUNCTIONS PREPD. BY DIFFUSION OF B INTO A DOPED SIC CRYSTALS THAT WERE COMPENSATED DURING GROWTH BY BE. ELECTROLYTIC ETCHING AS WELL AS PHOTOEMF. AND THERMOEMF. MEASUREMENTS SHOW A P MINUS P MINUS N STRUCTURE, WHERE P IS A REGION WITH APPROX. 10 PRIME7 OHM CM RESISTIVITY. THE P LAYER WIDTH FROM CAPACITANCE MEASUREMENTS AND FROM ETCH PIT EVALUATION IS 1.8-2.7 MU IN CRYSTALS OF 0.5-2 OHM CM RESISTIVITY. THESE VALUES AGREE WITH THE KNOWN DIFFUSION COEFFS. OF BE AND B IN SIC. FACILITY: LENINGRAD. ELEKTROTEKH. INST. IM. UL'YANOVA, LENINGRAD, USSR.

UNCLASSIFIED



5/2 027

UNCLASSIFIED

PROCESSING DATE—30OCT70

TITLE—LUBRICATING COATING -U-

AUTHOR—(05)—SENTYURIKHINA, L.N., RUBTSOVA, Z.S., PETROVA, L.N., LUTSENKO,  
G.A., VIGNISEK, N.I.  
COUNTRY OF INFO—USSR

SOURCE—U.S.S.R. 265,447

REFERENCE—OTKRYTIYA, IZOBRET., PROM. OBRAZTSY, TOVARNYE ZNAKI 1970,  
DATE PUBLISHED—09MAR70

SUBJECT AREAS—MATERIALS

TOPIC TAGS—CHEMICAL—PATENT, PROTECTIVE COATING, LUBRICANT, CHEMICAL  
COMPOSITION, MOLYBDENUM DISULFIDE, SILOXANE, BENZENE DERIVATIVE

CONTROL MARKING—NO RESTRICTIONS

DOCUMENT CLASS—UNCLASSIFIED

PROXY REEL/FRAE—3003/1798

STEP NO—UR/0482/70/000/000/0000/0000

CIRC ACCESSION NO—AA0130631

UNCLASSIFIED

2/2 027

UNCLASSIFIED

PROCESSING DATE--30OCT70

CIRC ACCESSION NO--AA0130631

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. A LONG LASTING LUBRICATING COATING  
CONTAINS 60-75 WT. PERCENT MO DISULFIDE AND 25-40 WT. PERCENT  
POLYMETHYLPHENYLSILOXANE RESIN WITH A UNIT STRUCTURE ((ME SUB2  
SIO)(PHSIO SUB1.5)(PH SUB2 SIO) SUB0.35).

UNCLASSIFIED

USSR

UDC 517.9

VIRABYAN, G. V.

"Completeness of a Unified System of Characteristic Elements of a Finite-Dimensional Operator and Its Adjoint"

Yerevan, Doklady Akademii Nauk Armyanskoy SSR, Vol 51, No 4, 1970, pp 196-202

Abstract: A question arises when a set of characteristic elements of an operator  $M$  and its adjoint  $M^*$  together form a complete system in  $R^N$ . This article is concerned with this question, and certain criteria are given for the existence of a complete set of characteristic elements for this operator and its adjoint.

Two theorems are posited and proven.

Theorem 1. A set of characteristic elements of an operator  $M$  and its adjoint  $M^*$  together form a complete orthonormalized system in  $R^N$  only if, for a certain orthonormalized base of the space  $R^N$ , the transformation matrix has

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USSR

VIRABYAN, G. V., Doklady Akademii Nauk Armyanskoy SSR, Vol 51, No 4, 1970, pp 196-202

$$\mathfrak{M} = \begin{pmatrix} \lambda_1 & \dots & 0 & \gamma_{11} & \dots & \gamma_{1n} \\ \cdot & \cdot & \cdot & \cdot & \cdot & \cdot \\ \cdot & \cdot & \cdot & \cdot & \cdot & \cdot \\ 0 & \dots & \lambda_l & \gamma_{l1} & \dots & \gamma_{lm} \\ 0 & \dots & 0 & \mu_1 & \dots & 0 \\ \cdot & \cdot & \cdot & \cdot & \cdot & \cdot \\ \cdot & \cdot & \cdot & \cdot & \cdot & \cdot \\ 0 & \dots & 0 & 0 & \dots & \mu_m \end{pmatrix}, \quad l+n=N$$

Theorem 2. In order that a set of characteristic elements of the operator  $\mathfrak{M}$  and its adjoint  $\mathfrak{M}^*$  together form a complete system in the space  $H$ , it is necessary and sufficient that the quadratic operator equation,

$$U^2 - DU - C = 0,$$

possess a solution having a simple structure in  $R^N$ . The necessity and sufficiency are proven and Theorem 2 is restated in somewhat different form with proof.

2/2

Acc. Nr.

AT0049568

Abstracting Service:  
CHEMICAL ABST 5-70

Ref. Code

480148

102872q Effect of combined methods of thermomechanical treatment on the properties of structural steel. Virakhovskii, Yu. G.; Gurevich, Ya. B.; Krupin, A. V.; Entin, R. I. (Mosk. Inst. Stal' Splavov, Moscow, USSR). *Izv. Vyssh. Ucheb. Zaved., Chern. Met.* 1970, 13(1), 147-50 (Russ). The results are given of production and lab. comparative studies of the heat treatment of steel KhNMS (C 0.32, Cr 1.02, Ni 5.20, Mo 0.70, Si 0.87, Mn 0.38%;  $A_{c1} = 715^\circ$ ,  $A_{c2} = 790^\circ$ ) austenitized at 900° and tempered at 200° for 1 hr. High-and-low (deformation at 850° with 30% redn. in a single pass followed by ~67% combined redn. in 6 passes at 500°) and stepped heat treatment (30% redn. at 850° in a single pass followed by 30% redn. at 750° in a single pass and 30% redn. at both 650° and 500° in 2 passes) both gave more favorable strength and plasticity properties than quenching in water from 850°, and high- and low-temp. heat treatment individually. The practical possibilities of combined heat treatment are discussed.

R. Hardbottle

REEL/FRAME

19801446

Graphite

USSR

UDC 661.666.2.002.3:539.431.1

VIRGIL'YEV, YU. S., KUROLENKIN, YE. I., MAKARCHENKO, V. G., and PEKAL'N,  
T. K., Moscow

"Dependence of the Strength Properties of Graphite On the Processing Temperature"  
Kiev, Problemy Prochnosti, No 11, Nov 73, pp 43-46

Abstract: The article deals with the change of some strength properties of three carbon materials in relation to the processing temperature. The first two tested materials, GMZ and KPG, are based on KNPS petroleum coke. GMZ was baked at 1300°C, and KPG was unbaked. The third material, ER, is a composition of natural graphite with semicoke. The charge compositions of the first two materials are similar with respect to coarseness, but the structural features of KPG, owing to the use of unbaked coke, predetermined its higher strength characteristics in comparison to GMZ. A study was made of the temperature relationships, in the region of processing temperatures of 1300-3000°C, of the strength characteristics: compression strength, the modulus of elasticity, and the hardness of carbon materials, and the relationship of these characteristics to the crystalline structure. Decreased values of the indicated parameters were noted as the processing temperatures rose. A relationship was established between the strength and the diameter of the  
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USSR

VIRGIL'YEV, YU. S., et al., Problemy Prochnosti, No 11, Nov 73, pp 43-46

region of coherent dispersion within the processing-temperature interval of 2000-3000°C, and an evaluation was made of the effect of the internal unit surface of the pores on the strength at temperatures below 2000°C. Three figures, two tables, sixteen references.

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Graphite

USSR

UDC 546.26-162:539.1.04

KUROLENKIN, YE. I., VIRGIL'YEV, Yu. S. and CHURILOV, Yu. S.

"Changes in the Submicroporosity of Structural Graphite Following Irradiation"

Moscow, Izvestiya Akademii nauk SSSR, Neorganicheskiye materialy, Vol 8, No 1, 1972, pp 80-83

Abstract: The study described here deals with the effect of irradiation conditions (temperature and integral flow) on both the formation and redistribution of submicroporosity (radius of inertia, volume and specific pore area) in GZ graphite. The graphite specimens were irradiated in airtight steel ampoules at temperatures of up to 800°C and dosages up to  $7.10^{24}$  n/cm<sup>2</sup>. Narrow-angle x-ray scattering was used to measure the submicroporosity. The porosity of the GZ graphite is classed into groups whereby the finer pores of  $\sim 200 \text{ \AA}$  are responsible for volumetric crystal growth. On exposure to irradiation, the volume of the finer pores decreases with an increase in dosage. This effect is markedly decreased with increasing irradiation temperatures. (4 illustrations, 5 biblio. references)

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USSR

UDC 539.61:620.17:546.26-162

VOLKOV, G. M., BARABANOV, V. N., VIRGIL'YEV, YU. S., ZAKHAROVA, YE. N., and  
LEONT'YEV, YE. A.

"The Influence of Crystallite Size Upon the Strength of Coal-Graphite Materials"

Kiev, Problemy Prochnosti, No 1, Jan 72, pp 113-115

Abstract: The influence of the nuclear and electron structure of a graphite crystallite upon the mechanics of its breakdown is studied. Use is made of molecular diagrams of some compounds of the homologous series of aromatic hydrocarbons, obtained by Pulman via wave-mechanics calculations by the method of molecular orbits. The influence of the size of graphite crystals upon the strength of carbon pyroceramic material was demonstrated. The experimental data were compared with results of structural research by optical-microscope and electron-microscope methods. Three figures, 4 references.

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UDC: 621.039.531:536.21:661.666

VIRGIL'YEV, Yu. S., BURDAKOV, N. S., MART'YANOV, V. G., and  
CHURILOV, Yu. S.

"Change in Heat Conductivity of Graphite Under Radiation"

Moscow, Atomnaya energiya, No. 3, March 1971, pp 311-312

Abstract: By generalizing the available data including that obtained by the authors themselves, this article seeks to find a relationship between the change in heat conductivity of graphite, important as a construction component, and the radiation temperature and dosage. Under irradiation, the heat conductivity drops sharply, with the maximum rate of drop occurring at the initial period of the irradiation and decreasing with increasing radiation temperature. The heat conductivity measurements were made on specimens 8 mm in diameter and 10 mm in height by means of a comparative method in which a standard was used in the temperature interval of 20-120° C, with a measurement accuracy of ±5%. Results of the measurements are shown in a curve of the heat conductivity of various brands of Soviet graphite, before and after irradiation, as a function of the temperature. A second curve gives the change in graphite heat resistance as a function of radiation temperature. From their experiments, the authors derive an empirical expression for the change in heat conductivity

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VIRGIL'YEV, Yu. S., et al, Atomnaya energiya, No. 3, March 1971,  
pp 311-312

as a function of the irradiation dosage and temperature, with  
the damaging effects on the graphite taken into account.

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USSR

UDC 621.039.53

KUROLNENKIN, Ye. I., BURDAKOV, N. S., VIRGIL'YEV, YU. S., OSTROVSKIY, V. S.,  
TURDAKOV, V. N., CHURILOV, Yu. S.

"Influence of Oxidation on Strength Properties of Graphite"

Atomnaya Energiya, Vol 32, No 4, Apr 72, p 312.

Abstract: This short article studies the influence of the degree of oxidation on compressive strength and on volumetric weight, characterized by porosity, for two commercial types of structural graphite, types GMZ and MPG. Studies were performed using cylindrical graphite specimens, 8 mm in diameter and 80 mm long, which were oxidized in an electric furnace in air at 700°C. The degree of oxidation was determined by weight loss of the specimen. It was found that at a 600-800°C oxidation temperature, the drop in volumetric weight occurs primarily in the surface layer. This agrees with the two-stage mechanism of oxidation of graphite, showing that in this temperature interval the process is intermediate between kinetic and diffusion processes. Graphs are presented showing the change in compressive strength and volumetric weight of the graphite with degree of oxidation.

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1/2 022

TITLE--COMPARATIVE STUDY OF ACTIVITY OF INTERCOSTAL MOTONEURONAL GROUPS IN  
CATS -U- UNCLASSIFIED PROCESSING DATE--23OCT70

AUTHOR--VIRGOROV, YU.L. ✓

COUNTRY OF INFO--USSR

SOURCE--NEYROFIZIOLOGIYA, 1970, VOL 2, NR 3, PP 289-295

DATE PUBLISHED-----70

SUBJECT AREAS--BIOLOGICAL AND MEDICAL SCIENCES

TOPIC TAGS--NEURON, CAT, INHIBITION, NERVOUS SYSTEM

CONTROL MARKING--NO RESTRICTIONS

DOCUMENT CLASS--UNCLASSIFIED

PROXY REEL/FRAME--1999/1490

STEP NO--UR/0660/70/002/003/0289/0295

CIRC ACCESSION NO--AP0123393

UNCLASSIFIED

2/2 022

CIRC ACCESSION NO--AP0123393

UNCLASSIFIED

PROCESSING DATE--23OCT70

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. ACTIVITY OF INSPIRATORY AND EXPIRATORY INTERCOSTAL MOTOR UNITS WAS STUDIED IN CATS. STATISTICAL DATA INDICATED THAT RECRUITMENT OF EXPIRATORY MOTONEURONS, REPRESENTED BY COLLECTION OF MOTOR UNITS, WAS MORE UNIFORM IN TIME AND GRADUAL THAT RECRUITMENT OF UNITS IN INSPIRATORY ONES. MOST OF EXPIRATORY UNITS WERE ABRUPTLY INHIBITED SHORTLY BEFORE INSPIRATION. OTHER CHARACTERISTICS OF ACTIVITY AND SEGMENTAL LOCATION OF BOTH INTERCOSTAL MOTONEURONAL GROUPS ARE DESCRIBED. SUPRA SPINAL ACTIONS WERE SUPPOSED TO BE RESPONSIBLE FOR CHANGES OF INTERCOSTAL ACTIVITIES AT THE END AND BEGINNING OF THE PERIOD OF BREATHING AND FOR THE FORMATION OF COINCIDENCES IN TIME EXTREMES OF ACTIVITY OF THE ANTAGONISTIC GROUPS.

FACILITY: INSTITUTE OF PROBLEMS OF INFORMATION TRANSMISSION.  
 FACILITY: ACADEMY OF SCIENCES, USSR, MOSCOW.

UNCLASSIFIED

USSR

UDC 539.3

EESORG, KH. KH., PROMET, P. KH., VIRKUS, KH. M., KULMET, R. YU.

"Stress Concentration Around a Rectangular Inclusion in a Homogeneous Elastic Medium Under a Plane Stress State"

V sb. Issled. po str-vu. Vyp. 11 (Studies on Construction. No. 11 -- Collection of Works), Tallin, 1970, pp 142-151 (from RZh-Mekhanika, No 9, Sep 71, Abstract No 9V44)

Translation: The stress distribution in a plate with a rectangular inclusion of another material under uniaxial compression was investigated for its application to the tensometric study of concrete structures with the aid of measuring plates applied to the material by the photoelasticity method. The results are compared with data obtained by the authors by an approximate analytical method. The coincidence was satisfactory. N. P. Fleyshman.

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USSR

UDC 678.743.41:541.515.701:53

VILENSKIY, A. I., VIRLICH, E. E., STEFANOVICH, N. N., RADTSIG, V. A.,  
VLADYKINA, T. N., and KROTOVA, N. A.

"The Effect of Peroxide Radicals on the Adhesive Properties of Fluoroplast-4"  
Moscow, Plasticheskiye Massy, No 10, 1971, pp 43-45

Abstract: Results are reported of the study of the adhesive activity of polytetrafluoroethylene (PTFE) as a function of the concentration of peroxide radicals generated during the treatment of PTFE in silent discharge. It was determined that current density has no effect on the maximum concentration of free radicals; however, it does shorten the process. Thermal treatment of the activated PTFE films leads to the formation of polar -CO and -C;C-groups which lead to high adhesive strength. In such thermally treated samples hydrogen bonds may form between the C=O groups of the films and OH groups of the epoxy resin. The experiments have shown that the high adhesive strength of the fluoroplast-4 activated in silent discharge is determined by stable peroxide radicals formed during the activation, which interact with the adhesive forming hydrogen bonds of an electrostatic character.

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USSR

UDC 678.643'42'5.029.5:621.792.3

VIRLICH, E. E. ✓

"Durability of Metal-Glue Compounds in Water and Aqueous Electrolyte Solutions"

Moscow, Plasticheskiye Massy, No 6, 1970, pp 58-60

Abstract: The article describes results of a study of the durability of glue compounds (glues based on epoxy resins) in water and aqueous electrolyte solutions. Cylindrical specimens ( $\varnothing$  20 mm), glued end to end, were subjected to the action of a tensile force and submerged in the medium in hermetically sealed glasses at 20-100° C. The durability of the epoxy resin-metal adhesive bond changes according to the mode of treatment of the metallic surface and the composition of the glue composites. The effect of these factors is due to the penetration of water molecules and electrolyte ions in the polymer-metal contact region. The introduction of fillers and plasticizers into the glue also affects the durability of the adhesive bond. Tests involv-

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VIRLICH, E. E., *Plasticheskiye Massy*, No 6, 1970, pp 58-60

ing glue compounds of steel St. 3 specimens, as well as a steel Kh18N9T-epoxy composite adhesion compound show that highly dispersed metallic fillers have a favorable effect on the adhesive bond. Plasticizers now widely used to increase the strength of glue compounds were used in experiments. The results confirm the ability of the plasticizers to increase the strength of glue compounds in air, but at the same time there is a sharp decrease in durability.

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1/2 024 UNCLASSIFIED PROCESSING DATE--11DEC70  
TITLE--A NEW HEMOSTATIC MATERIAL -U-  
AUTHOR--(02)-DAUROVA, T., VIRNIK, A.  
COUNTRY OF INFO--USSR  
SOURCE--MEDITSINSKAYA GAZETA, SEPTEMBER 25, 1970, P 3, COLS 6-7  
DATE PUBLISHED--25SEP70  
SUBJECT AREAS--BIOLOGICAL AND MEDICAL SCIENCES  
TOPIC TAGS--MEDICAL SUPPLY, HEMOSTASIS, ACRYLIC ACID, CALCIUM COMPOUND,  
BLOOD COAGULATION  
CONTROL MARKING--NO RESTRICTIONS  
DOCUMENT CLASS--UNCLASSIFIED  
PROXY FILM NO----FD70/605038/808 STEP NO--UR/9034/70/000/000/0003/0003  
CIRC ACCESSION NO--AN0142471  
UNCLASSIFIED

2/2 024

CIRC ACCESSION NO--AN0142471  
ABSTRACT/EXTRACT--(U) GP-0-

UNCLASSIFIED

PROCESSING DATE--11DECTO

ABSTRACT. THE INSTITUTE OF SURGERY IMENI  
VISHNEVSKIY AND THE COMPREHENSIVE RESEARCH LABORATORY, KOMPLEKSNAYA  
NAUCHNAYA LABORATORIYA, OF THE MOSCOW TEXTILE INSTITUTE HAVE PROPOSED A  
NEW HEMOSTATIC MATERIAL OBTAINED BY TREATING THE ORDINARY MEDICAL GAUZE  
WITH CALCIUM SALT OF THE POLYACRYLIC ACID. THE GAUZE IS STERILIZED IN  
AN AUTOCLAVE WITHOUT IMPAIRING THE HEMOSTATIC PROPERTIES OR STRENGTH OF  
THE GAUZE. TESTS CONDUCTED IN SIX SURGICAL CLINICS HAVE SHOWN THAT THE  
NEW MATERIAL STOPS BLEEDING OF SMALL ARTERIAL AND RENAL VESSELS. THE  
COAGULATION TIME WAS REDUCED TO ONE THIRD OF THE STANDARD. COMMERCIAL  
PRODUCTION OF THE NEW GAUZE WAS STARTED IN 1969.

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