

2/2 029

UNCLASSIFIED

PROCESSING DATE--30OCT70

CIRC ACCESSION NO--AP0123179

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. THE RESULTS OF AN EXPERIMENTAL COMPARATIVE STUDY OF THE WEAR RESISTANCE OF THE M-412 ENGINE CYLINDER SLEEVES AS A FUNCTION OF THE MICRORELIEF OF THEIR WORKING SURFACES ARE PRESENTED. A PROCEDURE IS GIVEN FOR THE ANALYTIC CALCULATION OF REGULAR MICRORELIEF PRODUCED BY THE VIBRATION ROLLING METHOD.

UNCLASSIFIED

USSR

BUNICH, P. G., PERLAMUTROV, V. L., SOKOLOVSKIY, L. Kh.

"Mathematical Economics Methods of Control of Operating Funds"

Ekonomiko-Matematicheskiye Metody Upravleniya Oborotnym Sredstvami. [English Version Above], Moscow, Finansy Press, 1973, 240 pages (Translated from Referativnyy Zhurnal Kibernetika, No 6, 1973, Abstract No 6V582K).

Translation: Independent organization of operating capital in industry and problems of the improvement of planning using mathematical economics methods are discussed. A method is demonstrated for computer calculation of the overall requirement for operating capital, determination of the optimal ratio between equity capital and debt capital. Requirements for economic information for computer calculations are outlined.

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BUNICH, P.

Econ

GREATER RETURN FROM INVESTED RUBLES DESIRED

[Article by P. Bunich, corresponding member of the USSR Academy of Sciences, Moscow, Sovetskaya Ekonomika (Moscow), Russian, 21 January 1977, p. 21]

The official report of the 23rd Congress of the USSR Central Committee notes that large amounts are invested in capital construction but the return from them does not come out enough and is less than it should be. To a significant degree, this is because capital investments are only partly returned to cost accounting. Collectives are only slowly spreading their efforts, carry on construction beyond their means, spread their resources among many projects, and fail to insure the necessary return on new fixed capital. In the course of the economic reform, a number of measures have already been implemented to strengthen the elements of cost accounting in the financing of capital construction. Assets have been granted for the development of production which will increase investment policy areas considerably, and loans for new equipment have increased somewhat. The effect of cost accounting has also increased in centralized investment. In general, however, this effect on the mechanism which controls construction is financed in still not great enough.

Let us review the non-centralized investment, which, in the period, for the most part, on the internal resources of enterprises. One of the sources of these investments is profits. This is not only paid from production jobs to the funds, but when their size is insufficient, part of the profits realized through implementation of the measures taken to increase the loan is raised. Additionally, this is holding over from the related growth of production development funds. Let us note the proceeds built with these funds are not obligated to pay fixed and working capital costs during. This tends to lower actual returns.

JPRS 55219 AT February 1978 Translations on USSR Economic Affairs No. 35

USSR

UDC 533.69

BUNIMOVICH, A. I., DUBINSKIY, A. V., Moscow

"Generalized Similarity Laws for Flow around Bodies under the Conditions of the 'Localness Law'"

Moscow, Prikladnaya matematika i mekhanika, Vol 37, No 5, 1973, pp 857-863

Abstract: Under the conditions of the localness law, that is, in cases where the flow of momentum to the surface of a body basically depends on the local properties of the surface (hypersonic flow of a gas in the Newtonian statement, flow of a rarefied gas, the effect of light, and so on), generalized similarity laws can be established which relate the aerodynamic characteristics to each other in the general case of affine-nonsimilar bodies. Methods are established for constructing the corresponding bodies, and examples of the application of the proposed similarity laws are presented.

During flow of an ideal gas around bodies in different velocity ranges the similarity laws are well known and have found broad practical application. By using these laws it is possible to recalculate the aerodynamic characteristics of the given body for another M number, and in some cases to obtain the aerodynamic characteristics of the affine-similar bodies [N. Ye. Kochin, et al. Teoreticheskaya gidromekhanika, Part 2, Moscow, Fizmatgiz, 1963; G. G. Chernyy, 1/2

USSR

BUNIMOVICH, A. I., DUBINSKIY, A. V., *Prikladnaya matematika i mekhanika*,
Vol 37, No 5, 1973, pp 857-863

Techeniya gaza s bol'shoy sverkhzvukovoy skorost'yu, Moscow, Fizmatgiz, 1959⁷.
In many areas of aerodynamics and flight dynamics various theories are
successfully used for determining the forces acting on the body. These
theories essentially are based on the propositions that the momentum flow to
the surface of the body basically depends on the local properties of the sur-
face and the local angle between the normal to the surface and the direction
of the flight velocity (the so-called localness law).

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USSR

UDC 533.6.011

BUNIMOVICH, A. I. (Moscow)

"Relationships Among Forces Acting Upon Bodies Moving in a Rarefied Gas, in a Light Flux, and in a Hypersonic Newtonian Flow"

Moscow, Izvestiya Akademii Nauk SSSR, Mekhanika Zhidkosti i Gaza, No 4, 1973, pp 89-95

Abstract: Relationships among the aerodynamic forces, that are valid in an arbitrary system of coordinates, are derived for three-dimensional, axisymmetric, and two-dimensional bodies during movement of the body in cases where the "law of locality" is valid, i.e., where the flow of momentum on the surface of the body depends upon the local angle between the velocity and a normal to the surface, and where the total angles and moments are determined by integration along that part of the body surface that is turned to the stream. Equations are obtained which determine the change of the lift (and, consequently, of the drag and the fineness) in relation to the angle of attack in the function of the area of projection of the body surface onto a plane that is perpendicular to the direction of flight. Particular cases of the obtained relationships are, for example, the Newtonian motion of a body at hypersonic velocities, the movement of a body in a rarefied gas, and action of the pressure of light upon a body. 2 figures. 4 references.
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USSR

UDC 533.6.12

BUNIMOVICH, A. I., and DUBINSKIY, A. V., Moscow

"Variational Method for the Generalized Class of Functionals
and its Application in Problems of Aeromechanics"

Moscow, Izvestiya Akademii Nauk USSR, Mekhanika Zhidkosti i Gaza,
No 1, Jan-Feb 73, pp 103-111

Abstract: The variational problem for the generalized class of
functionals of the type

$$I = f(I_1, I_2, \dots, I_n), \quad I_k = \int_{x_i}^{x_f} F(x, y, \dot{y}) dx \text{ is investigated.}$$

Particular attention is paid to the extreme of functionals repre-
senting a sum or a product of some orders of integrals from an
unknown function. The necessary conditions of the extreme are de-
rived and a method is given for solving the variational problem
for the cases of fixed and free ends. Analytical solutions of the
problem of the form of nonaxisymmetric bodies receiving the mi-
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BUNIMOVICH, A. I., and DUBINSKIY, A. V., *Izvestiya Akademii Nauk USSR, Mekhanika Zhidkosti i Gaza*, No 1, Jan-Feb 73, pp 103-111

nimum heat flux and of the problem of the form of thin bodies of revolution receiving the minimum specific heat flux at supersonic streamlining by an ideal gas flow are presented as examples. Four figures, fifty seven formulas, fourteen bibliographic references.

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USSR

UDC 613.6:/678.632:678:046.36

TROITSKIY, S. Yu., KUZ'MINYKH, A. N., ANDREYEVA, T. D., and BUNIMOVICH, G. I.,
Sverdlovsk Scientific Research Institute of Labor Hygiene and Occupational
Diseases

"Hygienic Aspects of Working Conditions in the Production of Phenol-Formaldehyde Plastics With Asbestos Filler"

Moscow, Gigiyena i Sanitariya, No 9, Sep 70, pp 89-91

Abstract: Hygienic conditions at plants producing phenol-formaldehyde plastics with asbestos filler were investigated. Dust concentrations of 3.7-5 mg/m³ were found in the air. The dust developed in connection with the charging of asbestos in mixers. In those sections of the plants in which the resin is heated, concentrations of phenol vapor in the air exceeded the maximum permissible limit. The concentration of formaldehyde in the air generally did not exceed 1 mg/m³, but in connection with such operations as the discharging of mixers and drying chambers, the highest concentrations exceeded the maximum permissible level by up to a factor of three. Ventilation systems were improperly designed. A medical examination of 103 workers employed in this type of production showed that 65 had various subjective complaints; 21 who were

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TROITSKIY, S. Yu., et al, Gigiyena i Sanitariya, No 9, Sep 70, pp 89-91

exposed to the action of phenol and formaldehyde vapors suffered from constant headaches. Pathological changes in the nervous system (neuritis, neurasthenic syndrome, cerebral angiodystonla, etc.) due to exposure to these vapors were found in 19 cases. Of those engaged in polishing and pressing, 12 had skin diseases and 14 had chronic atrophic rhinitis and folliculitis. Three employees in a mechanical workshop showed symptoms of pneumoconiosis. Increased mechanization and automation of operation, including transfer to a continuous process, will improve these working conditions and reduce the impairment of health. Introduction of automated discharge from the bottom of mixers, automatic opening of sacks with asbestos and feeding of asbestos into mixers, enclosed units for certain operations, and improved ventilation systems and local exhausts are important measures which should be taken.

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USSR

BUNIMOVICH, L. A.

"Inclusion of Bernoulli Shifts in Certain Special Flows"

Uspekhi Mat. Nauk [Successes in Mathematical Science], 1973, 28, No 3, pp 171-172 (Translated from Referativnyy Zhurnal Kibernetika, No 9, 1973, Abstract No 9V16)

Translation: The work of D. S. Ornstejn (RZHMat, 1972, 4B1008) showed that Bernoulli shift can be included in a special flow constructed on the basis of Bernoulli shift and a piecewise-constant function. This article studied special flows $\{S_t\}_{-\infty < t < \infty}$, constructed on the basis of automorphism of shift in the space of X -realizations of a stable random process satisfying the condition of regularity (C), formulated in this article. It is shown that if this flow is a K -flow and function $f(x)$, on the basis of which it is constructed, is approximated well by functions depending on the finite number of coordinates, then with any t $(-\infty < t < \infty)$ automorphism S_t is isomorphic to the Bernoulli shift.

Another theorem of Ornstejn in this case indicates that two flows composed of Bernoulli shifts and having identical entropy are isomorphic. From this, in combination with known results on transitive three-dimensional V -flows, it follows that this flow consists of Bernoulli shifts.

Author's view

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USSR

UDC: 519.25

BUNIMOVICH, L. A., SINAY, Ya. G., Moscow

"Concerning a Fundamental Theorem in the Theory of Scattering Billiards"

Moscow, Matematicheskiy Sbornik, Nov. Ser., Vol 90(132), No 3, Mar 73,
pp 415-431

Abstract: The authors consider billiards within regions on a plane or on a two-dimensional torus with a Euclidean metric, the border of these regions being everywhere convex inward. It is shown that the stream $\{S_t\}$ generated by such a billiard is a K -system. Principal attention is devoted to proof of a theorem which shows that the transversal layers for stream $\{S_t\}$ are comprised "in the main" of fairly long regular segments. The implications of this theorem relate to the absolute continuity of transversal foliations for billiards of the type investigated.

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Pathology

USSR

UDC 617.7-.681.092.4.001.57:519.24

AVETISOV, E. S., BUNIN, A. Ya., LUGOVSKOY, V. M., and KOZLOVA, L. P.,
Moscow Scientific Research Institute of Eye Diseases imeni Gel'mgol'ts

"Possibility of Mathematical Modeling of the Process of Change in Intraocular
Pressure in Primary Glaucoma"

Moscow, Vestnik Oftal'mologii, No 5, 1971, pp 10-16

Abstract: The proposed mathematical model of change in intraocular pressure (IOP) in different phases of primary glaucoma is based on two assumptions: (a) the central factor in the pathogenesis of the disease is the progressive death of functional elements of the optic nerve and retina caused by metabolic change combined with high IOP; (b) the metabolic rate in eye tissues and level of IOP are related in such a way that the former may increase when the latter rises slightly but decrease with further rise in IOP. Hence a rise in IOP may, with respect to the metabolic rate, be either compensatory or aggravating in nature. The dynamics of change in the average level of IOP over a fairly long period is useful for the early detection of glaucoma and objective evaluation of the course of the disease. For example, if tonograms obtained over a period of 1 to 1 1/2 years reflect a progressive rise in the average level of IOP, the presence of glaucoma can be considered confirmed. If the
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AVETISOV, E. S., et al., Vestnik Oftal'mologii, No 5, 1971, pp 10-16

diagnosis of glaucoma was established previously, the continued rise is an indication that the course of the disease is unfavorable.

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1/2 027 UNCLASSIFIED PROCESSING DATE--02OCT70
TITLE--ON THE MECHANISM OF THE INTRACRANIAL PRESSURE FLUCTUATIONS
SECONDARY TO STIMULATION OF THE DIENCEPHALON -U-
AUTHOR-(03)-BUNIN, A.YA., PANTIYELEVA, V.M., ZHDANOV, V.K.
COUNTRY OF INFO--USSR **B**
SOURCE--VESTNIK OBTAL'MOLOGII, 1970, NR 2, PP 55-58
DATE PUBLISHED-----70
SUBJECT AREAS--BIOLOGICAL AND MEDICAL SCIENCES
TOPIC TAGS--BRAIN, INTRACRANIAL PRESSURE, DIAGNOSTIC MEDICINE, ELECTRIC
DISCHARGE, BIOELECTRIC PHENOMENON
CONTROL MARKING--NO RESTRICTIONS
DOCUMENT CLASS--UNCLASSIFIED
PROXY REEL/FRAE--1986/0804 STEP NO--UR/0357/70/000/002/0055/0058
CIRC ACCESSION NO--AP0102767
UNCLASSIFIED

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UNCLASSIFIED

PROCESSING DATE--02JCT70

CIRC ACCESSION NO--AP0102767

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. A TOTAL OF 330 ELECTRIC STIMULI IN THE HYPOTHALAMUS, DIFFERENT AREAS OF THE BRAIN, BODY AND EXTREMITIES WERE IMPARTED TO 5 RABITS IN 10 TESTS WITH THE AIM OF ELUCIDATING MECHANISMS GOVERNING VARIATIONS IN THE LEVEL OF THE INTRAOCULAR TENSION FOLLOWING STIMULATION OF THE DIENCEPHALON WITH ELECTRIC CURRENT. IN APPLYING STIMULATION A SERIES OF COMPLEMENTARY WAVES, WHICH DEPEND UPON CHANGED BLOOD SUPPLY AND THE TONE OF INTRAOCULAR VESSELS, EMERGED ON THE BASIC WAVES OF THE OPHTHALMOPHETHYSMOGRAM. INVESTIGATIONS SHOWED THAT CHANGES IN THE AMOUNT OF BLOOD FILLING INTRAOCULAR VESSEL IS ONE OF THE PRIME FACTORS CAUSING FLUCTUATIONS OF THE OPHTHALMOTONE IN STIMULATION OF THE DIENCEPHALON. AN IDENTITY OF OPHTHALMOPLETHYSMOGRAPHIC CHANGES OBSERVED IN ELECTRIC STIMULATION OF THE HYPOTHALMAUS AND OTHER PARTS OF THE ANIMAL BODY WAS ASCERTAINED.

UNCLASSIFIED

1/2 023 UNCLASSIFIED PROCESSING DATE--16OCT70
TITLE--OPERATION EXPERIENCE AND DEVELOPMENT OF PERIODICALLY PULSED
REACTORS AT DUBNA -U-
AUTHOR--(03)-ANANYEV, V.D., BLOKHINTSEV, D.I., BUNIN, S.N.
COUNTRY OF INFO--USSR
SOURCE--CONF-690102, PP 173-95
DATE PUBLISHED-----70
SUBJECT AREAS--NUCLEAR SCIENCE AND TECHNOLOGY
TOPIC TAGS--FAST REACTOR, NUCLEAR REACTOR OPERATION, RESEARCH REACTOR,
NUCLEAR PHYSICS INSTITUTE/(U)IBR FAST NEUTRON PULSE
CONTROL MARKING--NO RESTRICTIONS
DOCUMENT CLASS--UNCLASSIFIED
PROXY REEL/FRAE--1983/1762 STEP NO--UR/0000/70/000/000/0173A0195
CIRC ACCESSION NO--AT0054600
UNCLASSIFIED

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UNCLASSIFIED

PROCESSING DATE--16OCT70

CIRC ACCESSION NO--AT0054600

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. A NUMBER OF DESIGN IMPROVEMENTS MADE ON THE IBR ON THE BASIS OF OPERATIONAL EXPERIENCE ARE DESCRIBED. SOME PECULIARITIES OF THE REACTOR UNDER OPERATING CONDITIONS OF INFREQUENT PULSES ARE GIVEN ALONG WITH A SHORT DESCRIPTION AND THE MAIN PARAMETERS OF THE HIGH POWER PERIODICALLY PULSED REACTOR IBR-2 WITH AN LIU-30 AS AN INJECTOR. SOME MAJOR EXPERIMENTAL WORKS ON NUCLEAR PHYSICS AND SOLID STATE PHYSICS PERFORMED USING THE IBR ARE DISCUSSED. 34 REFERENCES. FACILITY: JOINT INST. FOR NUCLEAR RESEARCH, DUBNA USSR.

UNCLASSIFIED

B

UDC: 662.7

USSR

BUNIN, G. M. and DEMIDOV, L. G.

"Separation of Coal in Magnetic Liquids"

Moscow, Khimiya Tverdogo Topliva, No 4, 1970, pp 141-143

Abstract: New techniques for beneficiation of coal and other minerals were developed at the Institute of Mineral Fuels: magnetohydrodynamic separation and separation in magnetic liquids. Bulk repulsive force f , determined by the following equation, is induced in liquid placed in crossed magnetic and electric fields:

$$f = \rho g + K_1 \cdot \text{grad } H^2 + K_2 \cdot \text{grad } E^2 + K \sqrt{E \times R},$$

where ρ = density of liquid, g = acceleration due to gravity, H = magnetic field intensity, and E = electric field intensity; K_1 , K_2 , and K_3 = constants characterizing physical properties of liquid (magnetic and dielectric susceptibility and conductivity). Based on physical properties of coals as a mechanical mixture of different petrographic components, it appears possible to separate a coal mixture by the totality of differences in mechanical and electromagnetic constants of individual coal components through appropriate selection of the density of the

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BUNIN, G. M. and DEMIDOV, L. G., Khimiya Tverdogo Topliva, No 4, 1970, pp 141-143

separatory medium, magnetic and dielectric susceptibilities, and also strength of the external magnetic and electric fields. A key feature of the coal separation process in artificially "weighted" liquid media is the possibility of simple and quite precise regulation (with a precision greater than 0.01 g/cm^3) of the repulsive force, making the method promising for ultrafine separation of organic and mineral components of coals. A second feature of the method is the possibility of getting several products in one separatory run.

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USSR

UDC 669.15-194.2.017

BUNIN, K. P., MARTSINIV, B. F., REPINA, N. I., and YATSENKO, A. I.,
Institute of Ferrous Metallurgy

"Structure and Chemical Microheterogeneities of Cast Low-Carbon Iron Alloys
During the $\delta \rightarrow \alpha$ Transformation"

Kiev, Metallofizika, No 40, 1972, pp 90-95

Abstract: The structural features and chemical microheterogeneity were investigated for cast iron-carbon alloys with 0.05-0.15% C and alloyed with Si, Al, Cr, Cu, Mn, and Mo. The direct segregation of alloying elements into deltadendrites was shown by micro-x-ray spectral analysis. In the delta-gamma transformation process the growth of austenite occurs in the form of orderly oriented plates, similar to the transformation during heating. The formation of austenite is accompanied by depletion of Si, Al, and Mo and a weak enrichment of Ni, Cu, and Mn. In alloys being tested for a double delta-gamma-alpha transformation, orderly oriented blocks inside the ferrite appeared. 4 figures, 1 table, 27 bibliographic references.

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USSR

UDC 669.14.017.3:541.12.017

BURIN, K. P., Corresponding Member of the Academy of Sciences Ukrainian SSR,
MARTSYNIV, B. F., RYEPINA, N. I., and YATSENKO, O. I., Institute of Ferrous
Metallurgy

"Peritectic Reaction in Fe-C-Al Alloys"

Kiev, Dopovidi Akademiyi Nauk Ukrayins'koyi RSR, Seriya A. Fizyko-
Tekhnichni ta Matematychni Nauki, No 12, Dec 71, pp 1119-1121

Abstract: The article describes results of a study of structural and concentration changes during peritectic transformation in Fe-C-Al alloys (0.3-0.7 percent C, 1.6-3.5 percent Al). The alloys were smelted, then 10-gram batches remelted and superheated to 1580-1600° C and quenched during controlled cooling in the crystallization interval or below. The structure was analyzed microscopically, the aluminum distribution by the microroentgen spectral method. The formation of austenite was observed during the cooling. A γ -solid solution appears at the liquid-delta phase interface in the form of thin borders around the branches of primary δ -dendrites. Crystallization

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USSR .

BUNIN, K. P., et al., Dopovidi Akademiya Nauk Ukrayins'koyi RSR, Seriya A. Fizyko-Tekhnichni ta Matematychni Nauki, No 12, Dec 71, pp 1119-1121

of the alloys by $L \rightarrow \delta$ and $L + \delta \rightarrow \gamma$ reactions is accompanied by inter-phase partition of aluminum, leading to the formation of intracrystalline microheterogeneity, which can be classified as inverse dendritic segregation.

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USSR

UDC 616.981.49-078.73

BUNIN, K. V., and GIZATULLINA, D. K., Chair of Infectious Diseases, First Moscow Medical Institute imeni I. M. Sechenova

"Clinical and Serological Parallels in Food Poisoning (Salmonellosis) Based on the Findings of Indirect Hemagglutination Reaction With Erythrocyte Diagnostica"

Moscow, Sovetskaya Meditsina, No 5, 1972, pp 59-63

Abstract: The dynamics of formation of antibodies of varying physicochemical types during food poisoning of Salmonella etiology is considered. The test consisted of the indirect hemagglutination reaction (RNGA), and the Landy-Lamb method (modified). Erythrocyte diagnostica and the cysteine test were used. A control group consisted of 150 healthy persons. The comparison group was 101 ill persons, 41.6 percent of whom had food poisoning caused by group B Salmonellae. Diagnosis was based on clinical data, bacteriological findings, anamnesis and epidemiological information; confirmation was established by the indirect hemagglutination test. The formation of antibodies of varying physicochemical types increased in direct proportion to the severity of the illness, with higher antibody titers corresponding to more severe cases of food poisoning. Serological confirmation of the diagnoses made with erythrocytic diagnostica was made in 70 to 80 percent of the tests.

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USSR:

UDC 911.3:616.34(575.1)

SHATROV, I. I., POKROVSKAYA, M. P., KRASKINA, N. A., BRAYNINA, R. A.,
ELKIN, I. I., SKVORTSOV, V. V., KILESSO, V. A., ~~BUNIN, K. V.~~ NIKIFOROV,
V. N., POKROVSKIY, V. I., and STARSHINOVA, V. S.

"Current Status of Typhoid"

V sb. Materialy XV Vses. syezda epidemiologiv, mikrobiologov i infektsion-
istov, Tezisy Dokl. Ch. 1 (Proceedings of the 15th All Union Conference
of Epidemiologists, Microbiologists, and Infectious Disease Specialists,
Theses Reports, Part 1 — collection of works), Moscow, 1970, pp 262-269
(from RZh-Meditsinskaya Geografiya, No 3, Mar 71, Abstract No 3.36.258)

Translation: During the last seven years, the incidence of typhoid has decreased each year by 6-7% on the average in this country. Maximum drops were observed in the Belorussian SSR, Kazakh SSR, Lithuanian SSR, Latvian SSR, Armenian SSR, and Estonian SSR; minimum drops were found in the Uzbek SSR and Kirghiz SSR. During the last two years, the incidence of typhoid was 10% higher among rural residents than among urban residents. In comparison with 1964, a drop in incidence of approximately 40% was observed; in rural locations, the drop was 23%. The leading significance of the water factor in transfer and distribution of the agent of typhoid is

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USSR

SHATROV, I. I., et al., Materialy XV Vses. syezda epidemiologiv, mikrobiologov i infektionistov, Tezisy Dokl. Ch. 1 (Proceedings of the 15th All Union Conference of Epidemiologists, Microbiologists, and Infectious Disease Specialists, Theses Reports, Part 1 -- collection of works), Moscow, 1970, pp 262-269 (from RZh-Meditsinskaya Geografiya, No 3, Mar 71, Abstract No 3.36.258)

confirmed. Of decisive importance, particularly in recent years, is the nutritional (milk) factor of typhoid transfer and distribution.

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Diagnosis

USSR

UDC 616.34-022-036.11-079.4

BUNIN, K. V., Prof., Corresponding Member Academy of Medical Sciences USSR

"Diagnosis and Differential Diagnosis of Acute Intestinal Infectious Diseases (Food poisoning, Cholera, and Dysentery)"

Moscow, Klinicheskaya Medtsina, Vol 49, No 4, Apr 71, pp 6-13

Abstract: In view of the spread of cholera, particularly that of the El Tor type, in a number of countries of Asia and elsewhere, the danger exists that infection with this disease may be carried into countries in which cholera did not occur before. Under the circumstances differential diagnosis of food poisoning, which are caused mainly by Salmonella, dysentery, and cholera becomes of importance. In carrying out the diagnosis, various aspects of which are reviewed, clinical, epidemiological, and microbiological data obtained in a laboratory investigation must be considered. Isolation of cholera vibrios from patients is best carried out by the classical method involving seeding in peptone water that has been made alkaline (enrichment medium) and cultivation on an alkaline agar medium. Addition to the peptone water of Na tellurite, NaCl, Na₂SO₄, and anticholera agglutinating serum was advantageous. When agglutinating cholera O-serum is used in tests, a negative or unclear result

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BURIN, K. V., *Klinicheskaya Meditsina*, Vol 49, No 4, Apr 71, pp 6-13

may be obtained if the cholera vibrios (this applies to El Tor vibrios, among others) are of the non-agglutinating type. Accelerated methods of testing for cholera vibrios have been proposed, which include an immunofluorescence test applied to the "rice water" excrement of patients and an immobilization test in which a specific serum against El Tor antigens renders the vibrios motionless in a suspended drop (the reaction is observed under a microscope in a dark field). Although either of these two tests requires only 2-3 hrs, they are not being applied extensively because of technical difficulties.

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1/2 021 UNCLASSIFIED PROCESSING DATE--11DEC70
TITLE--IMMUNOTHERAPY OF INFECTIOUS PATIENTS AND PREVENTION OF A BACTERIAL
- CARRIER STATE -U-
AUTHOR--BUNIN, K.V.
COUNTRY OF INFO--USSR *B*
SOURCE--KLIN MED 48(2): 12-17. 1970
DATE PUBLISHED-----70
SUBJECT AREAS--BIOLOGICAL AND MEDICAL SCIENCES
TOPIC TAGS--TYPHOID FEVER, CHLORAMPHENICOL, CHEMOTHERAPY, ANTIBODY,
HEMAGGLUTINATION
CONTROL MARKING--NO RESTRICTIONS
DOCUMENT CLASS--UNCLASSIFIED
PROXY FICHE NO----FD70/605014/C08 STEP NO--UR/0497/70/048/002/0012/0017
CIRC ACCESSION NO--AP0140478
UNCLASSIFIED

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UNCLASSIFIED

PROCESSING DATE--11DEC70

CIRC ACCESSION NO--AP0140478

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. THE THERAPY OF TYPHOID FEVER SHOULD INCLUDE ANTIBIOTICS, CHEMOTHERAPY AND IMMUNOTHERAPY. THERAPEUTIC DOSES OF LEVOMYCETIN (CHLORAMPHENICOL) (0.5 G, 5-6 TIMES DAILY) AND VI ANTIGEN CHEMICALLY PURIFIED INJECTED S.C. IN A DOSE OF 400 MU G, 2 TIMES DAILY AT 7-10 DAY INTERVALS DECREASES THE NUMBER OF RELAPSES AND THE FORMATION OF A BACTERIAL CARRIER STATE. LEVOMYCETIN WAS ADMINISTERED 10-12 DAYS FOLLOWING THE NORMALIZATION OF TEMPERATURE. THE NUMBER OF RELAPSES WAS DECREASED 3 TO 4 TIMES IN COMPARISON TO THE PATIENTS TREATED ONLY WITH LEVOMYCETIN (2.6PERCENT COMPARED WITH 12.8PERCENT). THE TITER OF INDIRECT HEMAGGLUTINATING ANTIBODIES INCREASED ABOUT 10 TIMES FOLLOWING THE APPLICATION OF VI ANTIGEN. THE 2ND INJECTION RESULTED IN AN ADDITIONAL INCREASE. THE VI ANTIGEN ACCUMULATES IN THE LYMPHOID TISSUES OF VARIOUS ORGANS INCREASING THE IMMUNOGLOBULIN (IG)M ANTIBODIES WHICH IS PROBABLY IMPORTANT FOR THE BACTERICIDAL PROPERTIES OF THE BLOOD. CORPUSCULAR ANTIGENS (MACROPHAGES OF BONE MARROW) PREDOMINANTLY INCREASE THE IGG ANTIBODIES. THE PERSISTENCE OF TYPHOID BACTERIA IN THE BILIARY TRACT IS THE MOST COMMON BACTERIAL CARRIER STATE. THE BACTERIA ALSO OCCUR IN MANY CELLS OF THE LYMPHOID TISSUES. THIS INDICATES SOME TYPE OF TOLERANCE TO THESE BACTERIA IN THE CARRIERS. THE PERSISTENCE OF BACTERIA RESULTS IN SOME IMMUNOLOGICAL HOMEOSTASIS GIVING RESISTANCE TO REINFECTION OF THE CARRIER. THE IGG TYPE OF ANTIBODIES ARE PREDOMINANTLY PRESENT IN CARRIERS; THERE IS A LOW LEVEL OF IGM. THE COMBINATION OF IMMUNE ANTIBIOTIC THERAPY IS RECOMMENDED.

FACILITY: DEP. INFECTION DIS., I. M. SECHENOV 1ST MOSCOW MED. INST., MOSCOW, USSR.

UNCLASSIFIED

USSR

UDC 577.4

BUNIN, P. G., PERLAMUTROV, V. L., and SOKOLOVSKIY, L. KH.

"Methods of Mathematical Economics for the Control of Working Capital"

Ekonomiko-matematicheskiye metody upravleniya oborotnymi sredstvami (cf. English above), Moscow, "Finansy," 1973, 240 pp, ill., 77 k. (from *RZh-Matematika*, No 6, Jun 73, Abstract No 6V582K)

Translation: The book takes up the organization of working capital in industry on the principles of profit-and-loss accounting, as well as questions relating to the improvement of planning through the methods of mathematical economics. A procedure is shown for computer-aided calculation of aggregate working-capital requirement and determination of the optimal level of one's own capital and the demand for bank credit. The requirements that must be met by the economic information for the computer-aided evaluations are stated.

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BUNIN, V.S.

In our country, the combined development of heat and electric power at low cost (heat and electric power plants) has been given special attention and considerable resources are being devoted to solving the problem involved in reducing the overall consumption of the country, which in 1978 even to certain extent (excluding gas) amounted to 790 billion kcal, compared with only 730 billion kcal in 1970. Around 25 percent of this fuel goes to generate electric power, including 520 million kcal from the heat engines, 120 million kcal from the electric power plants. In this connection, the heat consumption of 130 billion kcal of electric power, which is more than 20 million tons of conventional fuel and to produce this amounting to 44 million kcal of the steam electric stations (including the article is published in the report of the

The basic trend in the further development of an energy system is the expansion of the electric power system. The further development of an energy system is also characterized by the expansion of the electric power system and its integration with the development of the electric power system and its integration with the development of the electric power system. The further development of an energy system is also characterized by the expansion of the electric power system and its integration with the development of the electric power system.

PHOTOGRAPH BY V.S. BUNIN
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 PHOTOGRAPH BY V.S. BUNIN

Handwritten notes in the right margin, including "V.S. Bunin" and "1978".

USSR

UDC 621.165.001.14

BUNIN, V. S., Candidate of Technical Sciences, All-Union Thermo-technical Institute

"Basic Parameters and Peculiarities of Modern Turbine Heating Systems"

Moscow, Teploenergetika, No. 10, 1971, pp 31-33

Abstract: This article is devoted to a discussion of heating system turbines used for the combined development of electrical and thermal energy for communal and technological needs. Specifically, it considers the basic parameters and characteristics of such powerful turbines as those of the T, PT, and R types, with power levels of 40 MW and higher, and with a live steam pressure of 90, 130, and 240 kgs/cm². Such turbines have either been manufactured or are projected for future manufacture. An extensive table is given of models of turbines of these types together with their basic indices. The turbines manufactured by the Leningrad Metal Plant and by the Ural Turbomotor Plant are discussed and their indices compared. A table of the turbines manufactured in Czechoslovakia and their characteristics is also given, and turbines of other foreign sources, the USA and Denmark, are mentioned.

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1/2 023

UNCLASSIFIED

PROCESSING DATE--16OCT70

TITLE--EFFECTIVENESS OF THE INFLUENCE OF CO PRIME2 POSTIVE ON SPIN WAVE LOSSES -U-

AUTHOR--(04)-BUNINA, M.P., LEBEDEVA, YE.V., PILSHCHIKOV, A.I., SILVESTROBICH, I.I.

COUNTRY OF INFO--USSR

B

SOURCE--FIZ. TVERD TELA 1970, 12(2), 433-8 (RUSS)

DATE PUBLISHED-----70

SUBJECT AREAS--PHYSICS

TOPIC TAGS--SPIN WAVE THEORY, COBALT, ZINC FERRITE, LITHIUM COMPOUND, TITANIUM COMPOUND, MAGNETIC PUMPING, METAL ION

CONTROL MARKING--NO RESTRICTIONS

DOCUMENT CLASS--UNCLASSIFIED

PROXY REEL/FRAME--1983/1896

STEP NO--UR/0181/70/012/002/0433/0438

CIRC ACCESSION NO--AP0054699

UNCLASSIFIED

2/2 023

UNCLASSIFIED

PROCESSING DATE--16OCT70

CIRC ACCESSION NO--AP0054699

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. ON SPECIMENS OF LI-TI-ZN FERITES WITH THE FORMULA $LI_{1-2x}Fe_{1-x}Zn_x(Ti_{0.5-0.5x})_{0.5}$, WHERE T EQUALS 0.4-0.8 AND X EQUALS 0-0.4, INVESTIGATIONS WAS CARRIED OUT OF THE DEPENDENCE OF THE PARAMETER OF SPIN WAVE LOSSES, ΔH_{SK} , ON THE CONTENT OF CO²⁺ POSITIVE. MEASUREMENTS OF ΔH_{SK} WERE CARRIED OUT BY THE METHOD OF PARALLEL PUMPING ON CYLINDRICAL SPECIMENS AT ROOM TEMP. AT 9400 MHZ. THE EFFECT OF CO²⁺ POSITIVE ON ΔH_{SK} FOR SPIN WAVES PARAMETRICALLY EXCITED AT THE MIN. OF THE THRESHOLD FIELD VARIES ON THE INTRODUCTION INTO LI FERITE OF ZN²⁺ POSITIVE AND TI⁴⁺ POSITIVE. THE CONTRIBUTION TO ΔH_{SK} DETD. BY CO²⁺ POSITIVE IS PROPORTIONAL TO THE QUANTITY $(4\pi M-H_{EX})$ PRIME ONE HALF, CHARACTERISTIC FOR THE MECHANISM OF 2 MAGNON SCATTERING. THE INTRODUCTION OF NONMAGNETIC IONS INTO FERRITES CONTG. CO²⁺ POSITIVE INCREASES ΔH_{SK} SHARPLY WITHOUT VARIATION OF THE CONTENT OF CO²⁺ POSITIVE.

LOMONOSOVA, MOSCOW, USSR. FACILITY: MOSK. COS. UNIV. IM.

UNCLASSIFIED

1/2 023 UNCLASSIFIED PROCESSING DATE--16OCT70
 TITLE--EFFECTIVENESS OF THE INFLUENCE OF CO PRIME2 POSTIVE ON SPIN WAVE
 LOSSES -U-
 AUTHOR--(04)-~~RUMINA, M.P.,~~ LEBEDEVA, YE.V., PILSHCHIKOV, A.I.,
~~SILVESTROVICH, I.I.~~
 COUNTRY OF INFO--USSR S
 SOURCE--FIZ. TVERD TELA 1970, 12(2), 433-8 (RUSS)
 DATE PUBLISHED-----70
 SUBJECT AREAS--PHYSICS
 TOPIC TAGS--SPIN WAVE THEORY, COBALT, ZINC FERRITE, LITHIUM COMPOUND,
 TITANIUM COMPOUND, MAGNETIC PUMPING, METAL ION
 CONTROL MARKING--NO RESTRICTIONS
 DOCUMENT CLASS--UNCLASSIFIED
 PROXY REEL/FRAME--1983/1896 STEP NO--UR/0181/70/012/002/0433/0438
 AIRC ACCESSION NO--AP0054699
 UNCLASSIFIED

2/2 023

UNCLASSIFIED

PROCESSING DATE--16OCT70

IRC ACCESSION NO--AP0054699

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. ON SPECIMENS OF LI-TI-ZN FERITES WITH THE FORMULA $LI_{1-2T}Fe_{1-2T-x}Zn_x(Li_{0.5-0.5T}Fe_{1.5-0.5T}Ti_{0.5T}O_4)$, WHERE T EQUALS 0.4-0.8 AND X EQUALS 0-0.4, INVESTIGATIONS WAS CARRIED OUT OF THE DEPENDENCE OF THE PARAMETER OF SPIN WAVE LOSSES, ΔH_{SK} , ON THE CONTENT OF CO²⁺ POSITIVE. MEASUREMENTS OF ΔH_{SK} WERE CARRIED OUT BY THE METHOD OF PARALLEL PUMPING ON CYLINDRICAL SPECIMENS AT ROOM TEMP. AT 9400 MHZ. THE EFFECT OF CO²⁺ POSITIVE ON ΔH_{SK} FOR SPIN WAVES PARAMETRICALLY EXCITED AT THE MIN. OF THE THRESHOLD FIELD VARIES ON THE INTRODUCTION INTO LI FERITE OF ZN²⁺ POSITIVE AND TI⁴⁺ POSITIVE. THE CONTRIBUTION TO ΔH_{SK} DETD. BY CO²⁺ POSITIVE IS PROPORTIONAL TO THE QUANTITY $(4\pi M-H_{EX})$ PRIME ONE HALF, CHARACTERISTIC FOR THE MECHANISM OF 2 MAGNON SCATTERING. THE INTRODUCTION OF NONMAGNETIC IONS INTO FERRITES CONTG. CO²⁺ POSITIVE INCREASES ΔH_{SK} SHARPLY WITHOUT VARIATION OF THE CONTENT OF CO²⁺ POSITIVE.

FACILITY: MUSK. GOS. UNIV. IM. LOMONOSOVA, MOSCOW, USSR.

UNCLASSIFIED

Acc. Nr. AP0029116

Ref. Code: UR 0246

PRIMARY SOURCE: Zhurnal Nevropatologii i Psikhiiatrii, 1970,
Vol 70, Nr 1, pp 55-60

OTONEUROLOGICAL SYMPTOMATOLOGY IN LATERAL
AMYOTROPHICAL SCLEROSIS

Kalinovskay, I. Ya.; Bunina, T. L.

The report concerns an otoneurological study of 127 patients with lateral amyotrophical sclerosis. Disorders of swallowing were registered in 51.99%, of the soft palate in 55.90% disorders of the pharyngeal reflex in 57.84%. As a rule, there was an increased pharyngeal reflex in combination with a distinct paresis of the soft palate. A supranuclear paresis of the soft palate may be the only initial symptom in a bulbar form of lateral amyotrophical sclerosis. The hearing functions in this disease were affected quite rarely (12.7%). A spontaneous nystagm of a stem nature was seen in 18.8%. The optokinetical nystagmus (2.37%) and vertigo (5.5%) were encountered very rarely. The experimental nystagmus was either normal or there was a hyporeflexia and only in separate cases. An otoneurological study supplements the clinical picture, facilitates the differential diagnosis and extends our concepts of the topical process.

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1/2 . 010 UNCLASSIFIED PROCESSING DATE--13NOV70
TITLE--CONDENSATION OF AROMATIC COMPOUNDS WITH ALLYL TYPE HALIDES. X.
CATALYTIC ALPHA REARRANGEMENT OF 4,3,CHLORO,2,BUTENOXY,TOLUENE -U-
AUTHOR--(04)-BUNINAKRIVORUKOVA, L.I., YAGODIN, V.G., MARTYNOVA, V.P.,
BALYAN, KH.V.
COUNTRY OF INFO--USSR **B**
SOURCE--ZH. ORG. KHIM. 1970, 6(5), 991-5
DATE PUBLISHED-----70
SUBJECT AREAS--CHEMISTRY
TOPIC TAGS--ZINC CHLORIDE, CATALYST, CONDENSATION REACTION, TOLUENE,
CHLORINATED ORGANIC COMPOUND
CONTROL MARKING--NO RESTRICTIONS
DOCUMENT CLASS--UNCLASSIFIED
PROXY REEL/FRAME--3006/1342 STEP NO--UR/0366/70/006/005/0991/0995
CIRC ACCESSION NO--AP0135016
UNCLASSIFIED

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UNCLASSIFIED

PROCESSING DATE--13NOV70

CIRC ACCESSION NO--AP0135016

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. THE CLAISEN REARRANGEMENT OF P-MEC
SUB6 H SUB3 OCH SUB2 CH:CCLME GIVES P-MEC SUB6 H SUB4 OH, HOC SUB6 H
SUB4 (CH SUB2 CH:CCLME) ME-2,4, AND HOC SUB6 H SUB2 (CH SUB2 CH:CCLME)
SUB2 ME-2,6,4, SHOWING THAT THE REACTION IS INTERMOL. THE REARRANGEMENT
INVOLVES THE ALPHA-C ATOM OF OCH SUB2 CH:CCLME (L. I. BUNIMA-KRIVORUKOVA
ET AL., 1968). THE REARRANGEMENT RATE DEPENDS ON THE AMT. OF CATALYST
(ZNCL SUB2), SOLVENT POLARITY (DECALIN, PHNO SUB2, O-HOC SUB6 H SUB4 NO
SUB2), AND TEMP. FACILITY: Leningrad. Tekhnol. Inst. Im.
LENSOVETA, Leningrad, USSR.

UNCLASSIFIED

1/2 017 UNCLASSIFIED PROCESSING DATE--20NOV70
TITLE--CONDENSATION OF AROMATIC COMPOUNDS WITH ALLYL HALIDES. I.A.
ALKENYLATION OF NITROPHENOLS BY 4 CHLORO 2 PENTENE -U-
AUTHOR--(03)--MARTYNOVA, V.P., BUNINAKRIVORUKOVA, L.I., BALYAN, KH.V.

COUNTRY OF INFO--USSR

SOURCE--ZH. ORG. KHIM. 1970, 6(4), 775-81

DATE PUBLISHED-----70

SUBJECT AREAS--CHEMISTRY

TOPIC TAGS--ORGANIC NITRO COMPOUND, PHENOL, CHLORINATED ORGANIC COMPOUND,
ALKYLATION, CHEMICAL REDUCTION, CATALYST, PALLADIUM

CONTROL MARKING--NO RESTRICTIONS

DOCUMENT CLASS--UNCLASSIFIED
PROXY REEL/FRAME--2000/1944

STEP NO--UR/0366/70/006/004/0775/0781

CIRC ACCESSION NO--AP0125533

UNCLASSIFIED

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UNCLASSIFIED

PROCESSING DATE--20NOV70

CIRC ACCESSION NO--AP0125533

ABSTRACT/EXTRACT--(U) GP-O- ABSTRACT. THE ALKENYLATION OF O, M, AND P NITROPHENOLS WITH MECHCLCH:CHME (I) IN ACETONE SOLN. CONTG. K SUB2 CO SUB3 GAVE C, M, AND P O SUB2 NC SUB6 H SUB4 OCHMECH:CHME (II) AND SMALL AMTS. OF O SUB2 NC SUB6 H SUB3 (OH)CHMECH:CHME 2,3 (III). THE FORMATION OF III IS DUE TO THE REARRANGEMENT OF O II ISOMER AND NOT TO C ALKYLATION. HEATING II IN DECALIN AT 150-60DEGREES GAVE III AND ITS OTHER 2 ISOMERS. THE REDN. OF II OVER PD-CACO SUB3 CATALYST GAVE H SUB2 NC SUB6 H SUB4 OCHMECH:CHME. THE ATTEMPTED ALKENYLATION OF NITROPHENOLS WITH I IN MEOH GAVE ONLY 4 METHOXY 2 PENTENE; THE ALKENYLATION WITHOUT SOLVENTS GAVE THE STARTING NITROPHENOLS AND TARS. FACILITY: LENINGRAD. TEKHNOL. INST. IM. LENSOVETA, LENINGRAD, USSR.

UNCLASSIFIED

1/2 031 UNCLASSIFIED PROCESSING DATE--04DEC70
TITLE--MOLECULE WEIGHT DISTRIBUTION OF SOME POLYOLEFINS -U-
AUTHOR--(02)-BUNİYATZADE, A.A., AZIMOVA, A.B.
COUNTRY OF INFO--USSR *B*
SOURCE--PLAST. MASSY 1970, (6), 37-40 (RUSS)
DATE PUBLISHED-----70

SUBJECT AREAS--CHEMISTRY, MATERIALS

TOPIC TAGS--FRACTIONATION, POLYETHYLENE, ETHYLENE GLYCOL, MOLECULAR
WEIGHT, INTERNAL STRESS, BUTENE, COPOLYMER, CRACK PROPAGATION

CONTROL MARKING--NO RESTRICTIONS

DOCUMENT CLASS--UNCLASSIFIED
PROXY REEL/FRACTION--3006/0994 STEP NO--UR/0191/70/000/006/0037/0040

CIRC ACCESSION NO--AP0134706
UNCLASSIFIED

2/2 031

UNCLASSIFIED

PROCESSING DATE--04DEC70

CIRC ACCESSION NO--AP0134706

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. THE FRACTIONATION OF THE INTERMEDIATE D. POLYETHYLENES (I) IN A TETRALIN (SOLVENT)-TRIETHYLENE GLYCOL (PRECIPITANT) SYSTEM GAVE THE POLYDISPERSITY OF I. THE RESISTANCE TO CRACKING DURING HEATING OF I IS HIGH WHEN THE MOL. WT. DISTRIBUTION RANGE IS NARROW. I ARE SMALLER OR EQUAL TO 90PERCENT CRYST. AND THE CRYSTALLITES COMPETE FOR THE AMORPHOUS, LOW MOL. WT. FRACTIONS CAUSING INTERNAL STRESSES, WHICH INCREASE THE PROBABILITY OF CRACKING. IN THE CASE OF ETHYLENE-ALPHA-BUTYLENE COPOLYMER (II) THE POLYDISPERSITY HAS LITTLE EFFECT ON THE RESISTANCE TO CRACKING; THE DOMINANT FACTOR IS THE AV. MOL. WT. OF II.

UNCLASSIFIED

USSR

UDC: None

BATANOV, V. A., BUNKIN, F. V., PROKHOROV, A. M., and FEDOROV, V. B.

"Light Self-Focusing in a Plasma and the Ultrasonic Ionization Wave in a Laser Beam"

Moscow, Pis'ma v Zhurnal Eksperimental'noy i Teoreticheskoy Fiziki, vol 16, No 7, 1972, pp 378-382

Abstract: This letter describes a new type of behavior of a plasma flare in which the flare almost fully absorbs a laser beam passed through it. In the experiment in which this phenomenon occurs, a bismuth target is vaporized by a laser beam into a helium atmosphere with a pressure of 2.5 to 5 atm. The laser beam has a wavelength of 1.06μ and an intensity of 10^7 W/cm^2 , emitted in a pulse of 1 ms duration. Photographs of the flare show the drift of the plasma cloud from the target and along the lens caustic, and they demonstrate the breakaway and drift of the flare from the target at the beginning of the process. The authors assert that they were the first, in 1969, to report this breakaway and thus to indicate the possibility of obtaining a strongly absorbent plasma by vaporizing a solid target. The photographs also indicate the

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USSR

BATANOV, V. A., et al., Pis'ma Zhurnal Eksperimental'noy i Teoreticheskoy Fiziki, vol 16, No 7, 1972, pp 378-382

development of the self-focusing effect, caused by the aforementioned lens, and the plasma bunching produced by the focusing. The front of the ultrasonic ionization wave is at the back of the plasma cloud, with the length of the cloud increasing as a result of the ionization wave-front motion in the direction of the laser beam. The authors are connected with the P. N. Lebedev Institute of Physics.

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USSR

BATANOV, V. A.; ~~BIDKIN, E. V.~~; PROKHOROV, A. M.; FEDOROV, V. E. (Lebedev Physics Institute, USSR Academy of Sciences)

"Evaporation of Metallic Targets by Intense Optical Radiation"

Moscow, Zhurnal Eksperimental'noy i Teoreticheskoy Fiziki; August, 1972; pp 586-605

ABSTRACT: A theory of evaporation of metals subjected to intense optical radiation is developed on the basis of the liquid-vapor phase transition. A method for the approximate solution of the Clapeyron-Clausius equation is suggested which permits one to determine the temperature of the surface of a target as a function of the incident radiation intensity I with accuracy sufficient for experimental purposes. It is shown that when a certain critical value of the intensity $I_{nd} \sim 10^7 - 10^8 \text{ w/cm}^2$ is exceeded, a new effect -- a "transparency wave" -- arises as a result of the loss of metallic properties by the target: in the front of the wave the liquid metal changes into a liquid dielectric. For $I > I_{nd}$ vaporization begins to take place at the surface
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USSR

BATANOV, V. A., et al., Zhurnal Eksperimental'noy i Teoreticheskoy Fiziki;
August, 1972; pp 586-608

of the "transparent" (dielectric) layer, the temperature T_{md} of which ceases to increase and remains below the critical value. This layer is separated from the metal by the front of the transparency wave propagating into the target. This transparency effect is accompanied by the appearance of a number of other effects which may serve for its observation: viz., a sharp drop of the target reflection coefficient, a considerable change in the dependence of the evaporation front velocity on I , and, finally, the appearance of a maximum followed by a monotonic decrease in the dependence of the specific recoil momentum on I . The latter effect was experimentally observed in the present investigation. The results obtained are presented in the paper.

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USSR

~~BUNKIN, F. V.,~~ KRASYUK, I. K., MARCHENKO, V. M., PASHININ, P. P., PROKHOROV,
A. M., Physics Institute imeni P. N. Lebedev, Academy of Sciences, USSR

"Investigation of the Structure of a Spark Produced in the Focussing of a Pico-second Laser Pulse in Gases"

Moscow, Zhurnal Eksperimental'noy i Teoreticheskoy Fiziki, No 4, 1971, pp 1326-1331

Abstract: Research is conducted on the formation of points of strong nonlinear scattering of laser radiation and breakdown in air, nitrogen, and argon due to the focussing of a ruby laser radiation pulse with a duration of 20 -- 100 picoseconds and a power of about 2×10^9 watts. The mechanism of this phenomenon, which is linked to the self-focussing of laser radiation in a gas, is discussed. An analysis is given of the results of determination of the breakdown thresholds by means of short-focus and long-focus lenses. The part played by the self-focussing of laser radiation in the development of breakdown at optical frequencies is assessed. 3 figures. 16 bibliographic entries.

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USSR

B

UDC 621.375.9

BATANOV, V. A., BUNKIN, F. V., PROKHOROV, A. M., Academician, and FEDOROV, V. B.,
Physics Institute imeni P. N. Lebedev of the Academy of Sciences USSR, Moscow

"Gas Dynamic Molecular Laser With Optical Pumping"

Moscow, Doklady Akademii Nauk SSSR, Vol. 191, No. 6, 1970, pp 1267-1269

Abstract: Molecular gas lasers with incoherent optical pumping are claimed to have a relatively broad spectral band for the absorption of pumping light in a relatively narrow width of the working transition line. An infrared molecular laser is proposed with optical pumping to the molecules' rotation-vibration band in the electron ground state by incoherent radiation from a "fixed" shock-wave which arises during the stationary flow of the working gas mixture from a nozzle in an underexpanded state into a gas atmosphere. The composition of this gas may either coincide or not coincide with the composition of the working mixture. The working mixture in this discussion is assumed to be $\text{CO}_2 + \text{N}_2 + \text{He}$, in which the helium plays the same role as in CO_2 lasers with an electric discharge. It is noted that the nitrogen is not necessary to obtain inversion but it is desirable since it increases the effective lifetime of the upper laser level 00^0_1 (sic) and broadens the effective rotation-vibration band of the pumping absorption.

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BATANOV, V. A., et al., Doklady Akademii Nauk SSSR, Vol 191, No 6, 1970,
pp 1267-1269

This version of the laser is intended to overcome technical difficulties encountered in IR molecular lasers with optical pumping in the traditional tube version, which were the restricted choice of optical materials in the IR range for laser tube with CO₂ gas and for pumping tubes, and also eliminate the requirement of maintaining a fairly high temperature of the working mixture ($\sim 200^{\circ}\text{K}$). Specific parameters are proposed for this laser to produce a power of approximately 500 w at one meter.

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1/2 024 UNCLASSIFIED PROCESSING DATE--27NOV70
TITLE--TWO PHOTON DISSOCIATION OF MOLECULES -U-
AUTHOR--(02)-BUNKIN, F.V., TUGOV, I.I. **B**
COUNTRY OF INFO--USSR
SOURCE--ZHURNAL EKSPERIMENTAL'NOY I TEORETICHESKOY FIZIKI, 1970, VOL 58,
NR 6, PP 1987-1994
DATE PUBLISHED-----70
SUBJECT AREAS--PHYSICS
TOPIC TAGS--PHOTON, GREEN FUNCTION, PARTICLE CROSS SECTION, PHOTOEFFECT,
MOLECULAR PHYSICS
CONTROL MARKING--NO RESTRICTIONS
DOCUMENT CLASS--UNCLASSIFIED
PROXY REEL/FRAME--2000/2230 STEP NO--UR/0056/70/058/006/1987/1994
CIRC ACCESSION NO--AP0125808
UNCLASSIFIED

.2/2 024

UNCLASSIFIED

PROCESSING DATE--27NOV70

CIRC ACCESSION NO--AP0125808

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. THE PROBLEM OF TWO QUANTUM
PHOTODISSOCIATION OF DIATOMIC HETERONUCLEAR MOLECULES IS CONSIDERED. A
METHOD IS PROPOSED FOR TAKING INTO ACCOUNT THE COMPLETE VIBRATION
ROTATIONAL SPECTRUM OF SUCH MOLECULES FOR ARBITRARY TWO PHOTON
TRANSITIONS. THE METHOD IS BASED ON APPLICATION OF THE EXPLICIT
EXPRESSION OF THE GREEN FUNCTION FOR THE INTERNUCLEAR POTENTIAL. THE
NUCLEAR POTENTIAL ENERGY CURVE IS APPROXIMATED BY THE KRATZER POTENTIAL
 $V(R)$ EQUALS A MAGNITUDE OF R PRIME NEGATIVE 2 MINUS B R PRIME NEGATIVE 1.
AN ANALYTIC EXPRESSION IS DERIVED FOR THE CROSS SECTION FOR TWO PHOTON
DISSOCIATION OCCURRING WITHOUT CHANGE OF THE GROUND ELECTRON TERM; THE
EXPRESSION IS VALID FOR ARBITRARY VALUES OF THE VIBRATIONAL AND
ROTATIONAL QUANTUM NUMBERS OF THE INITIAL STATE. FACILITY:
FIZICHESKIY INSTITUT IM. P. N. LEBEDEVA AN SSSR.

UNCLASSIFIED

USSR

UDC: 616.45-001.1/.3-07:616.831.4/.8-
008.91.4.52

BELOVA, T. I., and BUNKINA, L. S., Laboratory of General Physiology of the Central Nervous System, Institute of Normal and Pathological Physiology, Academy of Medical Sciences USSR, and Chair of the First Moscow Medical Institute imeni I. M. Sechenov

"Histochemical Study of Catecholamines in the Oral Region of the Brain Stem Under Normal Conditions and After Rapidly Developing Stress"

Moscow, Byulleten' Eksperimental'noy Biologii i Meditsiny, Vol 70, No 12, Dec 70, pp 93-96

Abstract: Fluorescence of the locus caeruleus, substantia nigra, substantia grisea centralis, and adjacent structures of the brain stem was studied in normal mice and in mice subjected to stress induced by rapid asphyxiation. The color of the fluorescence and consequent composition of the catecholamines varies from structure to structure. The locus caeruleus and substantia nigra, for example, fluoresce bright green, an indication of their high content of norepinephrine and dopamine. Mild stress was found to reduce the intensity of the fluorescence in all of the

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USSR

BELOVA, T. I., and BUNKINA, L. S., Byulleten' Eksperimental'noy Biologii i Meditsiny, Vol 70, No 12, Dec 70, pp 93-96

brain structures studied, while severe stress increased it, especially in the locus caeruleus. The sharp response of the latter to brief asphyxia suggests that it is intimately involved in the stress states resulting from impairment of respiration.

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1/2 011 UNCLASSIFIED PROCESSING DATE--27NOV70
TITLE--AUTOMATIC DISCRETE CONTROL OF PULP DENSITY -U-
AUTHOR--(03)-MARYUTA, A.N., BUNKO, V.A., OBLETSOV, E.I. **B**
COUNTRY OF INFO--USSR
SOURCE--GORN. ELEKTROMEKHAH. I AVTOMATIKA. RESP. MEZHVED. NAUCHNO-TEKHN.
REFERENCE--MOSCOW, REFERATIVNYY ZHURNAL, METALLURGIYA, NO 4, 1970,
DATE PUBLISHED-----70

SUBJECT AREAS--EARTH SCIENCES AND OCEANOGRAPHY, MECH., IND., CIVIL AND
MARINE ENGR
TOPIC TAGS--MINING ENGINEERING, ORE BENEFICIATION, FLUID DENSITY, CRUSHING
PLANT, INDUSTRIAL AUTOMATION

CONTROL MARKING--NO RESTRICTIONS
DOCUMENT CLASS--UNCLASSIFIED
PROXY REEL/FRAME--3001/2062 STEP NO--UR/0000/70/000/014/0152/0156
CIRC ACCESSION NO--AR0127435
UNCLASSIFIED

2/2 011

UNCLASSIFIED

PROCESSING DATE--27NOV70

CIRC ACCESSION NO--AR0127435

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. IN A CHAIR OF THE DNEPROPETROVSK MINING INSTITUTE, AN AUTOMATIC DISCRETE PYCNOMETER WAS DEVELOPED BASED ON THE PRINCIPLE OF AUTOMATIC SELECTION OF PULP FROM A FLOW WITH A MEASURING JAR. THE CHARACTERISTIC FEATURE OF THE UNIT WHICH WAS DEVELOPED IS THAT THE FLOW SAMPLING MOMENT AND PULP DENSITY MEASUREMENT ARE TIME SEPARATED. AN EXPERIMENTAL MODEL OF THE DEVICE WAS TESTED UNDER INDUSTRIAL CONDITIONS. PULP DENSITY WAS MEASURED IN ROD MILL DISCHARGE AT THE CONCENTRATING PLANT OF THE KAMYSHBURUNSKIY COMBINE. MEASUREMENT ERROR WAS PLUS OR MINUS 0.02 KG-L. BASED ON THE DISCRETE DENSIMETER, A SYSTEM WAS DEVELOPED FOR AUTOMATIC CONTROL OF PULP DENSITY IN ROD MILLS WHICH IS UNDERGOING EXPERIMENTAL INDUSTRIAL TESTS AT THE PLANT.

UNCLASSIFIED

USSR

UDC 629.78.015.4:533.6.013.422

BUN'KOV, V. G.

"Consideration of Shift Deformation in Calculating Vibrations of a Wing of Small Aspect Ratio by the Polynomial Method"

Uch. zap. Tsentr. aerogidrodinam. in-ta (Scientific Notes of the Central Aerohydrodynamic Institute), 1972, Vol. 3, No. 4, pp 111-119 (from RZh-41. Raketostroyeniye, No 11, Nov 72, Abstract No 11.41.139)

Translation: The polynomial method is widely used in calculating vibrations and flutter of wings of low aspect ratio that have a fairly "smooth" structure: without breaks, without deep dips in the rigidity curves, and without large cuts in the covering. This method is a generalization of the Ritz method with the expansion of deformations in power series. A plate analogy is applied for deformations. Consideration of shift deformations (also by the energy method) makes it possible to evaluate errors imparted by the hypothesis of straight normals. It is shown that consideration of shift for wings with a "smooth" structure lowers the frequency of vibrations by 4-6% and that the frequencies drop by 15-25% for "cut" wings. 5 ill., 1 table. Resume.

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1/2 031 UNCLASSIFIED PROCESSING DATE--30OCT70
TITLE--SCATTERING FUNCTION AND QUALITY OF THE IMAGE IN HOLOGRAPHY -U-
AUTHOR-(03)-BUINOV, G.N., LUKIN, A.V., MUSTAFIN, K.S.
COUNTRY OF INFO--USSR *B*
SOURCE--OPTIKA I SPEKTROSKOPIIA, VOL. 28, APR. 1970, P. 762-765
DATE PUBLISHED----APR70
SUBJECT AREAS--PHYSICS
TOPIC TAGS--HOLOGRAPHY, SINGLE MODE LASER, LIGHT SCATTERING, LIGHT
DIFFUSION, IMAGE DEGRADATION
CONTROL MARKING--NO RESTRICTIONS
DOCUMENT CLASS--UNCLASSIFIED
PROXY REEL/FRAME--2000/1209 STEP NO--UR/0051/70/028/000/0762/0765
CIRC ACCESSION NO--AP0124863
UNCLASSIFIED

2/2 031

UNCLASSIFIED

PROCESSING DATE--30OCT70

CIRC ACCESSION NO--AP0124863

ABSTRACT/EXTRACT--(U) GP-O- ABSTRACT. APPLICATION OF A METHOD, BASED ON OBTAINING THE IMAGE OF A SHARP EDGE, TO THE DETERMINATION OF THE LINE SCATTERING FUNCTION OF THE HOLOGRAPHIC PROCESS. HOLOGRAPHS OF A RASER BLADE EDGE WERE OBTAINED WITH THE AID OF A SINGLE MODE LASER. EXCELLENT AGREEMENT BETWEEN THE THEORETICAL AND EXPERIMENTAL SCATTERING FUNCTIONS IS OBTAINED FOR COHERENT LIGHT, WHILE DIFFUSE LIGHT IS FOUND TO IMPAIR SUBSTANTIALLY BOTH THE LIMITING RESOLUTION OF THE HOLOGRAPHIC PROCESS AND THE QUALITY OF THE IMAGE.

1/2 034 UNCLASSIFIED PROCESSING DATE--27NOV70
TITLE--ORIGIN OF THE CENTRAL DIFFUSE SPOT ON THE X RAY DIFFRACTION
PICTURES OF AN AGEING ALUMINIUM SILVER ALLOY -U-
AUTHOR-(03)-DOBROMYSLOV, A.V., BUINOV, N.N., GLEBOV, V.V.
COUNTRY OF INFO--USSR **B**
SOURCE--FIZIKA METALLV I METALLOVEDENIE, APR. 1970, 29, (4), 807-812
DATE PUBLISHED-----70
SUBJECT AREAS--PHYSICS, MATERIALS
TOPIC TAGS--X RAY DIFFRACTION PATTERN, SILVER ALLOY, ALUMINUM ALLOY,
ELECTRON DENSITY, LOW TEMPERATURE EFFECT
CONTROL MARKING--NO RESTRICTIONS
DOCUMENT CLASS--UNCLASSIFIED
PROXY REEL/FRA--3003/0448 STEP NO--UR/0126/70/029/004/0807/0812
CIRC ACCESSION NO--AP0129673
UNCLASSIFIED

2/2 034

UNCLASSIFIED

PROCESSING DATE--27NOV70

CIRC ACCESSION NO--AP0129673

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. THE ORIGIN OF THE CENTRAL DIFFUSE SPOT REPEATEDLY APPEARING ON THE X RAY DIFFRACTION PATTERNS OF AGEING AG-AL ALLOYS AT LOW TEMP. IS DISCUSSED. THE DIFFUSE SPOT CANNOT BE ADEQUATELY EXPLAINED ON THE BASIS OF THE THERMAL VIBRATIONS OF INDIVIDUAL ATOMS. HOWEVER, ON THE BASIS OF THE GENERAL LAW OF DIFFRACTION AS APPLIED TO SAMPLES CONTG. SPHERICAL GUINIER-PRESTON ZONES (THE X RAY ANALOGY OF THE DIFFRACTION OF LIGHT WAVES BY A CIRCULAR DISC), A FEASIBLE EXPLANATION FOR THIS EFFECT MAY BE SECURED, IF THE ZONES ARE CONSIDERED AS HAVING A RELATIVELY HIGH ELECTRON DENSITY.

UNCLASSIFIED

1/2 030 UNCLASSIFIED PROCESSING DATE--18SEP70
TITLE--ORIGIN OF DEFORMATION CONTRAST STUDIED ON THE BASIS OF THE POSITION
OF THE CONTRAST FREE LINES IN TITANIUM AND NIOBIUM ALLOYS -U-
AUTHOR-(04)-SUDAREVA, S.V., BUINOV, N.N., VOZILKIN, V.A., BYCHKOVA, M.I.
COUNTRY OF INFO--USSR ~~_____~~ B
SOURCE--FIZ. METAL. METALLOVED. 1970, 29(1), 87-96
DATE PUBLISHED-----70

SUBJECT AREAS--MATERIALS, MECH., IND., CIVIL AND MARINE ENGR
TOPIC TAGS--TITANIUM ALLOY, NIOBIUM, ELECTRON MICROSCOPY, METAL
DEFORMATION

CONTROL MARKING--NO RESTRICTIONS
DOCUMENT CLASS--UNCLASSIFIED
PROXY REEL/FRAME--1984/0190 STEP NO--UR/0126/70/029/001/0037/0086
CIRC ACCESSION NO--AP0054986
UNCLASSIFIED

2/2 030

UNCLASSIFIED

PROCESSING DATE--18SEP70

CIRC ACCESSION NO--AP0054986

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. AFTER TEMPERING OF TI-NB ALLOYS THERE IS OBSD. ON ELECTRON MICROGRAPHS OF SUCH ALLOYS A CONTRAST IN THE FORM OF PAIRS OF DARK SEGMENTS WITH A ZERO INTENSITY LINE. THE NATURE OF THESE DEFECTS WAS STUDIED WITH THE AID OF THE DEFORMATION CONTRAST THEORY. A METASTABLE ALPHA PHASE WAS OBSD., COHERENTLY BONDED WITH THE MATRIX. THE OBSD. CONTRAST IS NOT ASSOCD. WITH VACANCY LOOPS, BUT IS CAUSED BY COHERENT DEFORMATION FIELDS AROUND THE PARTICLES OF THE ALPHA PHASE AND SOMETIMES THE OMEGA PHASE, DEPENDING ON THE STRUCTURAL STATE OF THE ALLOY.

UNCLASSIFIED

USSR

UDC 621.762.4.001

AKSENOV, G. I., and BUNOVA, G. Z.

"Kinetics of the Compacting Process During the Hot Pressing of Metal Powders"

Tr. Kuybyshev. aviats. in-t (Works of Kuybyshev Aviation Institute), 1970, vyp. 42, pp 87-90 (from RZh-Metallurgiya, No 3, Mar 71, Abstract No 3G340 by V. Chelnokov)

Translation: The article investigates the compacting mechanism in the hot pressing of reduced copper powder. Hot pressing was accomplished on a hydraulic press in an atmosphere of dissociated ammonia₂ at 200, 300, 400, 500, 600, and 700° under pressures of 2.4 and 6 tons/cm². A rise in temperature increases the compacting rate, density of specimens, and yield of material, and lowers the viscosity. Activation energy of the process is 16-20 kcal/mole. It is assumed that the compacting mechanism at low temperatures the dislocation climb process is superposed on this process. Two illustrations.

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USSR

UDC 621.762.4.001

BUNOVA, G. Z., SIDNIKHIN, A. I.

"Characteristic Features of the Recovery and Recrystallization Processes During Hot Extrusion of Metal Powders"

Tr. Kuybyshev, aviats. in-t (Works of Kuybyshev Aviation Institute), 1970, vyp. 42, pp 82-86 (from RZh-Metallurgiya, No 4, Apr 71, Abstract No 4G426)

Translation: The processes of recovery and recrystallization during hot extrusion of Cu-powders are investigated. The article contains 1 illustration and a 5-entry bibliography.

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USSR

UDC: 621.317.341.3.088:681.3

ZHILINSKAS, R. P., BUOZHIS, S. S.

"Computer Modeling of Reflectometer Errors by the Monte-Carlo Method"

Dokl. Vses. nauchno-tekhn. konferentsii po radiotekhn. izmereniyam. T. 2 (Reports of the All-Union Scientific and Technical Conference on Radio Engineering Measurements. Vol. 2), Novosibirsk, 1970, pp 27-30 (From RZh-Radiotekhnika, No 12, Dec 70, Abstract No 12A384)

Translation: It is noted that in view of the complex nature of relationships in SIF reflectometers, the most suitable method for determining their errors is computer modeling by a Monte-Carlo method. A brief exposition is given of the method used and its realization for actual reflectometers operating within the framework of the R2-35 instrument. Typical histograms are given for errors, and practical conclusions are drawn. Bibliography of four titles. E. L.

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USSR

BUNTAR', A. G., TKHORIVSKIY, A. M., Kiev Polytechnical Institute

"Crystallization Kinetics of Antimony Thin Films"

Leningrad, Fizika Tverdogo Tela, No. 12, Dec 71, pp 3481-3489

Abstract: The crystallization kinetics of a thin film of antimony during deposition in an electronograph chamber was investigated and the process of crystallization of a thin amorphous film of antimony condensed on a glass substrate was studied. It is noted that the condensation of antimony on a substrate through sublimation in a vacuum is practically unstudied. The electronographic study of the condensation process was carried out with the EG-100M electronograph equipped with a specially designed evaporator for carrying out deposition on a collodion substrate directly in the electronograph chamber. The evaporation temperature was selected so that the evaporation time for 4-5 mg of antimony did not exceed 5 min, corresponding to the time for the motion of the photographic plate on which the kinematic electronograph was recorded. It was shown that the rate of crystallization and the nature of the texture of the deposit formed are functions of the evaporation rate. Preliminary data

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USSR

BUNTAR', A. G., TKHORIVSKIY, A. M., Fizika Tverdogo Tela, No. 12, Dec 71,
pp 3481-3488

indicate that small changes in the evaporation rate have a considerable effect on the kinetics of antimony codensation. This is explained by the fact that both the initial thickness at which crystallization of the amorphous layer begins and the rate of growth of the crystalline phase are functions of the evaporation rate. Films were produced on a glass substrate of dimensions 130×35 mm by sublimation in a vacuum from a tantalum evaporator to study the process of crystallization of amorphous antimony films. There was satisfactory agreement between measurements of the thickness of the film and calculations of the thickness using the Vekshinskiy method. Analysis of a series of photographs of an antimony film during the crystallization process shows that the number of nuclei in various sections of the film varied from approximately 40 cm^{-2} for a film thickness of 350 \AA to 100 cm^{-2} for a film thickness of 400 \AA .

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1/2 018 UNCLASSIFIED PROCESSING DATE--04DEC70
TITLE--ELECTRON DIFFRACTION INVESTIGATION OF THE BOND STRENGTH IN AN IONIC
COMPOUND -U-
AUTHOR--(02)-BUNTAR, A.G., MARGOLINA, A.F. **B**
COUNTRY OF INFO--USSR
SOURCE--UKR. FIZ. ZH. (RUSS. ED). 1970, 15(3), 359-63
DATE PUBLISHED-----70

SUBJECT AREAS--CHEMISTRY
TOPIC TAGS--CHEMICAL BONDING, ELECTRON DENSITY, SODIUM COMPOUND, POTASSIUM
COMPOUND, FLUORIDE, BROMIDE

CONTROL MARKING--NO RESTRICTIONS
DOCUMENT CLASS--UNCLASSIFIED
PROXY REEL/FRAME--3008/0363 STEP NO--UR/0185/70/015/003/0359/0363
CIRC ACCESSION NO--AP0137467
UNCLASSIFIED

2/2 018 UNCLASSIFIED PROCESSING DATE--04DEC70
CIRC ACCESSION NO--AP0137467
ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. THE USE OF ELECTRON DIFFRACTION TO
DET. BOND STRENGTHS IS DISCUSSED. THE DEPENDENCE OF THE REFLECTION
INTENSITIES OF LAMBDA WAS STUDIED FOR NAF, NABR, AND KF FILMS. FOR
CRYSTALLITES SMALLER THAN OR EQUAL TO 100 ANGSTROM IN SIZE, THE
SCATTERING OF THE ELECTRON WAVES MAY BE CONSIDERED TO BE KINEMATIC.
ELECTRON D. DISTRIBUTIONS WERE CALCD. FOR THE MAIN CRYSTALLOGRAPHIC
DIRECTIONS. THE BOND IN NAF IS PROBABLY PARTIALLY COVALENT.
FACILITY: KOMMUNAR. GORNOMETAL. INST., KOMMUNAR, USSR.

UNCLASSIFIED

Adsorption

USSR

UDC 541.183.2

BONDARENKO, S. V., VDOVENKO, N. V., BURTOVA, M. A., RUDENKO, V. M., AND
TARASEVICH, YU. I., Institute of Colloidal Chemistry and Chemistry of Water,
Academy of Sciences, UkrSSR

"Wetting Heat and Water Adsorption on Organopalygorskite"

Kiev, Ukrainskiy Khimicheskii Zhurnal, Vol 38, No 10, Oct 71, pp 1008-1013

Abstract: The wetting heat and adsorption of water on a natural sample of palygorskite and on samples treated with organic materials were investigated. It has been shown that mineral surfaces modified with organic cations have a lower adsorption capacity. This is due principally to the replacement of the most active adsorption centers of the internal surface of the mineral (inorganic exchange ions, hydroxyl groups) by less active organic cations. The surface covered with organic modifiers increases with their increasing chain length, and consequently a gradual decrease occurs of the wetting heat and of the magnitude of adsorption. On the basis of thermochemical studies, changes were calculated for the differential thermodynamic functions of the $1/2$

USSR

BONDARENKO, S. V., et al., Ukrainskiy Khimicheskiy Zhurnal, Vol 38,
No 10, Oct 71, pp 1008-1013

adsorption process. It has been established that the A. V. DUMANSKY law
applies in determining the quantity of water bound by the palygorskite
modified with organic materials.

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USSR

Superalloys

UDC 539.4

BUNTUSHKIN, V. P., and BABICH, B. N., Moscow, All-Union Scientific Research Institute of Aviation Materials

"Peculiarities of the Temperature Dependence of the Microhardness of a Highly Heat-Resistant Dispersion-Hardened Nickel Alloy"
Kiev, Problemy Prochnosti, No 5, May 73, pp 108-110

Abstract: Results are presented of the investigation of the temperature dependence of microhardness of dispersion-hardened VDU-1 nickel alloy (Ni+2.5%ThO₂), in comparison with pure Ni (99.96%) and complex alloyed aging alloys EP-109 (KhN56VLKYu) and EP-220 (KhN51VLTYuKFR) in the 20-1200°C temperature interval. A linear dependence was established of the logarithm of microhardness on the temperature, with discontinuities of the curves at 250-300°C for the VDU-1 alloy and pure Ni and at 900-950°C for the aging alloys, the origination of the discontinuities being bound with the start of the recrystallization process. The dropping rate of hardness with rising temperature (inclination of straight lines lgH-t) characterizes the rate of diffusion processes and the thermal stability of the material. One figure, two tables, five bibliographic references. 1/1

USSR

UDC 621.762:669.24

BUNTUSHKIN, V. P., and POTEKIN, A. I., All-Union Scientific Research
Institute of Aviation Materials

"On the Growth Rate of Particles of Refractory Oxides in Ceramic Nickel"

Kiev, Akademiya Nauk UkrSSR, Poroshkovaya Metallurgiya, No 7, Jun 72,
pp 82-86

Abstract: The results of a comparative study of the growth of Al_2O_3 , Y_2O_3 , and HfO_2 particles and their stability in nickel bases of various density are presented. The effect of defects of the base microstructure on the behavior of dispersed particles in nickel at temperatures above $800^\circ C$ was established by direct methods of investigation of the alloy microstructure -- before and after high-temperature annealing -- and by determining their hot hardness. During short-time annealing (up to 5 hrs) the growth rate of the oxide particles in nickel with 3 to 5% porosity at temperatures of 1100, 1200, 1300, and $1400^\circ C$ was high and was practically independent of the nature of the hardening phase. The ability of the oxide particles to grow in nickel at high temperatures in a dense nickel matrix fell sharply, decreasing in the series $Al_2O_3 \rightarrow Y_2O_3 \rightarrow HfO_2$.

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USSR

UDC 621.793

YAGUBETS, A. N., TIMOFEYeva, N. I., BUNTUSHKIN, V. P., LYUKEVICH, V. I.,
BOBANOVA, ZH. I., and BUZINOVA, V. P., Moscow, Kishinev

"Obtaining Electrochemical Composite Materials Based on Nickel with Disperse
Metal Oxide Particles"

Kishinev, Elektronnaya obrabotka materialov, No 1 (43), pp 62-67

Abstract: A study was made of methods of obtaining composite materials based on nickel with disperse inclusions of refractory oxides -- lanthanum chromite, praseodymium zirconate, and hafnium dioxide. The technological process for obtaining combined coatings comprises three steps: electrolytic deposition of plates, assembly of the plates into packets with subsequent diffusion welding (rolling), and degassing annealing. The effect of the electrodeposition conditions on the composition of the materials was investigated. The pH of the electrolyte and position of the cathode relative to the direction of the force of gravity have the most significant effect on the disperse particle contents. The uniformity of distribution of the particles in the coating depends on uniformity of the hydraulic field of the electrolytic cell. The deformations of the matrix in the hot and cold states improve the structure and distribution of the particles in the composition, and high-temperature annealing causes consolidation of the oxide particles of certain metals. Possible causes of a
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USSR

YAZUBETS, A. N., et al., Elektronnaya obrabotka materialov, No 1 (43), pp 62-67

reduction in strength of the precipitation-hardened composite materials with a metal matrix obtained by the electrochemical procedure are discussed. The mechanism of coprecipitation of disperse inclusions with metal is discussed. The microstructure of electrolytically deposited nickel with 1.5 percent hafnium dioxide and lanthanum chromite is illustrated before and after heat treatment.

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USSR

UDC 615.31:547.722.6].012.1.015.11

SKVORTSOV, I. M., BUNTYAKOVA, N. A., STOLYARCHUK, A. A., and IVANOVA, N. I.,
Saratov University imeni N. G. Chernyshevskiy and Vinnitsa Medical Institute
imeni N. I. Pirogov

"Synthesis of 1-(furyl-2')- and 1-(5'-methylfuryl-2')-2-dimethylaminoethanes
and Some Pharmacological Properties of the Hydrochlorides and Quaternary Salts
Derived From Them"

Moscow, Khimiko-Farmatsevticheskiy Zhurnal, No 8, 1972, pp 14-17

Abstract: A continuation of an earlier work describing the synthesis of
amines like 1-(furyl-2')-3-dimethylaminopropane is presented. The relationship
between the structure of the quaternary salts and hydrochlorides, derivatives
of tertiary furan amines, and their pharmacological properties are discussed.
In experiments on mice, all eight compounds studied briefly dilated the pupils,
lowered blood pressure, and slowed the coronary blood flow. Thus, the com-
pounds possess M-cholinomimetic activity manifested selectively against the
peripheral or central cholinoreactive structures.

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USSR

UDC: 629.78.017.2

GUS'KOV, Yu. P., BUNYAKIN, S. V.

"Controlling the Maneuver of Rotating the Plane of a Circular Satellite Orbit to Intersect a Predetermined Point"

Moscow, Upr. dvizhushchimisya ob'yektami. Tr. IV Vses. soveshch. po avtomat. upr. Tbilisi, 1968--sbornik (Control of Moving Objects. Works of the Fourth All-Union Conference on Automatic Control. Tbilisi, 1968--collection of papers), 1972, pp 355-374 (from RZh-Raketostroyeniye, No 10, Oct 72, abstract No 10.41.44)

Translation: This paper investigates the problem of shaping signals for controlling the thrust of a gas-dynamic engine so that an artificial satellite passes above a given point on the earth's surface. A distinctive feature of the investigated problem of trajectory programming consists in matching the motion of a point on the earth's surface to motion of the artificial satellite during the active and passive segments of the maneuver trajectory assuming minimum engine operation. Requirements for maintaining the parameters of the initial orbit as well as satisfying given final conditions in the presence of perturbations due to lateral maneuvering of the

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USSR

GUS'KOV, Yu. P., BUNYAKIN, S. V., Upr. dvizhushchimisya ob"yektami. Tr. IV Vses. soveshch. po avtomat. upr. Tbilisi, 1968--sbornik, 1972, pp 355-374

satellite lead to the necessity of constructing an automatic control system with feedback. A comparative analysis is made of several possible schemes for forming a controlling action in accordance with a given accuracy criterion. Five illustrations, bibliography of four titles. Résumé.

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EQUIPMENT
Aeronautical and Space

USSR

UDC: 528.022.2

AYLAMAZYAN, A. K., BUNYAKIN, S. V., TARASOV, V. S., FILATOVA, O. N.

"An Angle-of-Attack Meter"

Moscow, Otkrytiya, Izobreteniya, Promyshlennyye Obraztsy, Tovarnyye Znaki, No 9, Mar 72, Author's Certificate No 331242, Division G, filed 24 Nov 70, published 7 Mar 72, p 114

Translation: This Author's Certificate introduces an angle-of-attack meter which contains a high-pressure receiver whose static pressure chamber is connected to a static and dynamic pressure pickup, while the total pressure chamber is connected to a dynamic pressure pickup, and auxiliary chambers which sense pressures along the upper and lower generatrices of the receiver nozzle are connected to the cavities of a differential pressure pickup. The meter also contains a scale with sliding index. As a distinguishing feature of the patent, precision is improved by connecting a source of information on the magnitude of the Mach number of the air signal systems to the supply winding of the inductive unit of the differential pressure pickup through a summing transformer. The output winding of the differential pickup is connected through a decoupling amplifier to the sine winding of a sine-cosine

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USSR

AYLAMAZYAN, A. K. et al., USSR Author's Certificate No 331242

rotary transformer whose cosine winding is connected to the output of the dynamic pressure pickup amplifier. The output winding of the rotary transformer is connected through an amplifier to the motor of a servosystem which is kinematically connected to the pointer index.

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USSR

UDC 627.81.034(47+57)

BUNYAKINA, N. G.

"Evaluating the Existing Methods of Forecasting Revision of Banks in the Example of the Kremenchug Reservoir"

Tr. koorkinats. soveshchaniy po gidrotekhn. (Works of the Coordinating Meetings on Hydroengineering), No 59, 1970, pp 60-63 (from RZh-Elektrotekhnika i Energetika, No 2, Feb 71, Abstract No 2 D40)

Translation: The forecast of revision of the banks of the Kremenchug Reservoir for the technical plan was calculated by Ukgidroproyekt using five methods: the methods of engineering analogies, the method of Ye. G. Kachugin, G. S. Zolotarev, B. A. Pyshkin. For the existing geological engineering network of the reservoir, the forecasted variables were calculated for 2, 5, 10 and 15 years -- Ye. G. Kachugin and N. Ye. Kondrat'yev. The forecasting results were compared with the actual data for the 9-year period basically for two types of banks: a) banks represented by terraces the slopes of which are formed from alluvial sand covered with forest soils; b) those represented by terraces and plateau slopes formed from slightly eroded rock (loess-like loam and sandy loam, dense loams). It has been established that under the conditions of the Kremenchug Reservoir, the following are sufficiently reliable forecasting methods: for slightly eroded loamy

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USSR

BUNYAKINA, N. G., Tr. koorkinats. soveshchaniy po gidrotekhn., No 59, 1970,
pp 60-63

banks, the Ye. G. Kachugin method; for sandy banks, the N. Ye. Kondrat'yev
method. There is 1 table.

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PRIMARY SOURCE: FBIS Daily Report, Soviet Union, 9 March 1970, Vol III, Nr 46, p D 1

USSR

DISCOVERY OF PI-MESON REPORTED AT DUBNA INSTITUTE

[Editorial Report--L] Moscow SOCIALIST INDUSTRY of 5 March 1970 publishes a report by TASS correspondent A. Vrenyakov entitled "The Discovery of the Secret of Pi-meson." The report describes how, experimenting on a synchrocyclotron at the Dubna Joint Nuclear Research Institute, "Soviet physicists have accomplished the previously unknown transformation of a positive meson into a negative one. The reaction can be reversed from a negative meson to a positive one."

The report continues: "This research by physicists Yu. A. Batusov, S.A. Bunyatov, Y.M. Sidorov, and V.A. Yarcha was examined on 3 March and acknowledged as an outstanding scientific discovery at a session of the USSR Council of Ministers Committee for Inventions and Discoveries."

"The Soviet physicists' discovery," the report continues, "is of enormous theoretical importance. Thus, in the opinion of scientists, with the help of the newly discovered reaction of pi-mesons a search for new atomic nuclei can be conducted."

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Recently, the report says, research scientists have been interested in the possibility of the existence of "multineutron systems" and even of "neutron drops." The Soviet physicists' latest work "has made it possible to investigate this extremely interesting problem under laboratory conditions." The scientists are now investigating the effects of the "double recharging" of pi-mesons. They are being aided in their research by physicists from Bulgaria, Mongolia, and Romania.

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BUNYATOV, S.A.

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DISCOVERY OF PI-MESON (PI-MESON) AT SOVIET INSTITUTES

[National Institute] Moscow Socialist Institute of 3 March 1970 publishes a report by the physicist A. Vengasov entitled "The Discovery of the Meson of Pi-meson." The report describes the experiments on a synchrotron at the Soviet Joint Nuclear Research Institute. Soviet physicists have announced the previously unknown transformation of a positive meson into a negative one. The reaction can be reversed from a negative meson to a positive one.

The report continues: "This research by physicists Yu. A. Zhurav, A. A. Dzhurav, V. M. Zolotarev, and Yu. A. Zhurav, is reported on 3 March and acknowledged as an outstanding scientific achievement by a resolution of the USSR Council of Ministers Committee for Agriculture and Discoveries."

"The Soviet physicist/discovery," the report continues, "is of enormous theoretical importance. Thus, in the opinion of scientists, with the help of the newly discovered reaction of pi-meson a search for new atomic nuclei can be conducted."

Recently, the report says, research scientists have been interested in the possibility of the existence of the "new" pi-meson and even of "neutral pi-meson." The Soviet physicist/discovery conditions. "The scientists are now investigating the effect of the 'double resonance' of pi-meson. They are being held in their research by physicists from Bulgaria, Mongolia, and Romania."

From the Soviet Union 9 March 70 KATV LA. III

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BLUNYATOV, S.A.

nuclear physics

BLUNYATOV, S.A. DAILY REVIEW Vol. XII No 48 (1970) (24)

Tuesday, March 10, 1970

THE DISCOVERY OF PI-MESONS
A. Freymarkov, TASS correspondent

Scientists in the planet's largest laboratories show great interest in the study of the physics of elementary particles, these "bricks" of the material world. This is only natural. The knowledge of these particles helps to explain the nature of nuclear forces. One more secret has been disclosed in this field: the phenomenon of the pi-meson's double re-charge.

Experimenting on the synchrotron in the joint Nuclear Research Institute in Dubna, Soviet physicists have opened the previously unknown conversion of the positive meson into the negative. Reaction may go in the reverse manner, not from the negative meson to the positive.

These findings by physicists Y.A. Zhurav, S.I. Piontsev, V.M. Kozlov and V.A. Izrael were discussed at a scientific conference for inventions and discoveries of the USSR Council of Ministers on March 5, and found to be a major scientific discovery.

For its mass the meson is a particle going in between the electron and proton. It was first predicted theoretically, and then discovered in the composition of cosmic rays. Meson can be observed with the help of special physical devices. Special accelerators are used for carrying out experiments.

The Soviet physicists' discovery is very important from the point of view of theory. Scientists think, for example, that the newly discovered reaction of pi-mesons may be used in looking for new atomic nuclei.

Of late, scientists have shown particularly interested in the possibility of the existence of multi-charge systems and even "nuclear drops" meaning the unusually existing distant "inhabitants" of the Universe known as stars. Soviet physicists' new work makes it possible to study this highly interesting problem in a laboratory.

The authors of the discovery continue profound studies of the double re-charge effect of pi-mesons. Physicists from Bulgaria, Mongolia and Rumania carry out fruitful work on the problem jointly with them.

(Svetlinozhenskaya Industriya, March 5, in full.)

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USSR

UDC 621.791.89

KUDINOV, V. M., and BUNYATYAN, A. KH.

"Hydrodynamic Modeling of Wave Formation Process in Explosive Welding of Metals"

Kiev, Avtomaticheskaya Svarka, No 8, Aug 71, p 71

Abstract: For purposes of experimentally checking various hypotheses regarding the nature of the wave formation process in the zone of the joint in the explosive welding of metals, the authors staged experiments with a liquid according to the following scheme: A clear liquid was poured into a rectangular plastic cuvette. Running parallel to the base of the cuvette in special grooves with a small air gap was a thin metal plate, which could be freely pushed out of the cuvette through a slit in the butt wall. A layer of colored liquid was poured onto the plate. When the plate was pushed out at velocity v the upper layer of liquid moved down by gravity until fusing with the fixed layer of liquid. The gap between the layers and the moving speed of the plate were selected so that the fusion of the liquids occurred at a

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KUDINOV, V. M., and BUNYATYAN, A. KH., *Avtomaticheskaya Svarka*, No 8, Aug 71, p 71

significant angle, the fusion point moving along the surface of the clear liquid at velocity v . This scheme was compared with the setup for the explosive welding of two parallel metal plates. The comparison indicates an analogy between the kinematics of the two processes, although their velocities differ by several orders.

A detailed description and discussion of the results will be given separately. The present article notes that the experiments confirmed the hypothesis of A. A. DERIBAS, V. M. KUDINOV, and F. I. MATVEYENKOV that wave formation is the result of alternate bulging of free surfaces near the contact point. It can also be regarded as established that the wave formation process is characteristic not only of the high-speed collision of metals, but is also possible in the fusion of two liquids at an angle. Hence the wave formation problem must be considered within the scope of the hydrodynamics of an incompressible fluid.

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B
Biochemistry

USSR

UDC: 577.155.34

DAVTYAN, M. A., and BUNYATYAN, G. KH., Institute of Biochemistry, Academy of Sciences Armenian SSR, Yerevan

"Purification and Properties of Arginase of the Rat Brain"

Moscow, Biokhimiya, Vol 35, No 2, Mar-Apr 70, pp 412-418

Abstract: Arginase was isolated from a homogenate of the brains of rats by applying the following steps: three-fold freezing and thawing in the presence of MgCl_2 combined with heating to 60° and centrifuging; extraction of lipids with ether; fractional precipitation with MeOH; gel filtration through Sephadex G-200; chromatography on KM-Sephadex G-50; two-fold chromatography on DEAE-Sephadex A-50. The activity of the arginase obtained by this procedure was 1470 times higher than that of the homogenate and its yield 38%. The arginase showed a high degree of homogeneity in paper electrophoresis and centrifuging. It has an L-arginine-splitting activity which was considerably higher than that of liver arginase, had a molecular weight of 62,000 vs. 118,000 for liver arginase, and differed from the latter with respect to the amino-acid composition. The data obtained by the authors indicated that brain arginase was distinct from the ureolytic enzyme

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DAVTYAN, M. A., and BUNYATYAN, G. KH., Biokhimiya, Vol 35, No 2, Mar-Apr 70, pp 412-418

present in the liver. Its principal localization in nuclei, which was established in earlier work by the authors, indicated that it may participate in the regulation of the synthesis of histones. The authors thank Academician A. YE. BRAUNSHTEYN and Doctor of Biological Sciences YE. V. GORYACHENKOV for allowing the opportunity to carry out evaluation of arginase of the brains of rats and for their valuable direction during the authors' period of work in the Laboratory of Chemical Principles of Biological Catalysis of the Institute of Molecular Biology, Academy of Sciences USSR.

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USSR

UDO 621.382.95:535.371

RYZHIKOV, I.V., BUNYAYEV, V.A., FOMENKO, G.P., VORONIN, V.G., KMITA, T.G., PRONIN, B.V., KHOKHLACHEV, K.I., KRUGLOV, I.I., MIKHAYLOV, V.V., TENYAKOV, YE.I

"Voltampere And Lumenampere Characteristics Of Silicon Carbide Light Diodes With High Current Density"

V sb. III Vses. konferentsiya po poluprovodnikov. karbidy kremniya (III All-Union Conference On Semiconductors Of Silicon Carbide), 1968, Moscow, 1970, pp 116-126 (from RZh--Elektronika i yeye primeneniye, No 1, January 1971, Abstract No 1B301)

Translation: Light diodes were investigated, obtained by diffusion of Al and B into n-SiC (6H) at 2000° C (for 40 minutes) and by diffusion of B alone for 10 minutes. The resistivity of the source material is 0.01--0.3 ohm.cm. The circuit for measurements, the experimental results and their consideration are presented. It is established that the voltampere characteristics with a current density 1-5000 a/cm² are described by the expression $I = AV^n$ ($n = 1.6--1.2$), and the lumenampere by $L = I^n$ ($n = 0.55--0.7$). Such dependences are the consequence of a radiative and nonradiative recombination of the carriers in all the regions of the p-n-n⁺ diode. A deviation is observed from the theory connected with the capture of majority carriers by fine centers of attachment. 7 ill. 10 ref. N.S.

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Acc. Nr.:

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B

Ref. Code:

ZIR 0144

USSR

UDC 621.375.018.756

BUNYAYEV, VLADIMIR ANDREYEVICH, Post Graduate at Novocheerkassk Poly-
technical Institute

"Theory and Method of Determining Statistical Parameters of Optoelectronic Switches"

Novocheerkassk, Izvestiya Vysshikh Uchebnykh Zavedeniy, Elektromekhanika (News of the Institutions of Higher Learning, Electromechanics), No 1, 1970, pp 15-18 (from Izvestiya Vysshikh Uchebnykh Zavedeniy, Elektromekhanika, No 1, 1970, p 112)

Translation: Results are presented from theoretical and experimental investigations of the static conditions of optoelectronic switches for switching electrometering circuits. Problems of their time stability are discussed. There are 2 illustrations and a 2-entry bibliography.

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EQUIPMENT
Gyroscopic

USSR

UDC 531.01

BURABLEV, A. P.

"On the Deviation of a Gyrocompass in Oscillations of a Point of a Suspension"

Dokl. Yubileyn. nauch.-tekhn. konferentsii Fak. avtomat. sistem. Tomsk. politekhn. in-t (Reports of the Jubilee Scientific-Technical Conference of the Faculty of Automatic Systems. Tomsk Polytechnical Institute), Tomsk, 1970, pp 59-63 (from RZh-Mekhanika, No 9, Sep 71, Abstract No 9A91)

Translation: Deviations of a two-rotor gyrocompass in the presence of linear oscillations of the suspension point that occur according to a harmonic law are investigated. It is assumed that the natural oscillation period of the gyrocompass is much less in the azimuth than the Schuler period. A system of differential equations for the motion of the gyrocompass is given for this case. The first equation is written with an accuracy up to magnitudes of the second order of smallness relative to variables and the other equation is given considering only first order terms. The solution is obtained by the method of consecutive approximations and the equations of motion and their solution are written in matrix form. The expression obtained for the deviation of the gyrocompass in the azimuth can be used to show the region of application of the

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BURABLEV, A. P., Dokl. Yubileyn. nauch.-tekhn. konferentsii Fak. avtomat. sistem. Tomsk. politekhn. in-t, Tomsk, 1970, pp 59-63

device and also obtained optimization of its parameters. Conditions are presented under which deviation in the azimuth can be considerably reduced. These conditions are valid for perturbations with frequencies greater than the frequencies of natural precession oscillations of the gyrocompass. S. S. Rivkin.

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USSR

UDC 51

BURACHAS, A., VILKAS, E.

"Some Aspects of Optimizing Personal Consumption Considering the Simulation Model of the Behavior and Rational Norms"

V sb. Mat. metody v sotsial'n. naukakh. Vyp. 1 (Mathematical Methods in Social Sciences. Vyp. 1--collection of works), Vil'nyus, 1971 (1972), pp 61-73 (from RZh-Kibernetika, No 12, Dec 72, Abstract No 12V350)

No abstract

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USSR

UDC 51

BURACHAS, A.

"Models of the Formation of the Demand for Long-Use Commodities"

V sb. Mat. metody v sotsial'n. naukakh. Vyp. 1 (Mathematical Methods in Social Sciences. Vyp. 1--collection of works), Vil'nyus, 1971 (1972), pp 74-97 (from RZh-Kibernetika, No 12, Dec 72, Abstract No 12V351)

No abstract

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1/2 020 UNCLASSIFIED PROCESSING DATE--18SEP70
TITLE--COMPARATIVE ANATOMICAL DATA ON THE LUMEN OF VERTEBRATE KIDNEYS -U-

AUTHOR--BURACHINSKIY, M.T.

COUNTRY OF INFO--USSR

B

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ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. THE KIDNEY ARTERIES WERE INVESTIGATED IN REPRESENTATIVES OF CLASSES OF FISH, AMPHIBIA, BIRDS AND MAMMALS. IT IS OBSERVED THAT IN PHYLOGENESIS THE EXTRAORGANIC ARTERIES OF KIDNEYS CONCENTRATE AND INTRAORGANIC ONES, DIFFERENTIATE CORRESPONDINGLY TO THE CHANGES IN THE INTERNAL STRUCTURE OF THE GIVEN ORGANS. THE NUMERIC ARTERIES ARE DISTRIBUTED IN FISH KIDNEYS ACCORDING TO THE SIMPLE PLAN, THE FLOMERULA ARE ARRANGED IRREGULARLY. IN KIDNEYS OF AMPHIBIA THERE ARE STILL LESS ARTERIES, BUT THEY ARE DISTRIBUTED COMPARATIVELY SIMPLY, HOWEVER THE GLOMERULA ARE GROUPED NEAR THE ABDOMEN SURFACE OF THE ORGANS. TO EACH KIDNEY OF THE BIRD THREE ARTERY COME, THE BRANCHES OF WHICH AND GLOMERULA ARRANGE CORRESPONDINGLY TO THE LOBULAR STRUCTURE OF THE ORGAN. THE LATTER IS OBSERVED EVEN BETTER IN MAMMALS, IN WHICH TWO OR ONE ARTERY COME TO EACH KIDNEY.

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