

USSR

POLYAK, M. S., and MYASNIKOVA, L. G., Antibiotiki, No 3, 1972, pp 218-222

of the Clostridia revealed a considerable prolongation of the lag phase and decreased density of the biomass in the logarithmic and stationary phases.

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USSR

UDC 616-002.364-085.334:582.282.123.2

POLYAK, M. S., Leningrad Scientific Research Institute of Antibiotics, Leningrad

"Effectiveness of Semisynthetic Penicillins in Experimental Gas Gangrene"

Leningrad, Vestnik Khirurgii imeni I. I. Grekova, Vol 106, No 5, May 71, pp 74-76

Abstract: The minimum bacteriostatic and bactericidal concentrations of oxacillin, methycillin, ampicillin, and penicillin (in the form of the K salt of benzylpenicillin) effective against *Cl. perfringens*, *Cl. septicum*, *Cl. histolyticum*, *Cl. sordelli*, and *Cl. sporogenes* were determined in vitro. The protective effect of oxacillin, methycillin, and ampicillin against infection with *Cl. perfringens*, *Cl. septicum*, and *Cl. histolyticum* was studied in experiments on mice. On intramuscular administration, ED₅₀ in gamma/mouse for infection with *Cl. perfringens* and *Cl. septicum* was 240 ± 51 , 255 ± 40.8 , and 40 ± 7.5 for oxacillin, methycillin, and ampicillin, respectively, while the corresponding minimum protective dose in gamma/1/2

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POLYAK, M. S., Vestnik Khirurgii imeni I. I. Grekova, Vol 106,
No 5, May 71, pp 74-76

mouse was 20, 160, and 30. The semisynthetic penicillins were scarcely effective against the infection produced by *Cl. histolyticum*. Intravenous oxacillin was more effective than intramuscular or peroral doses. Both in vitro and in vivo, methycillin and oxacillin had a lower activity against Clostridia than penicillin (benzylpenicillin), but the semisynthetic penicillins, as shown in experiments with oxacillin, were effective against Staphylococci in mixed infections with Clostridia and Staph. aureus strains resistant to benzylpenicillin. Methycillin and oxacillin did not act as penicillin antagonists when applied in combination with penicillin against pathogenic Clostridia.

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022 UNCLASSIFIED PROCESSING DATE--30OCT70
LE--EXPERIMENTAL STUDIES ON OLEMORPHOCYCLINE AEROSOLS -U-
AUTHOR--(02)--LAGERT, I.K., POLYAK, M.S.
COUNTRY OF INFO--USSR
SOURCE--ANTIBIOTIKI, 1970, VOL 15, NR 6, PP 554-557
DATE PUBLISHED-----70
SUBJECT AREAS--BIOLOGICAL AND MEDICAL SCIENCES
TOPIC TAGS--AEROSOL, ANTIBIOTIC, STAPHYLOCOCCUS, CLINICAL
MEDICINE/(U)OLEMORPHOCYCLINE ANTIBIOTIC
CONTROL MARKING--NO RESTRICTIONS
DOCUMENT CLASS--UNCLASSIFIED
PROXY REEL/FRA--2000/1841 STEP NO--UR/0297/70/015/006/0554/0557
CIRC ACCESSION NO--AP0125452
UNCLASSIFIED

2/2 022

UNCLASSIFIED

PROCESSING DATE--30OCT70

CIRC ACCESSION NO--AP0125452

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. EXPERIMENTAL STUDIES ON OLEMORPHOCYCLINE AEROSOLS SHOWED THE POSSIBILITY OF CREATING HIGH ANTIBIOTIC LUNG LEVELS. THE PREPARATION WAS ABSORBED BY THE BLOOD AND DETECTED IN THERAPEUTIC CONCENTRATIONS IN THE URINE AND THE TISSUES OF THE LIVER AND THE KIDNEYS. OLEMORPHOCYCLINE AEROSOLS WERE EFFECTIVE IN THE TREATMENT OF MICE INFECTED INTRANASELY WITH GRAMNEGATIVE BACTERIA AND STAPHYLOCCI. CHEMOTHERAPEUTIC ACTIVITY OF MORPHOCYCLINE AND GLEANDOMYCIN WAS OBSERVED. THE DATA OF THE STUDY PROVIDED RECOMMENDATION OF OLEMORPHOCYCLINE FOR THE USE IN AEROSOLS. IT IS APPROVED FOR CLINICAL TRIALS. FACILITY: LENINGRAD INSTITUTE FOR ANTIBIOTICS.

UNCLASSIFIED

USSR

UDC 621.372.85 3

GOLOVANOV, V. A., KRASNOV, YE. S., MERKIN, E. I., OSNOVINA, G. O., POLYAK, N. M.,
PROKOPENKO, V. G., and ERLIKH, E. I.

"Adhesives for the Ferrites of Super-High Frequency Instruments"

Elektron. tekhnika. Nauch.-tekhn. sb. Ferrit. tekhn. (Electronics Technology.
Scientific-Technical Collection of Articles. Ferrite Technology), 1971, vyp.4
(31), pp 111-114 (from RZh-Radiotekhnika, No 11, Nov 72, Abstract No 11 B154)

Translation: The authors study problems associated with the selection of an ad-
hesive for mounting ferrite inserts in high power level, super-high frequency in-
struments. Test results are also presented for various working conditions. Ori-
ginal article: one table and three bibliographic entries. Resume.

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Devices

3

USSR

UDC 621.3.049.7

GOLOVANOV, V. A., YEREMICHEVA, K. A., KRASNOV, Ye. S., MERKIN,
E. I., OSNOVINA, G. G., POLYAK, N. M., and ERLIKH, I. M.

"Adhesive with Epoxy Base"

Moscow, Otkrytiya, izobreteniya, promyshlennyye obraztsy, tovarnyye
znaki, No. 33, 1971, p 200

Abstract: This adhesive is designed to improve the operation of ferrite UHF devices in the face of low and high powered signals as well as temperature variations. A recipe for its manufacture is given.

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USSR

UDC 621.372.85

POLYAK, N.M., ERLIKH, I.M., SHTEYNBAKH, B.D.

"Adhesions For Ferrite Microwave Devices"

V sb. Obmen opytom v radioprom-sti (Sharing Of Experience In Radio Industry--
Collection Of Works), Issue 4, Moscow 1971, pp 47-48 (from RZh-Radiotekhnika, No 9,
Sept 1971, Abstract No 98136)

Translation: During polymerism of epoxy glues ordinarily used for fastening of ferrite bushings [vkladysh] to the armature in microwave devices, internal thermal stresses appear which are due to different temperature expansion coefficients of the ferrites and glue. It is possible to prevent formation of thermal stresses if cold hardening glue is used with the second-order transition temperature below an extremely low operating temperature. Data are presented on glues obtained on the basis of the PDI-3A oligomer [meaning unknown], characteristic of flexible hydrocarbon chains with terminal epoxy groups. 1 tab. 6 ref. N.S.

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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.

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USSR

UDC: 51

POLYAK, R. A.

"On an Approach to the Problem of Multiple-Goal Programming"

Tr. 4-y Zima. shkoly po mat. programmir. i smezh. voprosam, 1971, vyp. 2
(Works of the Fourth Winter School on Mathematical Programming and Related
Problems, 1971, No 2), Moscow, 1971, pp 138-156 (from RZh-Kibernetika, No
6, Jun 72, Abstract No 6V370)

Translation: The problem of vector optimization of the function $F(x) = (f_1(x), \dots, f_n(x))$, $x \in E^n$ is formulated. It is proposed that the concept of the best Chebyshev approximation of system $F(x)$ be used in solving it. The best Chebyshev approximation is a Pareto optimum and has a number of other useful properties. A convergent algorithm is proposed for constructing the best Chebyshev approximation. It is pointed out that the method can be used for solving the general problem of convex programming which consists in finding

$$\varphi(x^*) = \min \{ \varphi_j(x) \mid \varphi_j(x) < 0, j \in J \}.$$

When the method is used for solving the convex programming problem, a pair of sequences can be constructed which converge to solution of direct and dual convex programming problems. M. Kazakova.

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USSR

UDC 576.858.75

VOYTSEKHOVSKIY, B. L., POLYAK, R. Ya., and SMORODINTSEV, A. A., Member,
Academy of Medical Sciences USSR, All-Union Scientific Research Influenza
Institute, Leningrad

"Determination of the Toxic Activity of Influenza Virus with Respect to
Inhibition of Oxygen Consumption in the Virus-Cell System"

Moscow, Doklady Akademii Nauk SSSR, Vol 201, No 6, 1971, pp 1,478-1,480

Abstract: The effect of influenza virus strains on the respiratory function of human and animal cells sensitive and resistant to infection with the virus was studied. Influenza virus A₂-Hong Kong/68 that had been partly purified by centrifuging and with freon-113 stimulated the respiration of infected susceptible cells (chick embryo and human embryo cultures) and inhibited the respiration of resistant cells (human leukocytes and chick embryo fibroblasts). The toxic effect of the virus on respiration was suppressed by type-specific antibodies. Microcalorimetric determination of the heats of reaction of various substrates with a virus-infected and non-infected homogenate of chick embryo fibroblasts showed that all principal stages of glycolysis and oxidation were altered by infection with the virus.

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USSR

VOYTSEKHOVSKIY, B. L., et al., Doklady Akademii Nauk SSSR, Vol 201, No 6, 1971, pp 1,478-1,480

The decrease in the consumption of O_2 was accompanied by reduced activity of glycolytic and oxidative enzymes, increased activity of ATP-ase, and accelerated utilization of NAD-H₂. There was a direct relationship between the toxic activity of a virus strain, as indicated by inhibition of cell respiration, and the pathogenicity of the strain to the cell donor. The strain A₂-Hong Kong/3 with a highly virulent effect on humans was much more toxic to human leukocytes than the vaccinal strain A₂-Hong Kong/21, which is adapted to chick embryo fibroblasts. On the other hand, strain A₂-Hong Kong/21 was more toxic to chick embryo fibroblasts than to human leukocytes. The results obtained show that the toxicity of an influenza virus strain, and consequently its virulence, can be conveniently determined on the basis of its capacity to inhibit the respiration of resistant cells.

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USSR

UDC 612.743

UFLYAND, Yu. M., and POLYAK, S. B., Chair of Physiology, Sanitation Hygiene Medical Institute, Leningrad

"Electromyographic Characteristics of the Antagonistic Muscles of Extremities During Adequate Vestibular Stimulation:

Leningrad, Fiziologicheskii Zhurnal SSSR imeni I. M. Sechenov, Vol 56, No 2, 1970, pp 191-196

Abstract: Experiments were conducted to determine the effect of vestibular stimulation on the electrical activity of skeletal muscles. At the beginning of rotation, all the studied antagonistic muscles showed increased bioelectrical activity. During five minutes of uniform rotation, gradual decrease in the excitation of motor centers was noted, which on occasions reached complete electrical "silence", indicating adaptation of the neuromotor centers. Comparison of the electromyographs of antagonistic muscles of anterior and posterior extremities taken after rotatory stimulation of the vestibular apparatus (centrifugal acceleration in the head--feet direction) showed higher excitation and a more clearly expressed excitation process in the case of the triceps and anterior tibial muscles,

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as compared to the biceps and gastrocnemius muscles, respectively. After the rotation was stopped, the bioelectrical activity of antagonistic muscles increased again sharply, but only for a short period, followed by complete arrest. These phenomena are most probably a reflexive compensatory reaction directed to maintain a stable position of the animal during stimulation of the vestibular apparatus.

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Acc. Nr: **AP0037008**

Ref. Code: UR 0239

PRIMARY SOURCE: Fiziologicheskii Zhurnal SSSR, 1970, Vol 56,
Nr 2, pp 191-196

ELECTPOMYOGRAPHIC CHARACTERISTIC
OF THE LIMBS' ANTAGONISTIC MUSCLES DURING PROPER VESTIBULAR
STIMULATION

Uflyand, Yu. M.; Pelyak, S. B.

Dept. of Physiology, Sanitary Hygienic Medical Institute, Leningrad

Regular increase of the bioelectric activity of the limbs' antagonistic muscles was shown to occur during rotation of an animal in the horizontal plane. Excitation of the anterior tibial muscle always surpassed that of the gastrocnemius muscle while the excitation of the triceps always surpassed that of the biceps, regardless the direction of the rotation.

D.A.

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USSR

UDC 539.374 4

VERETNIKOV, S. V., KRASIKOV, K. I., NOVOBRATSKIY, R. L., PERPER, F. A.,
POLYAK, S. H., UMANSKIY, YA. S., USIKOV, M. P., EPSHTEYN, G. N.

"Effect of an Impact of a Part of a Matrix Under Impulse Distortion"

V sb. Vysokoskorostn. deformatsiya (High-Speed Deformation -- Collection of Works),
Moscow, "Mauka", 1971, pp 108-109 (from RZh-Mekhanika, No 3, Mar 72, Abstract
No 3V653).

Translation: The structure and mechanical properties of nickel, nichrome (NiCr7) and Kh18Ni9Ti steel after hydraulic impulse stamping with impact and without impact of the parts of the matrix were investigated. It was established that collision occurs in a closed matrix and the central zone of the part undergoes the strongest impact. The impact of a part of thickness 2 mm causes strengthening of the material in the middle of the thickness of the part and weakening in the zone of a depth up to 0.3 mm from the side of the surface of the part contacting the matrix which is connected with nonuniform plastic deformation in the impact process. The weakening effect is supported by results of studying parts of thickness 0.3 mm that have first undergone collision with the matrix. Authors abstract.

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USSR

UDC 542.48

KOLOTYGIN, Yu. A., D'YAKOV, A. A., FILIPPOV, S. N., and POLYAK, T. I.,
Sverdlovsk

"Acid Treatment of Distilled Sea Water"

Moscow, Vodosnabzheniye i Sanitarnaya Tekhnika, No 10, 1972, pp 5-6

Abstract: Experimental results are reported on the study of thermal decomposition of bicarbonates in partially acidified Caspian Sea water. It was shown that the decomposition of bicarbonates can be almost completely prevented by acidifying the water to pH 5-6. On this basis a method was developed for evaporation of sea water following a partial acidification of the starting material.

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POLYAK, V.S.

Radioastronomy

CARL

See JPRS 5985
7 SEP 73

(2)

UDC 621.396.67
THE DEVELOPMENT OF STRUCTURAL METHODS FOR INCREASING THE EFFECTIVENESS OF FULLY ROTATABLE PARABOLIC ANTENNAS

Article by A.G. Sokolov and V.S. Polyak. Moscow, Izvestiya Vysshikh Uchebnykh Zavedeniy -- Radiofizika, Russian, Vol. 15, No. 3, 1973, submitted 7 November 1972, pp 635-660

The modern stage of development of radioastronomy, radio-physiology, and space communications is marked by an attempt to increase the effective area of fully rotatable reflector antennas (FZA) to several hundreds of thousands of square meters (which corresponds to diameters exceeding 100 meters) and raising the operating frequency to 100 000 megahertz. In so doing, great difficulties arise in maintaining antenna effectiveness at the short-wave end of the band, usually at the centimeter and millimeter wavelengths, because the deviation of the actual shape of the surface from that given must be kept within the limits of 0.1-0.03 wavelength despite continuous changes in the field of gravitational forces with gusty rotation and despite changing winds. Certain works [1,2,4,6] have indicated that the direct route to reducing structural deformation is restricted, since it is impossible to create a structure with deformations which are less than the deformations from their own weight, which changes proportionally to the square of the reflector's diameter. This leads to a gap between permitted and actual deformations which grows as the diameter increases. This is especially important in large antennas, in view of the reduction in the share of wind loads to several percent with increased diameter.

Thus a basically new problem arises -- the search for structural approaches which lie beyond the deformational limits. However, neither the diameter of the antenna's aperture D, nor the wavelength λ in themselves create structural problems in their realization. The problem arises only at a certain ratio D/ λ , which thus determines the direction of structural implementation.

USSR

UDC 614.72:66.013

POLYAK, V. Ye., Shchelkovo Sanitary Epidemiological Station, Moscovskaya Oblast

"Air Pollution in the Vicinity of a Chemical Plant and the Effect of Its Emissions on Health and Living Conditions"

Moscow, Gigiyena i Sanitariya, No 7, Jul 70, pp 92-93

Abstract: The Shchelkovo Chemical Plant, which manufactures sulfuric acid and sodium bisulfite, emits sulfur dioxide and other noxious gases in quantities far in excess of maximum permissible concentrations, as shown by air sampling carried out by the local sanitary epidemiological station for the past 11 years. Some people live no more than 100 m from the plant. In answering specially prepared questionnaires, the great majority of people living within a radius of 1,000 m complained of the strong, unpleasant odor of the emissions, their deleterious effects on health, vegetation, and bees, rusting of metal objects, etc. A study of the records of 4,000 outpatients at the local medical facility showed that those living within a radius of 1,000 m of the plant sought medical care for disorders of the respiratory tract, eyes, skin, and nervous system almost twice as often as those living 3,000 m or more from the plant. On the basis of air sampling, questionnaires, and analysis of visits to the clinic, the sanitary epidemiological station is requesting that the management of the plant take steps to reduce air pollution and to create a protective zone around the plant.

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USSR

UDC 519.8:62-50.72:519.25:518.6

POLYAK, Yu. G.

Veroyatnostnoye Modelirovaniye na Elektronnykh Vychislitel'nikh Mashinakh
(Probability Modeling on Electronic Computers), Moscow, "Sovetskoye Radio,"
1971, 400 pp

Translation: Annotation: The author examines questions on a procedure for the direct probability modeling of complex systems on a computer. He discusses the methods of simulating random effects and interpreting the results of probability modeling, questions of finding algorithms, and programming of models on a computer. He examines methods of control of the statistical experiment on a model. He formulates heuristic principles for constructing the model and proving its correspondence with the modeling system. The discussion is illustrated with examples from the field of modeling radio engineering systems. A large part of the material is original. The book is intended for specialists occupied with development and investigation of radio engineering systems of different types and also for a wide number of persons utilizing computers for modeling physical, economic, and other processes and systems. (74 illustrations, 25 tables, and 501 bibliographic entries).

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POLYAK, Yu. G., Veroyatnostnoye Modelirovaniye na Elektronnykh Vychislitel'-
nikh Mashinakh (Probability Modeling on Electronic Computers), Moscow,
"Sovetskoye Radio," 1971, 400 pp

Table of Contents:

Forword

Introduction

1. Major Systems: Experiment and Analysis
2. Direct Modeling of the System
3. Methodology of Probability Modeling
4. Survey of the Contents

Bibliography

Chapter I. Basic Concepts and Examples

- 1.1. Preliminary Comments on Terminology
- 1.2. The Model as Approximation of the Description. Geometric Treatment
- 1.3. Transition From Description to Model
 - 1.3.1. Model of a Functioning System (23)
 - 1.3.2. Model of a Projected System (25)

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USSR

POLYAK, Yu. G., Veroyatnostnoye Modelirovaniye na Elektronnykh Vychislitel'nikh Mashinakh (Probability Modeling on Electronic Computers), Moscow, "Sovetskoye Radio," 1971, 400 pp

- 1.4. Block Model and Onset of Stochasticity
- 1.5. Examples of Partial and Block Models
- 1.6. Conclusions. Formulation of Methodological Problems. Planning of the Discussion.

Bibliography

Statics of Modeling

Chapter II. Simulation, Investigation, and Control of Random Effects

- 2.1. Introduction
- 2.2. Basic and Derived Random Effects
- 2.3. Random, Pseudorandom, and Quasirandom Basic Effects
- 2.4. Criteria and Methods of Checking the Basic Effects
- 2.5. Requirements for Simulatable Effects

Bibliography

Chapter III. Algorithms for Simulating Random Effects on a Computer

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POLYAK, Yu. G., Veroyatnostnoye Modelirovaniye na Elektronnykh Vychislitel'-
nikh Mashinakh (Probability Modeling on Electronic Computers), Moscow,
"Sovetskoye Radio," 1971, 400 pp

- 3.1. Basic Effects. Simulation of Pseudorandom Numbers With Uniform Distribution
 - 3.2. Simulation of Random Events
 - 3.3. Simulation of Discrete Random Quantities
 - 3.4. Simulation of Continuous Random Quantities
 - 3.5. Simulation of Random Vectors
 - 3.6. Simulation of Random Processes
 - 3.7. Simulation of Random Fields
 - 3.8. Concluding Comments
- Bibliography

Chapter IV: Interpretation of Modeling Results

- 4.1. Criteria
- 4.2. Statistical Treatment of the Modeling Results (Typical Schemes; Terms)
- 4.3. Statistical Treatment of Independent Applications of the Interpretation Criterion

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USSR

POLYAK, Yu. G., Veroyatnostnoye Modelirovaniye na Elektronnykh Vychislitel'-
nikh Mashinakh (Probability Modeling on Electronic Computers), Moscow,
"Sovetskoye Radio," 1971, 400 pp

4.4. Statistical Treatment of Dependent Applications of Interpretation
Criterion (Stationary Case)

4.5. Other Methods of Statistical Treatment of Results. Methodological
Comments.

Bibliography

Dynamics of Modeling

Chapter V: Statistical Experiment With Variations of the Model

5.1. Comparison of the Variations of the Modeling System

5.2. Optimization of the Modeling System

5.3. Other Problems Associated With Modeling Variations of the System

Bibliography

Chapter VI: Construction of the Model

6.1. Introduction

6.2. Principles and Rules of Modeling

6.3. Construction of a Unique Model

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USSR

POLYAK, Yu. G., Veroyatnostnoye Modelirovaniye na Elektronnykh Vychislitel'nikh Mashinakh (Probability Modeling on Electronic Computers), Moscow, "Sovetskoye Radio," 1971, 400 pp

- 6.4. Organization of the Sequence of Models
- 6.5. General Solutions in Constructing Models. Analogies.
- 6.6. Concluding Remarks

Bibliography

Chapter VII: Programming of Models

- 7.1. Introduction
- 7.2. Programming of Block Models With Discrete Events
- 7.3. Automation of Programming Block Models With Discrete Events
- 7.4. Concluding Remarks

Bibliography

Appendix I. Several Symbols

Appendix II. The Distribution Function $\phi(x) =$

$$\frac{1}{2\pi} \int_{-\infty}^x e^{-\frac{x^2}{2}} dx$$

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USSR

POLYAK, Yu. G., Veroyatnostnoye Modelirovaniye na Elektronnykh Vychislitel'nykh Mashinakh (Probability Modeling on Electronic Computers), Moscow, "Sovetskoye Radio," 1971, 400 pp

Appendix III. $t_p = \phi^{-1} \left(\frac{1+P}{2} \right)$

Appendix IV. Nomogram for the Chi-Square Probability Function

Subject Index

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USSR

UDC:539.12.173

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ABDULLAYEV, R.S., GURVICH, L.G., ZAKHAROV, G.E., POLYAK, YU.V.
and SKRIPNIKOV, YU.S.

"Experimental Determination of Energy Release due to Radiation in Certain
Construction Materials"

Tashkent, Sb. Dozimetriya i Radiats. Protsessy v Dozimetr. Sistemakh
(Symposium on Dosimetry and Radiation Processes in Dosimetric Systems),
1972, pp 197-200 (from Referatsionnyy Zhurnal-Yadernyye Reaktory, 1973, Ab-
stract No 3.50.78)

Translation: Investigation results are presented on static temperature
distribution inside a sphere located in the radiation field of a reactor, specific
heat release for various metals was determined. Calculation of specific heat
release was based on the assumption of uniform and exponential distribution of
heat release sources through the depth of the material. Measurement of
temperature field inside the sphere provided data on absorption on gamma-
radiation by lead. 1 illustration. 2 references.
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1/2 008

UNCLASSIFIED

PROCESSING DATE--09OCT70

TITLE--CANONICAL EQUATIONS FOR THE CASE OF NON HOLONOMIC SYSTEMS -U-

AUTHOR--POLYAKHOV, N.N.

P

COUNTRY OF INFO--USSR

SOURCE--VESTNIK LENINGRADSKOGO UNIVERSITETA, NO 1, MATEMATIKA, MEKHANIKA,
ASTRONOMIYA, 1970, NR 1, PP 120-122

DATE PUBLISHED--70

SUBJECT AREAS--MATHEMATICAL SCIENCES

TOPIC TAGS--POISSON EQUATION, DYNAMIC SYSTEM, NONLINEAR EQUATION

CONTROL MARKING--NO RESTRICTIONS

DOCUMENT CLASS--UNCLASSIFIED

PROXY REEL/FRAME--1984/0386

STEP NO--UR/0043/70/000/000/0120/0122

CIRC ACCESSION NO--AP0055171

UNCLASSIFIED

2/2 008

UNCLASSIFIED

PROCESSING DATE--09OCT70

CIRC ACCESSION NO--AP0055171

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. THE PAPER CONTAINS THE CANONICAL EQUATIONS IN THE FORM OF POISSON (EQUATIONS (10) OR (11)) FOR THE CASE OF NON HOLONOMIC DYNAMICAL SYSTEMS. THE COORDINATES Q SUBSIGMA AND THEIR DERIVATIONS \dot{Q} SUBSIGMA ARE CONNECTED BY NON LINEAR EQUATIONS (1). THE PROOF IS BASED ON THE PRINCIPLE OF GAUSS.

UNCLASSIFIED

89

1/2 037 UNCLASSIFIED PROCESSING DATE--13NOV70
TITLE--THE LONG PERIOD PERTURBATIONS OF ARTIFICIAL SATELLITES UNDER THE
ACTION OF SOLAR RADIATION PRESSURE -U-
AUTHOR--POLYAKHOVA, YE.N.
COUNTRY OF INFO--USSR P
SOURCE--VESTNIK LENINGRADSKOGO UNIVERSITETA, NO 7, MATEMATIKA, MEKhanIKA,
ASTRONOMIYA, 1970, NR 2, PP 144-152
DATE PUBLISHED-----70

SUBJECT AREAS--ASTRONOMY, ASTROPHYSICS, SPACE TECHNOLOGY
TOPIC TAGS--SOLAR RADIATION, PRESSURE, ORBIT PERTURBATION, PERTURBED
SATELLITE MOTION, EARTH SATELLITE ORBIT

CONTROL MARKING--NO RESTRICTIONS

DOCUMENT CLASS--UNCLASSIFIED
PROXY REEL/FRAME--3005/1944 STEP NO--UR/0043/70/000/000/0144/0152

CIRC ACCESSION NO--AP0133788

UNCLASSIFIED

UNCLASSIFIED

PROCESSING DATE--13NOV70

2/2 037

CIRC ACCESSION NO--AP0133788

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. THE LONG PERIOD PERTURBATIONS OF THE ORBITAL ELEMENTS OF ARTIFICIAL SATELLITES WITH HIGH "AREA TO MASS" RATIO CAUSED BY THE DIRECT SOLAR RADIATION PRESSURE ARE CONSIDERED. A LARGE SEQUENCE OF ORBITS IS SELECTED TO ILLUSTRATE THE PRINCIPAL PERTURGING EFFECTS. THE GRAPHS ARE DRAWN ON THE SUPPOSITION OF NEGLECTING THE PLANET NONSPHERICITY INFLUENCE AND THE EFFECT OF SHADOW.

UNCLASSIFIED

Hydrobiology

USSR

POLYAKOV, A.

"From the Aquarium to Radioecology"

Moscow, Vodnyy Transport, 3 Mar 70, p 3

Abstract: The snow-white building resembles an ocean liner as it stands at one of the moorings in Sevastopol's North Bay. In a few years, the scientific world will mark the centennial of a scientific research institution which has taken its place among them and which was created on the initiative of the famous Russian traveller and zoologist, N. Miklukho-Maklay. Here prominent scientists and biologists A. Kovalevskiy, S. Zernov, I. Sechenov, and I. Mechnikov, worked. Under Soviet power, the Sevastopol' Biological Station became the Institute of the Biology of the Southern Seas, Ukrainian Academy of Sciences.

The main objective of this institution is to probe the secrets of the silent world, to help commercial fishermen increase the yield of fish and sea products, and to render good service to the inhabitants of the sea.

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USSR

POLYAKOV, A., Moscow, Vodnyy Transport, 3 Mar 70, p 3

Water surrounds us on all sides, but we manage without diving gear. The thick glass of the aquarium separates us from the marine surroundings.

Behind the glass walls of the twelve-sided hall and the round central basin, there is greenish twilight. It comes from "moonlight" of lamps which shine through the denser water. Under such lighting, the lace of sea plants, the rock fragments, the bottom covered with polishing pebbles, and the multiform inhabitants of the underwater kingdom are well discernable.

In the richest collection of Black Sea fauna, all inhabitants of the "bluest sea in the world" are represented -- from timid bull-heads to menacing rays. Here you can see the rare, sea-rooster and needlefish, the stauride and stripped red mullet, *Ozenilabrus Tinca*, and the grey mullet, the Black Sea shark, and even sea-cows, sea-foxes, and sea-lions, and in the sturgeon family, the stellate sturgeon and the white sturgeon. Incidentally, the excursion guide maintains that the latter lives to 200 years and can weigh 1,000 kilograms. An

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USSR

POLYAKOV, A., Moscow, Vodnyy Transport, 3 Mar 70, p 3

amazing characteristic of the flatfish is that it resembles a pan-cake. Among grey rocks it is grey, but if it is moved to the black bottom, its coloration turns to black. Such a phenomenon is called mimicry.

It was earlier believed that the animal and plant world of the Black Sea was very inferior. Scientists of the institute have refuted this assertion, having proven that in the amount of vegetable plankton it is considerably richer than the Mediterranean and is not inferior to the North Sea. It also has a great number and variety of commercial fish. And the live exhibits of this underwater zoo are proof of this.

The damage that so-called overgrowth does to ships, moorings, and piles is well-known. A department of overgrowth biology is successfully working on a solution to the problem of combatting this evil.

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USSR

POLYAKOV, A., Moscow, Vodny Transport, 3 Mar 70, p 3

Workers in the Benthos Department (Bathyl organisms) are conducting research connected with the processing of sea plants and their use in the national economy. The reproduction patterns of marine fish, upon which not only the planning of catches but also the restocking of sea life depends, are fascinating to the scientists of the laboratory of fish plankton. In the zooplankton group, everything is directed toward the future. They are interested not only in the present yield of underwater pastures, but also in their condition tomorrow and after.

Along with the old classical disciplines of hydrobiology, new sciences have emerged. Among them are radioecology, bionics, and sanitary biology. Whereas bionics deals with the search for analogies between live organisms of the underwater world and technological devices, sanitary biology, with the only such laboratory in the country at the institute, is resolving the problem of preventing pollution of the sea.

The youngest department of the institute is the department of

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USSR

POLYAKOV, A., Moscow, Vodnyy Transport, 3 Mar 70, p 3

radioecology, headed by Doctor of Biological Sciences, Professor G. Polikarpov, a Corresponding Member of the Ukraine SSR Academy of Sciences.

Marine radioecology is the child of the atomic age. It studies the patterns of interaction between radioactive substances and marine organisms. This field, like marine neustonology which studies life in the uppermost layer of the sea, was born and has developed at the institute. The close cooperation of these two sciences has led to the creation of neuston radioecology. This branch deals with the role of radioactivity in the origin and evolution of sea life and with the effect of artificial radioactivity in nature upon the neuston, which is an incubator and nursery of the majority of species of sea and ocean inhabitants, as commercial fish, crabs, shrimps, oysters, and mussels.

As studies have shown, radioactive isotopes exert a detrimental effect on the development of spawn, larvae, and fry. By contributing their work to the cause of peace, scientists and biologists of this heroic city, together with all progressive people, stand for the cessation of atomic experiments.

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USSR

POLYAKOV, A., Moscow, Vodnyy Transport, 3 Mar 70, p 3

The success of the young department is evidenced by the fact that the report of strontium-90 content in the sea especially interested one of the special departments of the UN committee.

Another success is T. Petipa, a young scientist who heads the Laboratory of Organism Associations.

Upon graduating from the biology department of the Rostov State University, Tamara came to Sevastopol'. She is the daughter of a builder and the great-granddaughter of the famous ballet master Maruis Petip. Working as a laboratory assistant and later as a young scientific worker at the Institute of Biology of the Southern Seas, she laboriously collected material for her candidate dissertation and accumulated it in expeditions and trips to Yugoslavia, Romania, Bulgaria, Italy, France, and Tunisia. Scientific work became her whole life.

When the material was collected, systematized, and processed, Tamara took her dissertation to the court of scientists in Moscow.

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USSR

POLYAKOV, A., Moscow, Vodnyy Transport, 3 Mar 70, p 3

Here, at the Institute of Oceanology, something unexpected took place. Having twice voted on the dissertation "Feeding and Energy Balance of Plankton-Eating Crayfish Crustacea", presented for the title of Candidate of Biological Sciences, the scientific council awarded to T. Petipa the title of doctor.

The strenuous work goes on in the laboratories. A number of interesting studies are devoted to its results. A multivolume scientific work on the flora and fauna of the Black Sea and the Azov Sea is near completion.

Along with this, expeditions occupy an important place in the work of the institute. Institute workers have gone on expeditionary voyages in the Atlantic and Indian oceans and have gone many times to the Carribean, its bays and straits, where they helped Cuban scientists to master commerical fishing areas.

Day and night, in tropical heat and icy cold the ship of Sevastopol' researchers plies the world's oceans.

7/7

USSR

UDC 619.614.48

POLYAKOV, A. A., Academician, All-Union Academy of Agricultural Sciences imeni Lenin, KULIKOVSKIY, A. V., and ANDRYUNIN, Yu. I., Candidate of Veterinary Sciences, All-Union Research Institute of Veterinary Sanitation

"Studies on Disinfection of Bacteria and Spores by Gamma Rays"

Moscow, Veterinariya, No 4, 1973, pp 26-31

Abstract: The ultrastructure of Staphylococci, Listeria, and anthrax spores was studied with an electron microscope following their exposure to different doses of gamma rays from a ^{60}Co source. For electron microscopy, the cells and spores were fixed with osmic acid, defatted with ethanol, and embedded in methacrylate for sectioning. Exposure of the bacteria to different doses of radiation, including bactericidal doses (0.3 Mrad for listeria and 0.5 Mrad for Staphylococcus), elicited only minimal changes consisting of localized dissolution of plasma membrane, a less dense cytoplasm, vacuolization of the nuclear region, and aggregation of the nuclear strands. Exposure of the anthrax spores to 0.5 and 1 Mrad of irradiation caused the sporoplasm volume to increase, the outlines of the different coats to be less well differentiated, and germinating spores were noted. A 2 Mrad dose was sporocidal; spore outline became diffuse,
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USSR

POLYAKOV, A. A. and ANDRYUNIN, Yu. I., Veterinariya, No 4, 1973, pp 26-31

and coat layers became indistinct. The internal structure was poorly differentiated and contained many dense bodies in the sporoplasm. The results showed that gamma rays exert their disinfectant action without exerting pronounced structural changes in bacterial vegetative cells and spores, and death occurs instantaneously after exposure. Sublethal doses induce germination in spores.

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Veterinary Medicine

USSR

UDC 614.9-084.48

POLYAKOV, A. A., TRZHETSETSKAYA, T. A., BOSH'YAN, G. M., PRESNOV, I. N.,
IVANOVA, V. I., TARAKANOV, Yu. I., SMIRNOV, A. M., KULIKOVSKIY, A. V. SHUVAYEVA,
O. N., and DMITRIYEVA, T. A., All Union Scientific Research Institute of
Veterinary Sanitation, Moscow

"Advances in the Disinfection of Objects Associated With Livestock Raising"

Moscow, Zhurnal Mikrobiologii, Epidemiologii i Immunobiologii, No 8, 1971,
pp 20-24

Abstracts: An outline is given of the results of recent research conducted by the All Union Scientific Research Institute of Veterinary Sanitation. Some of the practical and theoretical accomplishments are: (a) synthesis of 5 disinfectants (caspos, demp, molaran, gudronol, hypochlor); (b) electron microscope study of the effects of different classes of disinfectants (alkalies, acids, chlorine preparations) on bacterial cells (*E. coli*, *Salmonella*, *Staphylococci*) (c) discovery that soil can be completely or partly disinfected by growing timothy and sweet clover; (d) development of methods for disinfecting wool and hides by means of gases (ethylene oxide, methyl bromide); and (e) successful testing of various gases (ethylene oxide, methyl bromide, war gases) and gamma rays to combat some bee diseases (foulbrood, nosema disease, Isle of Wight disease) found in hives.

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USSR

UDC 576.851.48.095.18:541.454

POLYAKOV, A. A., PAVLOVA, I. B., and KULIKOVSKIY, A. V., All-Union Scientific Research Institute of Veterinary Sanitation and Moscow Institute of Epidemiology and Microbiology imeni Gamaleya, Academy of Medical Sciences USSR

"Dynamics of Structural Changes in *E. coli* and *Staph. aureus* Following Application of Alkalies"

Moscow, Zhurnal Mikrobiologii, Epidemiologii i Immunobiologii, No 11, 1971, pp 31-35

Abstract: The bactericidal effects of sodium and potassium hydroxide on *E. coli* and *Staph. aureus* were investigated by electron microscopy. The alkalies dissolve the outer cell membrane in 5-10 min, further dissolve and create perforations in the outer membrane and attack the cytoplasmic membrane in 30-45 min, and completely destroy both membranes and break the cytoplasm and karyoplasm into granular segments of various electron density in 60-80 min. The minimum effective concentrations of the alkalies is 0.2% with respect to *E. coli* and about 0.9% with respect to *Staph. aureus*. It is concluded that the alkalies saponify the lipid fraction of the membranes, after which enzymes destroying the protein and mucopeptide fraction are released. *Staph. aureus* is more resistant to alkalies because its membrane is made of a smaller portion of lipids and a larger portion of mucopeptides.

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USSR

UDC 621.357.8(083.8)

SAMETSKIY, B. I., BELOUSOV, V. I., POLYAKOV, A. M., SHOLENTSEV, G. P., KONDRASHKOV, M. P., KUROV, P. YE.

"Solution for Electrochemical Etching of Metals"

USSR Author's Certificate No 308097, filed 7 Apr 69, published 23 Aug 71 (from RZh-Khimiya, No 6 (II), Jun 72, Abstract No 6L286P)

Translation: A solution containing K_2SO_4 is patented for electrochemical etching of metals. It is distinguished by the fact that in order to improve the quality of marking a product made of Cu and its alloys, Na_2CO_3 has been introduced into it. The composition of the solution (in % by weight is as follows): 7.9-8.1% Na_2CO_3 , 1.9-2.1 K_2SO_4 , and the rest water. Example. When marking with a solution containing 8% Na_2CO_3 by weight, 1.9% K_2SO_4 and the rest water at a voltage of 5 volts on plates made of copper and BRKH-8 bronze, a clear image of the symbols is obtained which is not removed during machining.

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USSR, RSFSR

UNCLASSIFIED

19 Sep 54

ZELENIKO, G.D.], Chief, Main Admin of Labor Reserves under Council of Ministers USSR, gave introductory address at assembly of students of technical schools of Moscow and Moskovskaya Oblast.

DUBROVINA, L. [V.], Dep Min of Educ RSFSR, and **ZALUZHNYI, V. [V.]**, Sec, CC All-Union Komsomol, congratulated assembled students on start of new school year.

* * *

POLYAKOV, A.M.], Sec, ^{Stalingrad} City Komsomol Comm, **ZUYEVA, T.M.]**, Min of Culture RSFSR, and **GLEBOV,** Sec, Stalingrad City Party Comm, spoke at meeting in connection with opening of a planetarium, the gift of workers of East Germany to the workers of Stalingrad.

Pravda 20 Sep 54

Q-370

47
(6)

JC

USSR-ESTSR

UNCLASSIFIED

9 Dec 53

KOROTKOV, B. , Sec, Molotov City Komsomol Comm, author of Komsomolskaya Pravda article calling for city Komsomols to work in the country.

POLYAKOV, A.M. , Sec, Stalingrad City Komsomol Comm, and NOVICHKOV, , Sec, Stalingradskaya Oblast Komsomol Comm, mentioned in Moskovskaya Pravda article criticising the Stalingrad city trade section for failure to show sufficient concern for the school of culinary trade apprentices.

Komsomolskaya Pravda 9 Dec 53

N-919

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JC

USSR - RSFSR / *UkrSSR* UNCLASSIFIED

Rpt 16 July 1953

STRUIEV, *[A.I.]*, Sec. of Stalinskaya Oblast Party Com., gave a report on the Beriya case at a joint plenum of Stalinskaya Oblast and Staline City Komsomol Committees.

The following persons spoke at a joint plenum of Stalingradskaya Oblast and Stalingrad City Komsomol Committees:

GRISHIN, *[I.T.]*, Secretary of Stalingradskaya Oblast Party Committee.

POLYAKOV, *[A.M.]*, Sec. of Staliningrad City Komsomol Com.

BOGACHEV, Sec. of Stalingradskaya Oblast Komsomol Committee.

Komsomol'skaya Pravda, 16 July 1953

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USSR-RSFSR

UNCLASSIFIED

Rpt 18 Jul 53

CEMUTOV, , Secretary of the Stalingradskaya Oblast Party
Committee, gave a report at a meeting of the aktiv of
Stalingrad concerning measures for improvement of work
among youth in enterprises and constructions in the city.
POLYAKOV, A.M., Secretary of the Stalingrad City Komsomol
Committee, and
NEXRASOV, , Secretary of the Stalingrad City Party Com-
mittee, took part in discussions.

Komsomol'skaya Pravda, 18 July 1953

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1 Feb 44

Awards to laborers, engineers, technicians, and Party and Soviet workers for active participation in the heroic defense of the City of Stalingrad and displaying steadfastness and courage in this.

Order of the Red Banner of Labor

[Cont from card 2; see BONDAR', I.I., same date]

POLYAKOV, Aleksey Mikhaylovich, Dep Chmn, Stalingrad Oblast

Exec Com,

PROKHAVILOF, Vasily Timofeyevich, Sec, Stalingrad Oblast

Party Com,

Order of the Red Star

BORODIN, Ivan Petrovich, Dep Sec, Stalingrad Oblast Party

Com, for Construction and Building Materials,

[Cont on card 4; see SUKHOV, M.I., same date]

Vedomosti Verkhovnogo Soveta

SSSR #10, 1944 (17 Feb 44)

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Acc. Nr. **APO054290**

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Ref. Code: **UR 9115**

PRIMARY SOURCE: **Ortopediya, Travmatologiya i Protezirovaniye,**
1970, Nr 3, pp 41-44

**METHOD OF CONTACT MICROOENTGENOGRAPHY IN THE STUDY
OF BONE TISSUE**

Polyakov, A. N.

A description of the method of contact microoentgenography in the study of bone-tissue which permits to carry out quantitative evaluation of the mineral component concentration in bony structures at the microscopic level is presented in the paper. The procedure of preparation of specimens (bone-tissue ground-ends) for quantitative microoentgenography is submitted, along with description of technical equipment and modes of use of this method, approach to processing of the obtained data.

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Marine and Shipbuilding

USSR

UDC 621.87

BRODSKIY, I. L., and POLYAKOV, A. Ye.

"Analysis and Synthesis of Round Cylinders of Variable Cross Section"

Moscow, Izvestiya Vysshikh Uchebnykh Zavedeniy -- Mashinostroyeniye, No 4, 1973, pp 48-52

Abstract: A differential equation is found for the winding of a thin, inelastic thread, twisted with a constant pitch around a round cylinder of variable cross-section. The equation is developed by considering the cylinder as static and the thread mobile. Using the equation either the length of thread wound or the contour of the cylinder may be found. Approximate analysis of a conical cylinder shows that all such cylinders pass through the same point in the middle of the cone formed, called the nodal point. Further graphoanalytic approximation of a cylinder as consisting of conical elements leads to the cylinder profile. A numerical example is presented. The method is being applied to ship construction.

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Superalloys

USSR

UDO 669.1*24*25:669.046.546

DASHEVSKIY, V. YA., and POLYAKOV, A. YU.

"Thermodynamic Properties of Sulfur Diffusions in Molten Fe-Ni-Cr Alloys"

Moscow, Izvestiya Akademii Nauk SSSR, Metally, No 2, Mar-Apr: 72, pp 46-49

Abstract: A study was made of the thermodynamic properties of sulfur diffusions in molten Fe-Ni-Cr alloys. The addition of 16% Ni to iron at 1600°C does not noticeably affect sulfur diffusions. Additions of chromium to both molten iron and molten Fe-Ni alloys are accompanied by strengthening of the sulfur bonds in the diffusion, caused by the presence of chromium in the metal, and points out the advantage of desulfurization during melting of chromium steels prior to chromium addition.

In the melting of stainless and other chromium steels in an oxygen converter by the method developed at the Institute of Metallurgy imeni A. A. Baykov it is advantageous to complete iron desulfurization during the first oxidizing period of the heat, i.e., prior to charging the converter with ferrochromium carbide. Three figures, 6 bibliographic references, 1 table.

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POLYAKOV, B. I.

SPRS 56,499
14 JULY 72

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STUDY OF THE SUCCESSIVE EFFECT EXERTED ON THE BODY BY
CENTRIFUGAL ACCELERATIONS WITH A VARIABLE VECTOR AND
CORIOLIS ACCELERATIONS

Article by B. I. Polyakov and V. G. Andreyev; Moscow,
Aktual'nyye Voprosy Kosmonavtiy i Meditsiny (Cur-
rent Problems in Space Biology and Medicine), Russian, 1971,
pp 220-222

One of the variants of the combined influence exerted
on the body by different accelerations is successive exposure
to linear (overloads) and angular or Coriolis accelerations
during spaceflight.

The timeliness of study of the effects of such expo-
sures is determined not only by the fact that in the avail-
able literature this problem is treated extremely inadequately,
but also due to the fact that some American astronauts during
the time they were in the ocean after landing, at sea exhibited
symptoms of motion sickness developing immediately after ex-
posure to descent accelerations (Lamb, 1964; Derry and Gatten-
son, 1967).

The objective of our investigation was a comparative
evaluation of the level of vestibular stability of human sub-
jects before and after their rotation on a centrifuge.

The subjects (seven clinically healthy males in non-
flight occupations in the age Group 23-46 years) were sub-
jected to transverse accelerations of 1 G with a duration up to
10 minutes or 6 G with a duration up to five minutes and al-
ternately rotation about their own longitudinal axis with
velocities of 15 and 60/sec. The level of vestibular stabil-
ity was determined by tolerance to a test with cumulation of
Coriolis accelerations (I. I. Bryantov, 1965), which was con-
ducted twice: a day prior to rotation on the centrifuge and

USSR

UDC 621.785.53:661.65:620.172.2

BABUSHKIN, B. V., and POLYAKOV, B. Z., Belorussian Polytechnic Institute

"Residual Stresses in Steel After Saturation with Boron From Melts"

Moscow, Metallovedeniye i Termicheskaya Obrabotka Metallov, No 7, 1973, pp 27-30

Abstract: Effects of the phase layer composition, carbon content, tempering temperature, heat treatment, and natural aging on residual stresses of borated U* and 45 steels were experimentally investigated. The residual stresses determined by the electro-tensometer method are discussed, and compared with calculated values. The phase composition was found to affect the distribution of residual stresses. The increase of the carbon content increased the residual stresses in the borated layer at non-electrolytic saturation and decreased it at electrolytic saturation. Maximum residual stresses result with furnace cooling from the borating temperature. Increased cooling rates result in decreased residual stresses; minimum residual stresses were observed after water quenching. Tempering increased the compression stresses in the layer. Natural aging up to nine months has little effect on the distribution of residual stresses. Four figures, one table, seven bibliographic references.

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USSR

UDC 621.791:669.295:621.78.062.3

KUPREYEV, V. P., Engineer, and POLYAKOV, D. A., Candidate of Technical Sciences, PETROV, A. V., Doctor of Technical Sciences, and VORONTSOV, V. V. Engineer

"Change of Protective Medium Composition During Welding of Titanium in Controlled Atmosphere Chambers"

Moscow, Svarochnoye Proizvodstvo, No 7, Jul 73, pp 24-26

Abstract: Investigation of controlled atmosphere welding of titanium was carried out in an USKS-2 unit with an operating chamber volume of 800 liters, equipped with a vacuum system which provided an operating pressure inside the chamber of $5-6 \times 10^{-5}$ mm Hg for 130-140 minutes. During the welding process the concentration of water vapors was measured along with the concentrations of hydrogen, nitrogen, and oxygen. It was established that hydrogen content is increased as a result of the titanium reacting with the water vapors while the oxygen and nitrogen content was decreased. For a constant argon humidity in the chamber the quantity of hydrogen entering into the gas phase was proportional to the time of arc burning and its effective thermal capacity. An increase of water vapor in the argon by factors of 10 and 100 leads to a respective increase of factors of 2 and 4 of the amount of hydrogen entering
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KUPREYEV, V. P., et al., Svarochnoye Proizvodstvo, No 7, Jul 73, pp 24-26

into the gas phase, other conditions being equal. 1 figure, 4 tables, 7
bibliographic references.

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USSR

UDC 621.791.052.015:620.192.47:669.295

POLYAKOV, D. A., Candidate of Technical Sciences, and ABRAMOVA, V. N.,
Engineer

"Influence of Surface Condition on Gas Content and Properties of Welded
Joints of Titanium Alloys"

Moscow, Svarochnoye Proizvodstvo, No 7, 1971, p 31-32.

Abstract: Welded joints produced of titanium alloys have surface layers saturated with gases. Various methods were studied for removal of the surface layer: wire brushes, abrasive tools, and scrapers. It was found that when the joints show temper colors, cleaning of the surface with a wire brush significantly increases cyclical strength. The brush material (carbon and stainless steel wire) has no significant influence on the properties of the welded joints. Treating the surface of welded joints with a sandpaper disk decreases cyclical strength. Cleaning of seams with a blue surface with the wire brush more than doubles the cyclical strength.

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USSR

UDC: 621.791.011:669.295

POLYAKOV, D. A. (Cand. of Techn. Sciences), ABRAMOVA, V. N. (Engineer),
SEDYKH, K. V. (Engineer), ZYKOV, YE. V. (Engineer), and ZACHESOVA, O. A.
(Engineer)

"Weldability of the Cast VT14L Titanium Alloy"

Moscow, Svarochnoye proizvodstvo, Oct 71, no 10, pp 22-24

Abstract: This study has been prompted by problems related to replacement of stamping and forging in the fabrication of parts from quench-hardened VT14 alloy with castings from the VT14L alloy. It is shown that the welding technology of VT14L alloy and its combinations with the formable VT14 alloy is practically no different from that of VT14 and other well known titanium alloys. In argon-arc welding of VT14L as annealed and of that in combination with VT14 as hardened (aging after welding) or in welding of both as annealed and as aged, the welds feature a strength equal to the VT14L base metal, while plasticity and impact toughness of the welds are much lower than those of the base metal. Both the plasticity and impact toughness

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POLYAKOV, D. A. (Cand. of Techn. Sciences), et al, Svarochnoye proizvodstvo, Oct 71, no 10, pp 22-24

may be considerably increased by annealing. In resistance spot welding optimum properties of welds of VT14L plus VT14 alloys are ensured by quenching and aging the plates prior to welding without quench-hardening the weld. Tables in the original article cite data on the mechanical properties of base materials VT14L and VT14 alloys used per se and data on the mechanical properties of welds from VT14L-VT14 combinations in a variety of states, data on the strength of spot welds in shearing tests and as well as those after holding at 300°C, and finally strength properties of welds after annealing in repeated static loading.

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USSR

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UDC 621.791.052.001.5:669.295:621.9.011

POLYAKOV, D. A., Candidate of Technical Sciences, and SAGALEVICH, V. M., Doctor of Technical Sciences

"Investigating Residual Stresses and Finding Methods For Reducing Them in Titanium Alloy Welded Joints"

Moscow, Svarochnoye Proizvodstvo, No 7, Jul 70, pp 6-7

Abstract: A study was made to determine 1) the level of residual stresses in butt and Tee joints of OT4-1 titanium alloy, and 2) the efficiency of heat treatment and weld rolling in reducing them. Residual stresses were determined directly from measurements of residual elastic deformations by mechanical tensometers. The residual stresses were determined in the initial state after welding and after annealing of thin-sheet joints at 510°C for 30 min, and thick sheet joints at 560 and 620°C for 30 min. Stresses were also determined in thin-sheet butt joints after rolling over the weld. Near the weld zone, and over the weld and zone. It was shown that the strength of joints after rolling did not change significantly. Annealing reduced the maximum longitudinal stresses in thin-sheet butt joints by 30-40%. In thin-walled Tee joints the stress level was reduced 3 to 4 times. Stresses were completely removed in thick-walled butt joints. Rolling over the weld was found to be optimal for the removal of strains. 7 figures, 1 table.

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USSR

UDC 621.791.754.293.669.295

POLYAKOV, D. A., Candidate of Technical Sciences, and MANUYLOV, N. N., Engineer

"Argon-Arc Welding of VT5-L Alloy and VT5-L With OT4 and OT4-1 Alloys"

Moscow, Svarochnoye Proizvodstvo, No 11, Nov 70, pp 12-13

Abstract: Experiments were performed using flat specimens 4, 10, and 25 mm thick with welding plates made of cast plates 12 and 30 mm thick by mechanical working on both sides to the required thickness. Type VT5-L cast titanium alloy, plus a combination of this alloy with OT4 and OT4-1 deformable alloys, can be joined by manual or automatic Argon-arc welding without a filler or with a filler of technical titanium or Ti + (2-3)% Al. The filler is selected on the basis of the metal thickness and required mechanical properties of the joints. Welded joints of all thicknesses have good plasticity and impact toughness and low sensitivity to stress concentrators. The fatigue limit and strength with repeated static loading of 1/2

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POLYAKOV, D. A., et al., Svarochnoye Proizvodstvo, No 11, Nov 70, pp 12-13

welded joints is no lower than for cast VT5-L. Annealing causes no significant changes of the mechanical properties or structure of the welded joints.

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Acc. Nr.

AT0045338

Abstracting Service:
CHEMICAL ABST

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Ref. Code

UR0020

90949e Nature of active centers during anionic polymerization. Polyakov, D. K.; Baranova, N. I.; Gantmakher, A. R.; Medvedev, S. S. (Fiz.-Khim. Inst. im. Karpova, Moscow, USSR). Dokl. Akad. Nauk SSSR 1970, 190(1), 148-50 [Phys. Chem. (Russ)]. The electronic absorption spectra corresponding to the ion pairs and free carbanions of the 1,1-diphenylbutyllithium (I)-tetrahydrofuran (II), 1,1-diphenylpolyisoprenyllithium (III)-II, and 9,10-dihydroalkylanthracenyllithium (IV)-II systems was studied over a broad range of concns. by a combined spectrophotometric and conductometric method (P., 1963, 1965, 1967). At low I and II concns. ($<10^{-3}$ mole/l.), the dependence of the equiv. elec. cond. on concn. followed Ostwald's law. The dissociation constants of the "living" ends of the I and II systems in this region were 3.5×10^{-6} and 13.3×10^{-6} mole/l., resp., and were const. $<10^{-3}$ moles/l. The mobility of the carbanions decreased from 88.5 to 15.9 cm²/ohm equiv. on passing from I to II carbanions. At I and II concns. $>10^{-3}$ mole/l., deviations from Ostwald's law were obsd. The electronic spectra in the region of free ion predominance (I and II concns. $\sim 4 \times 10^{-6}$ mole/l.) and ion pair predominance ($\sim 3 \times 10^{-3}$ mole/l.) were identical, so the position of the max. absorption band did not change on passing

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from free carbanions to ion pairs. Similar results were obtained with III. The same max. (445 $m\mu$) was obsd. in the electronic absorption spectra for the free ions and the ion pairs of this system. The identical electronic spectra for the free ions and ion pairs in all the systems studied indicated that changing the energy of electrostatic interaction of the ion pair components has little effect on the absorption spectra. Changing the gegenion or solvent in anionic systems can have a decisive effect on the kinetics of the process, but has little effect on the structure and compn. of the copolymers.

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UDC: 539.3

POLYAKOV, P. I.

"Numerical Solution of the Spatial Problem of a Die on a Combined Base With a Variable Proportionality Factor"

Stroit. konstruksii. Mezhd. resp. nauchn. sb. (Building Construction. Interdepartmental Republic Scientific Collection) 1970, No. 14, pp 133-137 (from RZh-Mekhanika, No. 2, Feb 71, Abstract No. 2V30)

Translation: The problem is considered of the action of an axially symmetrical loaded die on a base, a generalization of the Hertz theory and the Zimmerman-Winkler hypothesis. With the use of the method of finite sums, the original equation is replaced by a system of algebraic equations; by adding the equation of equilibrium to the obtained system, the settling of the die and the values of the reactive pressure in the breakdown nodes are found. The values of the kernel in the integral equation at the singular points are found by a combination of precise and approximate solutions of the

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USSR

POLYAKOV, F.I., *Stroit. konstruktsii. Mezhd. resp. nauchn. sb.*, 1970, No 14, pp 133-137 (from *RZh-Mekhanika*, No 2, Feb 71, Abstract No 2V30)

problem of a die on the surface of an elastic half-space. The adopted method for eliminating the singularities permits obtaining any degree of accuracy of the approximate solution. Tables of data are given in the article for computing the problem, as well as graphs of the reactive pressures as functions of the change in value of the proportionality factor. Author's abstract

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USSR

UDC 531.3

POLYAKOV, G. G.

"Generalized Problems of a Cosmic Elevator"

Moscow, Mekhanika Tverdogo Tela, No 6, Nov-Dec 72, pp 54-59

Abstract: The concept of a cosmic elevator, introduced by Isaacs et al. in the article "Satellite Elongation Into a True 'Sky Hook,'" Science, Vol 151, No 3711, 1966 with reference to a cosmic elevator established on the equator of a rotating planet, is in the present article developed and generalized to include several more complex cases. The equatorial restriction is removed, and the point of attachment can be at an arbitrary point of the planet's surface. The shape of the curve along which the nonequatorial cosmic elevator is deflected is discussed. Another variant dealt with is an equatorial elevator with $n + 1$ platforms with masses m_i and distances from the earth's center r_i ($i = 0, 1, 2, \dots, n$). The lowest, zeroth platform serves as the anchor. 1 figure. 2 references.

1/1

USSR

UDC 523.71.66.066.6

DYTHERSKIY, YU. I., POLYAKOV, G. V., and LUKAVYY, L. S., Moscow Chemical-Technological Institute Imeni D. I. Mendeleev

"The Mechanism of the Separation of Aqueous Salt Solutions by Reverse Osmosis"

Moscow, Teoreticheskiye Osnovy Khimicheskoy Tekhnologii, Vol 6, No 4, Jul-Aug 72, pp 628-631

Abstract: Results are reported explaining the selectivity of membranes based on the capillary model of semipermeability mechanism. The permeability of a membrane with respect to the solutions containing various ions is a linear function of a parameter representing the modified ion field energy in vacuum, and the selectivity -- a linear function of the inverse value. With increased strength of the hydrated ion membrane, the permeability of the membrane decreases while the selectivity increases. Furthermore, it has been shown that removal of the concentrational polarization by thorough stirring of the solution increased only slightly -- by 4-5% -- the selectivity of the membrane towards solutions containing strongly hydrated ions such as Zn^{++} , Cd^{++} , Mn^{++} or SO_4^{--} , their permeability being increased by a factor of 1.5-2, while the solutions containing poorly hydrated ions such as K^+ , Na^+ , Br^- , or Cl^- have their permeability increased by 20-25%, and the selectivity by 25-30%.

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USSR

UDC: 621.396.620

POLYAKOV, I. L.

"On the Problem of Improving the Actual Selectivity of a Receiver"

V sb. Vopr. elektrosyazi (Problems of Electrical Communications--collection of works), Kiev, "Tekhnika", 1970, pp 91-96 (from RZh-Radiotekhnika, No 11, Nov 70, Abstract No 11D12)

Translation: The paper investigates receiver selectivity as a function of the resonance transmission factor for the voltage of a single-tank input circuit with regard to the noise properties of the amplifying element. Recommendations are given for realization of maximum selectivity. It is shown that receiver selectivity can be appreciably improved by adjusting coupling between the amplifying element and the input circuit tank. Bibliography of two titles. Resumé.

USSR

UDC 632.952

POLYAKOV, I. M.

Khimicheskiy Metod Zashchity Rasteniy ot Bolezney (Chemical Method of Protecting Plants From Diseases), Leningrad, "Kolos," 1971, 167 pp

Translation: Annotation: This book familiarizes the reader with the physical, chemical, and toxicological properties of fungicides.

It includes a short description of groups of fungicides by the method of their application (disinfectants, soil fungicides, fungicides with uprooting action, and fungicides with immunizing action), and the book presents expenditure norms, and procedures and times for applying preparations to different agricultural crops.

A great deal of attention in the book is devoted to the economic efficiency of different methods of using fungicides and to selecting chemical agents for plant protection.

In addition, information is given on the mechanism of the action of fungicides on plant pathogens and on plants.

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USSR

POLYAKOV, I. M., Khimicheskij Metod Zashchity Rasteniy ot Bolezney (Chemical Method of Protecting Plants From Diseases), Leningrad, "Kolos," 1971, 167 pp

The book is intended for specialists in plant protection, agronomists, and kolkhoz and sovkhoz directors.

We request that remarks and wishes be sent to the address: 191,186 Leningrad, Nevskiy Prospekt, 28, Department of Kolos Publishing House.

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USSR

POLYAKOV, I. M., Khimicheskiy Metod Zashchity Rasteniy ot Bolezney (Chemical Method of Protecting Plants From Diseases), Leningrad, "Kolos," 1971, 167 pp

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USSR

UDC 632.93+631.531

POLYAKOV, I. II., POPOV, V. I., KUMACHEVA, YE. M.

"Effectiveness of Vitavax Against Loose Wheat Smut"

Moscow, Khimiya v Sel'skom Khozyaystve, No 1, 1972, pp 20-22

Abstract: A study was made of vitavax (2,3-dihydro-5-carboxyanilid-6-methyl-1,4-oxathine) prepared in various forms as a fungicide in the control of loose wheat smut. Test results are presented for the Krasnodar Kray, Leningrad, Irkutsk, Novosibirsk and Moscow Oblasts for a 75% wetting powder produced by the Uniroyal Company of the USA and a mixture of the MPE-25-vitavax made by the Murphy Company of England containing 50% vitavax and 30% bis-(*o*-guanidino-octyl)ammonium sulfate.

The 75% wetting powder was effective in the control of loose wheat smut in all the test areas. On slurry disinfection of the seed with vitavax in doses of 4-8 grams/kg (without drying), damage to the wheat from this disease was completely prevented in natural and artificial tests of seed infested with smut. The compound did not lower the germination or the thickness of the stand, and on the whole it had a positive effect on the harvest. An insignificant reduction in yield was observed only in one case. The effectiveness of the combination MPE-25-vitavax compound against smut was somewhat lower. Vitavax has been recommended for broad production testing under various climatic conditions.

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USSR

UDC: 537.56:539.196:541.183:541.128

SEREBRYAKOV, G. A., POLYAKOV, I. T. and KOSTROV, V. V., Ivanovo Chemical Technological Institute, Ivanovo, Ministry of Higher and Secondary Specialized Education RSFSR

"Interaction Between Gas Molecules and the Surface of a Solid Adsorbent"

Ivanovo, Khimiya i Khimicheskaya Tekhnologiya, Vol XIII, No 3, 1970, pp 435-7

Abstract: On a theoretical basis, the authors show that a solid adsorbent produces excitation of the energy state of the chemo-adsorbed molecule, and that this state can be estimated on the basis of the energy of the molecule - adsorbent bond.

Some suggestions are made for computing the energy of activation and the temperature in the case of dissociation of a gas on the surface of an adsorbent.

1/1

USSR

UDC 632.911.2

POLYAKOV, I. M., and VLADIMIRSKAYA, M. YE., All-Union Institute of Plant Protection

"Laboratory Methods of Testing Soil Fungicides (A Survey of the Literature)"

Moscow, Khimiya v Sel'skom Khozyaystve, Vol 8, No 3, Mar 70, pp 36-42

Abstract: The article presents a critical analysis of various methods used for determining the fungicidal activity, radius of toxic action and persistency of soil fungicide. In the authors' view, none of the methods gives a comprehensive idea about the action of preparations on certain soil pathogenic fungi (test objects) so as to permit a judgment on the suitability of a preparation for soil fumigation. The article describes a method developed by the authors for studying the activity of fumigants towards pathogenic fungi, using *Rhizoctonia solani* (8- to 10-day culture) and *Fusarium oxysporum* of any form (*lycopercici cucumerinum*, *conglutinans*, 15- to 18-day culture) as the bioobjects. The method makes it possible to determine the minimum toxic dose of a preparation which causes the total destruction of the bioobject, as well as to establish the radius of toxic action of the preparation in this dose, its persistency in the soil and its phytocidity to plants. New chemicals are used in a dose of 100 mg per kg of soil for the 1/2

USSR

BOLYAKOV, I. M., and VLADIMERSKAYA, M. YE., Khimiya v Sel'skom Khozyaystve,
Vol 8, No 3, Mar 70, pp 36-42

initial evaluation of their fungicidal activity towards *Rhizoctonia solani*,
500 mg for *Fusarium oxysporum*. If a preparation displays fungicidal activity,
it is subsequently tested in lower doses. Tests are conducted at 20-22, 10-
12 and 4-5° C and are repeated three times.

2/2

USSR

UDC 632.952:581.1 / 634.75/721

POLYAKOV, I. M., NILOVA, V. P., KSENDZOVA, E. N., ZARUBINA, M. A.,
RAKITINA, R. N., All-Union Institute of Plant Protection, Leningrad,
All-Union Academy of Agricultural Sciences imeni V. I. Lenin

"Investigation of the Nature of Nitrafen Action on Berry Cultures"

Moscow, Khimiya v Sel'skom Khozyaystve, Vol 8, No 6, Jun 70, pp
31-34

Abstract: The study was carried out on first year "Festival'naya" strawberries and black currant of the "Liya Productive" and "Lakston" line. The plants were treated in early spring, the strawberries being sprayed twice at a week's interval with a 1% nitrafen solution and the currants once with a 2% solution. The leaves were subjected to biochemical analysis 20 days later and the fruit was checked as it ripened. The leaves of the treated strawberry plants exhibited higher levels of chlorophyll, carbohydrates, and ascorbic acid in comparison to controls, there was no indication of peroxidase activity, the polyphenoloxidase activity was increased, and

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USSR

POLYAKOV, I. M., et al, Khimiya v Sel'skom Khozyaystve, Vol 8, No 6, Jun 70, pp 31-34

the activity of cytochromoxidase and ascorbatoxidase was lowered. Both types of currant showed increased content of nitrogenous materials and chlorophyll under the influence of nitrafen, and their cytochromoxidase and peroxidase activity was elevated. As far as the content of carbohydrates and vitamin C and the activity of ascorbatoxidase are concerned, the two types of currant showed different effects to the action of nitrafen. Neither nutritional nor taste qualities of the berries were affected by treatment with nitrafen.

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USSR

UDC 632.911.2

POLYAKOV, I. M., and VLADIMIRSKAYA, M. YE., All-Union Institute of Plant Protection

"Laboratory Methods of Testing Soil Fungicides (A Survey of the Literature)"

Moscow, Khimiya v Sel'skom Khozyaystve, Vol 8, No 3, Mar 70, pp 36-42

Abstract: The article presents a critical analysis of various methods used for determining the fungicidal activity, radius of toxic action and persistency of soil fungicide. In the authors' view, none of the methods gives a comprehensive idea about the action of preparations on certain soil pathogenic fungi (test objects) so as to permit a judgment on the suitability of a preparation for soil fumigation. The article describes a method developed by the authors for studying the activity of fumigants towards pathogenic fungi, using *Rhizoctonia solani* (3- to 10-day culture) and *Fusarium oxysporum* of any form (*lycopercici cucumerinum*, *conglutinans*, 15- to 18-day culture) as the bioobjects. The method makes it possible to determine the minimum toxic dose of a preparation which causes the total destruction of the bioobject, as well as to establish the radius of toxic action of the preparation in this dose, its persistency in the soil and its phytocidity to plants. New chemicals are used in a dose of 100 mg per kg of soil for the 1/2

USSR

POLYAKOV, I. M. and VLADIMIRSKAYA, M. YE., Khimiya v Sel'skom Khozyaystve, Vol 8, No 3, Mar 70, pp 36-42

initial evaluation of their fungicidal activity towards Rhizoctonia solani, 500 mg for Fusarium oxysporum. If a preparation displays fungicidal activity, it is subsequently tested in lower doses. Tests are conducted at 20-22, 10-12 and 4-5° C and are repeated three times.

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1/2 031 UNCLASSIFIED PROCESSING DATE--04DECTO
TITLE--REACTION OF GAS MOLECULES WITH SOLID ADSORBENT SURFACES -U-

AUTHOR--(03)-SERBRYAKOV, G.A., POLYAKOV, I.T., KOSTROY, V.V.

COUNTRY OF INFO--USSR

SOURCE--IZV. VYSSH. UCHEB. ZAVED., KHIM. KHIM. TEKHNOL. 1970, 13(3), 435-7

DATE PUBLISHED-----70

SUBJECT AREAS--CHEMISTRY

TOPIC TAGS--ADSORPTION, SURFACE PROPERTY, ACTIVATION ENERGY, HYDROGEN
BONDING, COPPER, NICKEL, ALUMINUM, ZINC, THERMAL EFFECT

CONTROL MARKING--NO RESTRICTIONS

DOCUMENT CLASS--UNCLASSIFIED

PROXY REEL/FRAME--3008/0621

STEP NO--UR/0153/70/013/003/0435/0437

CIRC ACCESSION NO--AT0137706

UNCLASSIFIED

2/2 031

UNCLASSIFIED

PROCESSING DATE--04DEC70

CIRC ACCESSION NO--AT0137706

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. THE CALCN. OF THE ACTIVATION ENERGY FOR THE DISSOCN. OF A GAS ON THE SURFACE OF AN ADSORBENT IS PRESENTED. DATA ARE GIVEN FOR THE ENERGIES OF THE METAL H BONDS AND FOR THE ENERGY OF THE GAS MOL. ON THE SURFACES OF CU, NI, AL, AND ZN. THE ESTD. ACTIVATION TEMPS. FOR H ON THESE METAL SURFACES ARE GIVEN.

FACILITY: IVANOV. KHIM.-TEKHNOL. INST., IVANOVO, USSR.

UNCLASSIFIED

1/2 028 UNCLASSIFIED PROCESSING DATE--020CT70
TITLE--TWT USING A NONUNIFORM LINE SECTION WITH TUNNEL DIODES -U-

AUTHOR--(02)-KULIKOV, S.M., POLYAKOV, I.V. P

COUNTRY OF INFO--USSR

SOURCE--MOSCOW. RADIOTEKHNIKA I ELEKTRONIKA, VOL 15, NO 3, 1970, PP
505-511

DATE PUBLISHED-----70

SUBJECT AREAS--ELECTRONICS AND ELECTRICAL ENGR.

TOPIC TAGS--TRAVELING WAVE TUBE, TUNNEL DIODE, TRAVELING WAVE AMPLIFIER,
TRANSMISSION LINE

CONTROL MARKING--NO RESTRICTIONS

DOCUMENT CLASS--UNCLASSIFIED

PROXY REEL/FRAME--1991/1344

STEP NO--UR/0109/70/015/003/0505/0511

CIRC ACCESSION NO--AP0110915

UNCLASSIFIED

2/2 028

UNCLASSIFIED

PROCESSING DATE--02OCT70

CIRC ACCESSION NO--AP0110915

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. ALTHOUGH TUNNEL DIODES HAVE A BROADER BAND THAN TUBES OR TRANSISTORS AND CAN BE USED WITH TRAVELING WAVE AMPLIFIERS FOR WAVES IN THE TENS OF GIGAHERTZ FREQUENCY RANGE, THE TRANSMITTED SIGNAL HAS THE DEFECT OF LACKING DIRECTION. AS A RESULT, THE INSTABILITY OF SUCH AMPLIFIERS IS DIFFICULT TO AVOID. THIS INSTABILITY IS THE RESULT OF THE COMPLEX CHARACTERISTIC OF THE TRANSMISSION LINE RESISTANCE AND ITS VARIATION WITH THE FREQUENCY. THIS DEFECT CAN BE AVOIDED BY USING A NONUNIFORM TRANSMISSION LINE. THEN, THE LINE CAN BE EFFECTIVELY MATCHED AT ITS TERMINALS, AND IT WILL BE STABLE FOR ANY LENGTH. THE AUTHORS PROVE THEORETICALLY THAT THIS STATEMENT IS TRUE. THEIR RESULTS SHOW GOOD AGREEMENT WITH THE EXPERIMENTAL FACTS.

UNCLASSIFIED

1/2 017 UNCLASSIFIED PROCESSING DATE--20NOV70
TITLE--ALGORITHM FOR PLANNING POLYCLINIC SERVICE -U-
AUTHOR--(02)-POLYAKOV, I.V., RAKHMANIN, G.D. P
COUNTRY OF INFO--USSR
SOURCE--MOSCOW, SOVETSKOYE ZDRAVOOKHRANENIYE, RUSSIAN, NO 3, 1970, PP
21-27
DATE PUBLISHED-----7C

SUBJECT AREAS--BIOLOGICAL AND MEDICAL SCIENCES
TOPIC TAGS--ALGORITHM, MEDICAL FACILITY, QUEUEING THEORY, MEDICAL PATIENT

CONTROL MARKING--NO RESTRICTIONS
DOCUMENT CLASS--UNCLASSIFIED
PROXY REEL/FRAE--3C05/0677 STEP NO--UR/0753/70/000/003/0021/0027
CIRC ACCESSION NO--AP0132798

UNCLASSIFIED

2/2 017

UNCLASSIFIED

PROCESSING DATE--20NOV70

CIRC ACCESSION NO--AP0132798

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. IT HAS LONG SINCE BEEN ESTABLISHED THAT THE FLOW OF PATIENTS REQUESTING MEDICAL SERVICE IS EXTREMELY IRREGULAR FROM MONTH TO MONTH IN THE YEAR, FROM DAY TO DAY IN THE WEEK, AND ALSO IN THE COURSE OF THE DAY. THIS IRREGULARITY OF PATIENT FLOW CAUSES AN OVERLOAD OF PHYSICIANS, AND THE QUALITY OF SERVICE TO PATIENTS SUFFERS AS A CONSEQUENCE. IN PLANNING THE NUMBER OF VISITS TO PHYSICIANS, IT THEREFORE BECOMES ESSENTIAL TO ENVISAGE A CERTAIN INCREASE IN THESE VISITS IN MONTHS WHEN A RISE IN THE VISITS TO POLYCLINICS IS OBSERVED, AND, ON THE OTHER HAND, A REDUCTION IN MONTHS WITH A COMPARATIVELY LOW VISIT RATE. MOREOVER, THIS QUESTION IS ASSOCIATED WITH THE RATIONAL DURATION OF VISITS TO THE PHYSICIAN ON VARIOUS DAYS OF THE WEEK AND IN THE COURSE OF THE DAY. IT SEEMS TO US THAT IT IS POSSIBLE TO SOLVE THIS PROBLEM WITH QUEUEING THEORY. FACILITY: CHAIR OF SOCIAL HYGIENE AND PUBLIC HEALTH ORGANIZATION, HEAD, PROFESSOR S. YA. FREYDLIN, OF THE FIRST LENINGRAD MEDICAL INSTITUTE IMENI I. P. PAVLOV, AND THE LENELEKTRONMASH INSTITUTE.

UNCLASSIFIED

USSR

UDC 621.375.4.029.6

KULIKOV, S. M., POLYAKOV, I. V.

"TWT Using a Nonuniform Line Section with Tunnel Diodes"

Moscow, Radiotekhnika i Elektronika, Vol 15, No 3, 1970,
pp 505-511

Abstract: Although tunnel diodes have a broader band than tubes or transistors and can be used with traveling wave amplifiers for waves in the tens of gigahertz frequency range, the transmitted signal has the defect of lacking direction. As a result, the instability of such amplifiers is difficult to avoid. This instability is the result of the complex characteristic of the transmission line resistance and its variation with the frequency. This defect can be avoided by using a nonuniform transmission line. Then, the line can be effectively matched at its terminals, and it will be stable for any length. The authors prove theoretically that this statement is true. Their results show good agreement with the experimental facts.

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USSR

UDC: 614.1:313.13-013(470.23)

POLYAKOV, I. V., and POGGENPOL', S. S.

"Shifts in the Incidence of Diseases With Temporary Loss of Time From Work Among the Working Population of Leningrad"

Moscow, Zdravookhraneniye Rossiyskoy Federatsii, Vol 14, No 1, Jan 71, pp 11-13

Abstract: The total incidence of diseases resulting in loss of time from work by employees at industrial enterprises in Leningrad decreased from 1958 to 1968. However, instances of loss of time due to hypertension, diseases of the respiratory tract, and accidents on the way to and from work increased during the period in question. Among the 10 principal industry branches at Leningrad, the highest frequencies of disease were in the textile and light, metallurgical, chemical, wood-working, and paper industries and the lowest in automotive transport, communications, and building materials production. While in all other age groups the incidence of diseases resulting in temporary loss of time decreased during the period 1958-68, it increased in the group of persons 60 yrs old or older. The variations with age of the number of persons who did not lose any time due to disease decreased. The total percentage of instances of chronic disease forming the cause

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USSR

POLYAKOV, I. V., and POGGENPOL', S. S., Zdravcokhraneniye Rossiyskoy Federatsii, Vol 14, No 1, Jan 71, pp 11-13

of loss of time decreased, while the ratio of losses of time due to chronic disease increased for persons aged 40-59 yrs. Because of health examinations at medical dispensaries, the percentage of workers older than 40 yrs who were employed in the industry could be increased from 31.9% in 1958 to 41.8% in 1968.

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POLYAKOV I.V.

BIRTH RATE TRENDS IN Leningrad

UDC: 614.1:312.1(470.23-25)

[Article by I.V. Polyakov] Candidate of Medical Sciences, and N.S. Sokolova, Chair of Social Hygiene and Public Health Organization (headed by Professor S.Ye. Freydlin), First Leningrad Medical Institute named I.P. Pavlov (head: V.A. Milyayev, Doctor of Medical Sciences); Moscow, Sovetskaya Zdravo-ohraneniye, Russian, No 10, 1972, submitted 23 May 1972, pp 29-32]

Analysis of birth rate trends plays a certain part in forecasting demographic situations. In connection with acceleration of the process of urbanization of the population, it is growing particularly important to investigate different aspects of birth rate in different large cities of our country. In the present work we analyze some characteristics of the birth rate in Leningrad during the period from 1959 to 1970.

In Leningrad, as in all large cities of our country, the birth rate was lower in this period than the overall national rate. There was a gradual decline in birth rate from 1959 to 1967. For example, in 1960, this index constituted 13.49/1000 and in 1966 it was 11.30/1000. Starting in 1968, there was some rise in birth rate and in 1970 it was already 12.60/1000 (Figure 1).

The uniqueness of the curve of birth rate dynamics was studied by the method of least squares. The equalized (hypothetical) line is indicative of a mild tendency toward decline of birth rate from the maximum 1960 level (13.0/1000) to a minimum in 1970 (11.0/1000). The angle of inclination of this rectified curve (II) in relation to the abscissa axis constituted 12°. We assumed that such a slope to the equalized line is determined, to some extent, by a certain rise in birth rate in the last few years. To rule out this influence the birth rate indices in the 1960-1966 interval were re-equalized. The results of equalization are also plotted on Figure 1, and the scale of the coordinate grid did not change. The angle of inclination of the new equalized line (III) of birth rate trend was

*Leningrad za 50 let (Leningrad Over a 50 Year Period), statistical collection, 1967, p 130, Leningrad.

**Leningrad i Leningradskaya Oblast' v Tsifryakh (Leningrad and Leningrad Oblast in Numbers), statistical collection, Leningrad, 1971, p 264.

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(2)

USSR

POLYAKOV, I. Ya.

"An International Conference on Forecasts of Plant Pests and Diseases"

Moscow, Zashchita Rasteniy, No 3, 1973, pp 52-53

Abstract: The 2d Scientific Methods Conference on Forecasting the Appearance of the Main Crop Pests and Diseases and Notification of the Times of Treatment was held in November 1972 in the All-Union Institute of Plant Protection in Moscow. The conference was attended by scientists from the East European communist countries and the USSR. Five of the 18 papers dealt with problems relating to the organization of research on methods of forecasting and notification. Eight papers were devoted to mathematical methods and ways of estimating the spread and abundance of pests. The other 5 papers discussed the use of various methods for establishing the phenology of pests and pathogens. One of the papers (W. Ebert of East Germany) described the use of aerial photography as a means of judging the condition of crops and the damage done by pests and diseases.

1/1

- 75 -

USSR

UDC: 550.834

BRISKIN, S. N., VANDER, S. S., DOLINSKIY, Yu. D., KUZNETSOV, L. Sh., POLYA-KOV, K. K., Special Design Office of the Ministry of Geology of the USSR

"Nuclear-Precession Magnetometer"

Moscow, Otkrytiya, Izobreneniya, Promyshlennyye Obrastzy, Tovarnyye Znaki, No 13, May 72, Author's Certificate No 335649, Division G, filed 23 Mar 70, published 11 Apr 72, p 195

Translation: This Author's Certificate introduces: 1. A nuclear-precession magnetometer with digital registration. The instrument contains a magnetically sensitive pickup, coincidence gates, a master frequency oscillator, a count time shaper and a counter. As a distinguishing feature of the patent, the operational reliability of the device is improved by connecting the coincidence gate to the set terminals of the least significant digit counter, and by connecting the input of the least significant digit counter through a second coincidence gate to the count time shaper and to a counter with variable scaling factor, which is connected to the master frequency oscillator and to the most significant digits of a standard frequency period counter which is connected through a third coincidence gate to the standard

1/2

SKIN, S. N. et al., USSR Author's Certificate No 335649

frequency oscillator. A second input of the third coincidence gate is connected through a nuclear precession period counter to the magnetically sensitive pickup. 2. A modification of this magnetometer distinguished by the fact that the counter with variable scaling factor is connected in addition to the least significant digits of the standard frequency period counter.

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JRS 58343
6 March 1973
POLYAROV, K.M.
Growth of Crystals -
Tsakelidze

POLYAROV, K.M.

POSSIBILITY OF GROWING SINGLE CRYSTALS WITHOUT A CRUCIBLE UNDER CONDITIONS OF WEIGHTLESSNESS

Article by K. M. Polyakov and L. N. Rashkovich, Moscow State University Physics Department, Yerevan, IV Vsesoyuzniye Nauchno-Tekhnicheskoye Instituty, Bratskoye, Russian, September 1972, pp 180-183

A formulation of the problem of single-crystal growth in orbital space is becoming possible at the present time. We feel that the future for this process lies primarily in the possibility of growing crystals from melts without crucibles. This paper examines the crystallization process for a weightless liquid, occurring by virtue of heat dissipation through a crystal seed of the same substance. It was assumed for simplification that the weightlessness is total, while the crystallizing substance is isotropic. Evaluating the importance of these assumptions is beyond the scope of this paper, although it is clear that the influence of these factors cannot be ignored. The material is presented here without the mathematical calculations.

1. Outline of a Liquid Surface Contacting a Solid Phase Under Isothermal Conditions

The extensive literature on the behavior of a liquid under zero-gravity conditions has largely been summarized in the bibliography of collection [1], as well as in M. Ya. Barmyak's dissertation [2]. We are concerned with knowing how a liquid sphere will behave if it comes into contact with a rod or other solid of simple geometric form. No one has up to now specifically examined this matter, even though it is a special case of a problem which has been solved by various procedures.

Under equilibrium conditions, the liquid will have the shape of a solid of rotation due to the constant contact angle and resulting symmetry (in the case where the boundary line of the three phases is a circle). Finding the generatrix equation can be reduced to solving an isoperimetric problem in the variational calculus, since a stable liquid form is determined by the condition of minimum surface energy in the liquid-solid system provided that the liquid volume is constant. One may show that two solutions exist. If the axis of rotation passes through the surface of a liquid, such as a drop on a plane, the liquid will form a sphere. Otherwise (for example, with a drop on the

lateral face of a cylindrical rod, the generatrix equation is specified by an elliptical integral. (When there is a rather sizable amount of liquid, its free surface generatrix has an inflection point near the boundary line of the phases, while at a distance from the solid phase, the generatrix approximates an arc of a circle centered on the axis of rotation. The free surface of the liquid has no inflection point if the volumes are small.)

Two factors will determine the shape of the equilibrium liquid surface, which it assumes after contacting the end of the solid rod. They are the contact angle magnitude and ratio of the radii of the initial liquid sphere (R) and of the rod (r). If R/r is small, the liquid will form a spherical segment at the end of the rod. For small contact angles, the segment's height is much less than its base length. Let us note that the system's surface energy will be greater if a drop of the same volume is suspended not at the end, but on the lateral face of the rod. If R/r is such that not all the liquid can be situated on the rod end, part of it will be located on the lateral face, where a corner point separating the spherical drop situated at the end from the remaining amount of liquid covering the lateral face will appear on the generatrix. Increasing R/r further merely alters the surface form of this last portion of liquid. We will note that, generally speaking, the case is possible in which the spherical drop hangs on the lateral face and the end is located within the drop, and this is less suitable from the energy viewpoint than when the free surface has a corner point. In summarizing, we reach the conclusion that as the liquid contacts the rod, it flows onto the lateral face, where a relatively small volume of liquid can be supported at the rod end. This amount corresponds to $R/r = 0.52$ for a 10° contact angle.

3. Behavior of the Liquid in a Temperature Field

As is well known, under zero gravity at a constant temperature, the liquid should have a spherical shape. Since the surface tension temperature coefficient for most liquids is of an order greater than the volume expansion coefficient, if a temperature gradient is present, the liquid will spontaneously begin moving to the region of higher temperatures, where its surface energy will be lower. The spherical liquid shape will be deformed. As can be shown, the generatrix curvature radii ratio at points of minimum and maximum temperature (in the plane isotherm case) will equal the ratio of the surface tension values at these points.

If the temperature field is such that the temperature is lowered on both sides of some maximum, assuming two-dimensional isotherms, the liquid will be located in the maximum temperature region and will have the shape of a sphere flattened on both sides. We believe that the temperature will begin to fall and the crystallization isotherms will intersect the liquid volume. The solid phase areas appearing on the melt surface will unavoidably be in contact. Since the crystallization occurs gradually, a small solid-phase volume will appear at first, and its immersion in the melt will be more favorable from the viewpoint of energy in terms of the overall surface energy. The new melt areas appearing at this spot will again crystallize and once more be plunged into the melt. The process can be concluded with the entire melt

POLYAKOV, L. Ye.

STATISTICAL METHODS OF EVALUATING PHYSICAL DEVELOPMENT OF THE POPULATION

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Article by L. Ye. Polyakov, N.N. Taranda, D.M. Malinskii, Military Medical Academy, ~~Imeni S.M. Kirillova~~, Director - Professor N.N. Ivanov, Leningrad; Moscow, Sovetskoye Zdravookhraneniye, Russian, No 2, 1972, submitted 8 September 1971, pp 17-22]

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Physical development is one of the main general indices characterizing the level and shift of physical condition of the population and its different age-sex, ethnic, occupational, and other groups. Regular monitoring of physical development is an important component of the prophylactic direction of Soviet public health. In the USSR a well-organized system has been developed for dynamic medical observation of the physical development of population groups and especially the rising generation. The concern for many physical development of children and young people can be attributed to the fact that it is precisely among them that it is possible to successfully alter the shape and proportions of the body through physical education.

Such work becomes effective provided there is a scientifically substantiated method of assessing the level and dynamics of physical development. Soviet health statistics are constantly improving methods for group and individual evaluation of physical development.

In the present article we discuss the state and prospects of a statistical method for individual evaluation of physical development. Such evaluations are made in the USSR on the basis of specially developed tables of standards which are based on mathematical statistical methods.

The method presently in general use to evaluate individual physical development is the method of regression scales (or the method of correlation). A summary evaluation of individual physical development using this scale is more justified than the previously used index method, sigma rating by the method of R. Martin, and others.

The rating tables used with the regression scale method are made up for a qualitatively homogeneous (according to sex, age, permanent residence, occupation, etc.) population group. The chief parameters of physical development:

POLYAKOV, L. Ye.

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Medicine

SAMPLING METHOD OF MEDICAL STATISTICAL INVESTIGATIONS IN THE USSR

Article by Professor L. Ye. Polyakov, V.G. Vladimirov, Moscow, Sovetskoye Zdravoochraneniye, Russian, No 11, 1971, submitted 17 June 1971, pp 8-13

The sampling method of investigating the patterns of phenomena and processes in different areas of medicine and public health is gaining increasing recognition in our country because of its advantages over mass studies in many cases. V.I. Lenin indicated that "it is better to obtain a little relatively reliable, complete and homogeneous information than much fragmentary, questionable, and wrong information".

The theoretical and practical aspects of sample medical statistical investigations have been developed well and are based on the basic positions of mathematical statistics and probability theory. Scientifically planned, properly organized and performed sample studies make it possible to obtain such general indices and with the qualities that V.I. Lenin had in mind.

The use of the sampling method is widely propagandized by WHO [2]. In the tenth report of the WHO committee on medical statistics, it is stated: "The activities and effectiveness of public health services and use thereof by the people depend on complex interaction of many sociological, biological, organizational, and other factors. To study these factors, especially when funds are limited, a flexible and economic mechanism is needed that could be used as a supplement to the registration system and other permanent statistical systems. Sample studies are such a supplement, and performance thereof should become an important part of the operation of medical statistics services."

WHO specialists recommend the sample method to evaluate physical condition, to investigate factors that affect health, to investigate public health activities, to evaluate the effectiveness of measures instituted in the public health area, to pursue investigations in the area of environmental hygiene, for rapid data processing, for quality control (for example, some death certificates could be thoroughly checked out against case histories and autopsy reports in order to determine the accuracy of established cause of death).

Sample studies conducted in our country in the early years of Soviet power (i.e. much earlier than in other countries) made an inestimable contribution

MEDICINE

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HARDENED ALLOYS -U-
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ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. AN ENERGY MODEL FOR THE DESCRIPTION OF THERMOPLASTIC HARDENING PROCESSES OF METALS WAS CONSTRUCTED THEORETICALLY ON THE BASIS OF THERMODYNAMICS OF IRREVERSIBLE PROCESSES. THE WHOLE PROCESS WAS DIVIDED INTO THE EVALUATION OF WORK IN HARDENING AND IN SOFTENING. THE WORK IN SOFTENING IS HIGHER THAN THE WORK IN HARDENING. THE MODEL WAS APPLIED TO HEAT TREATMENT OF AL ALLOYS (IVANOVA, ET AL., 1965) AS A SPECIAL CASE.

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USSR

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KASHAFUTDINOV, S. T. and POLYAKOV, N. F.

"A Weak Turbulent Jet in Transverse Flow"

Novosibirsk, Izvestiya Sibirskogo Otdeleniya Akademii Nauk SSSR, Seriya Tekhnicheskikh Nauk, Issue 1, No 3, 1973, pp 74-80

Abstract: Although a large number of studies have been made in the theory of turbulent jets, very little information has been obtained on the discharge of a jet into a transverse subsonic flow. The present study was made in order to measure turbulence and mean velocities in a number of jet cross-sections whose nominal parameters are those of unperturbed transverse flow, and to determine the distribution of pressures on the surface around the nozzle and the cross-sectional spectra.

The observations were made with use of a wind tunnel with open working portion having an elliptical cross-section of 2.33 x 4.00 x 4.00 m. The conclusions reached were as follows:

- 1) Turbulence is unevenly distributed in the jet: on the windward side it amounts to 0.3-0.5%, on the leeward side to a figure two orders higher; 2) 1/2