

USSR

VITTIKH, V. A., SOYFER, V. A., YAMOVICH, A. A.

"Compression of Data in Experimental Studies of Physical Fields"

Avtomatika i Vychisl. Tekhn. [Automation and Computer Technology], 1972, No 6, pp 61-66 (Translated from Referativnyy Zhurnal Kibernetika, No 4, 1973, Abstract No 4V311, by the authors).

Translation: This article studies an approach to the problem of data compression in experimental studies of physical fields represented by exponential functions of two variables, using methods of adaptive discretization. Means are indicated for realization of adaptive discretization algorithms, and estimates are constructed of the expansions of these fields under adaptive noise conditions. The relationship of the problems of data compression with the physics of the processes studied is emphasized, increasing the effectiveness of compression.

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UDC 615.468.6:615.462].015.2:64.281

PLOTKINA, N. S., KHOKLOVA, V. A., and VITUL'SKAYA, N. V., Institute of Clinical and Experimental Surgery, Leningrad Institute of Textiles and Light Industry  
Imeni S. M. Kirov

"Some Characteristics of the Antimicrobial Effect of Modified Chemical Fibers"

Moscow, Zhurnal Mikrobiologii Epidemiologii i Immunobiologii, No 11, 1972,  
pp 96-97

Abstract: Polyvinyl alcohol fibers impregnated with letilan (nitrofurylacrolein) possessed an antibacterial effect toward Staphylococci which sharply increased after autoclaving the fibers at 1.2 atm for 20 min. The letilan in these fibers suppressed the growth of all pathogenic strains of Staphylococci and of fungi from the Candida genus in concentrations of 10 million microbial cells/ml. Letilan was also active against Escherichia coli in a concentration of 1 million cells/ml, and against Proteus in concentration of 100,000 cells/ml. However, it was inactive against Bacillus pyocyaneus. The antibacterial properties of these fibers impregnated with letilan were not altered after 24 hr exposure to physiological solution, alcohol, pus, bile, urine, and dry heat at 160°C for 3 hr. Their antibacterial activity sharply decreased after contact with blood. Similar effects on microbes was observed in the case of  
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PLOTKINA, N. S., et al., Zhurnal Mikrobiologii Epidemiologii i Immunobiologii, No 11, 1972, pp 96-97

polyvinyl alcohol fibers impregnated with polyacrylic acid containing neomycin (14%) or streptomycin (12%). The fibers with neomycin suppressed the growth of a larger number of strains than streptomycin, although their effect in liquid media was identical. The antibacterial effect of these fibers did not change after exposure to physiological solution, alcohol, urine, bile, blood, autoclaving, and boiling. The polypropylene fibers containing 0.5% furagine suppressed the growth of Staphylococcus in a concentration of 10-100 millions cells/ml and to a lesser extent of Escherichia coli (1-10 millions cells/ml). These fibers did not lose their antibacterial properties after contact with blood, pus exudate, urine, bile, physiological solution, autoclaving, and dry heat. However, boiling and alcohol killed their antibacterial properties. The use of the above fibers as surgical material is recommended.

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VOL'F, L. A., GILLER, S. A., KOTETSKIY, V. V., MEOS, A. I., PLOTKIN, I. L.,  
and VITIL'SKAYA, N. V., Leningrad Institute of Textile and Light Industry  
imeni S. M. Kirov; Institute of Organic Synthesis, Academy of Sciences  
Latvian SSR; Leningrad Sever Manufacturing Society

"Antimicrobial Fibers Produced From Compounds of Nitrofuran Series"

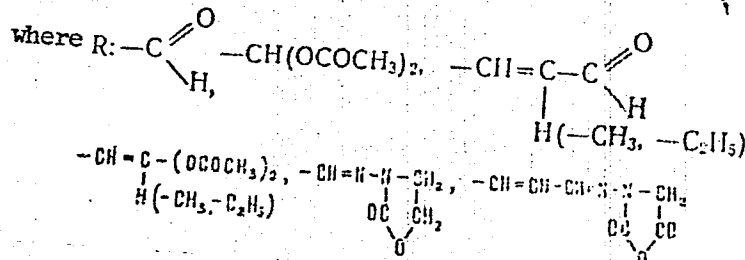
Riga, Fiziologicheski Opticheski Aktivnyye Polimernyye Veshchestva, "Zinatne,"  
1971, pp 150-154

Abstract: Acetylation of polyvinyl alcohol (PVA) fibers with aldehydes of  
5-nitrofur series resulted in fibers capable of producing covalent ionic  
bonds, or coordination linkage between medicinal substances and polymers. The  
nitrofur compounds used in this work had the following chemical structure:

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VOL'F, L. A., et al., Fiziologicheskii i Opticheski Aktivnyy Polimernyye Veshchestva, "Zinatne," 1971, pp 150-154

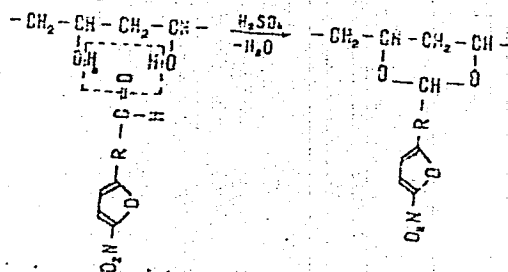


Among all compounds tested, 5-nitrofurfural (NF), β-(5-nitrofuril-2)-acrolein (NFA), and their acetates such as furazolidone and furagin were of greatest interest. The acetylation of PVA fibers with aldehyde of 5-nitrofuran series is based on the ability of functional groups of polymer to react with carbonyl groups and to form acetylcyclobuthyleneglycol-1,3 links according to

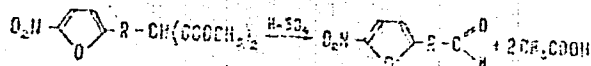
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VOL'F, L. A., et al., Fiziologicheski i Opticheski Aktivnyy Polimernyye Veshchestva, "Zinatne," 1971, pp 150-154



In the case of acetates the reaction proceeds as



The substitution extent of hydroxyl groups of PVA was 18-25 mole % under optimal acetylation conditions. The obtained fibers were mechanically strong, stable to sterilization by boiling, contained numerous capillaries, and possessed high antimicrobial activity. More than 28% of the antibacterial substances could be incorporated into fibers. Experiments with a natural

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VOL'F, L. A., et al., *Fiziologicheski i Opticheski Aktivnyy Polimernyye Veshchestva*, "Zinatne," 1971, pp 150-154

cellulose were not very successful. Only cellulose esters were capable of reacting with aldehyde of 5-nitrofurans and forming useful fibers. Compounds of 5-nitrofurans series were incorporated into polyamide, polyester, polyformaldehyde, and polypropylene fibers during their molding. The obtained fibers possessed high antibacterial properties along with good mechanical properties. All of the fibers can be used for sutures, blood vessel substitutes, contraceptive devices, and for other medical uses.

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VITUL'SKAYA, N. V., VOL'f, L. A., GILLER, S. A., YEGOROV, B. A., KOTETSKIY, V. V., PLOTKIN, L. L., and YANOVSKAYA, N. B., Leningrad Institute of Textile and Light Industry imeni S. M. Kirov; Institute of Organic Synthesis, Academy of Sciences Latvian SSR

"New Fibers for Medical Use"

Riga, Fiziologicheski i Opticheski Aktivnyye Polimernyye Veshchestva, "Zinatne," 1971, pp 145-149

Abstract: In order to increase the X-ray contrast effect of surgical suture materials, films and fibers were prepared from aqueous solutions of polyvinyl alcohol (PVA) with addition of barium sulfate in various concentrations (0.5-20%). The best contrast was obtained with 150  $\mu$  PVA film containing 10 and 20 BaSO<sub>4</sub>. A lower dose (1%) of BaSO<sub>4</sub> did not produce desired results. Sutures were prepared from PVA with admixture of polyformaldehyde, BaSO<sub>4</sub>, barium chloride, and collargol. The prepared fibers were thermostabilized at 220°C for 10 min and acetylated in water bath containing 20%  $\beta$ -(5-nitro-furyl-2)-acrolein and 20% H<sub>2</sub>SO<sub>4</sub> at 70°C for 2 hrs. The ready to use fibers were mechanically strong, stable in hot water (boiling for 1 hr produced only 10% shrinkage), and possessed high antimicrobial properties, especially toward 1/2



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VITUL'SKAYA, N. V., et al., Fiziologicheskii i Opticheski Aktivnyye Polimernyye Veshchestva, "Zinatne," 1971, pp 145-149

Staphylococcus aureus, Escherichia coli, Trichophyton group, and other bacteria. Good results were obtained with polyformaldehyde fibers with 5 and 10% BaSO<sub>4</sub>, PVA with iodine-containing organic compounds. The obtained fibers were used for the manufacturing of such surgical materials as sutures, cotton, nets, contraceptive devices, etc., which presently are undergoing medical testing.

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1/2 029

UNCLASSIFIED

TITLE--DIFFERENCE IN CATALYTIC AND ELECTROCHEMICAL ACTIVITIES OF SMOOTH AND PLATINIZED PLATINUM ELECTRODES -U- PROCESSING DATE--30OCT70

AUTHOR--VITVITSKAYA, G.V.

COUNTRY OF INFO--USSR

SOURCE--ELEKTROKIMIYA 1970, 6(3), 432

DATE PUBLISHED-----70

SUBJECT AREAS--CHEMISTRY

TOPIC TAGS--ELECTROCHEMISTRY, PLATINUM ELECTRODE, CATALYST, ACTIVATION ENERGY, CHEMICAL REDUCTION, CHEMICAL REACTION RATE, SURFACE PROPERTY

CONTROL MARKING--NO RESTRICTIONS

DOCUMENT CLASS--UNCLASSIFIED

PROXY REEL/FRAME--1998/1140

STEP NO--UR/0364/70/006/003/0432/0432

CIRC ACCESSION NO--AP0121699

UNCLASSIFIED

2/2 029

UNCLASSIFIED

PROCESSING DATE--30OCT70

CIRC ACCESSION NO--AP0121699

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. FOR THE CATALYTIC AND ELECTROCHEM. DECOMPN. OF H SUB2 O SUB2 (IN NEUTRAL AND SLIGHTLY ALK. MEDIA), THE VALUES OF THE APPARENT ACTIVATION ENERGY ON A SMOOTH PT ELECTRODE ARE 2.0-2.5 TIMES HIGHER THAN FOR PLATINIZED ELECTRODES. FOR A SMOOTH PT ELECTRODE, THE VALUES ARE 9700 AND 20,100 CAL-MOLE, RESP., AND FOR PLATINIZED PT 4000 AND 8200 CAL-MOLE, RESP. EVIDENTLY IN THIS CASE A DECREASE OCCURS IN THE RELATIVE RATE OF THE DECOMPN. PROCESS WITH DECREASE, SIMULTANEOUSLY, IN THE ACTIVATION ENERGY, WHICH, INDICATES A MARKED DECREASE IN THE VALUE OF THE PREEXPONENTIAL COEFF. IN THE REACTION RATE EQUATION. FACILITY: LENINGRAD. TEKHNOL. INST. IM. LENSOVETA, LENINGRAD, USSR.

UNCLASSIFIED

USSR

VITYAYEV, Ye. Ye., GAVRILKO, B. P., ZAGORUYKO, N. G., SAMOKHVALOV, K. F.

"Requirements for Prediction Algorithms"

Vychisl. Sistemy [Computer Systems -- Collection of Works], No 50, Novosibirsk, 1972, pp 101-105 (Translated from Referativnyy Zhurnal, Kibernetika, No 3, Moscow, 1973, Abstract No 3 V721 by the authors).

Translation: Certain requirements for algorithms for prediction of empirical regularities are formalized.

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✓ UDC: 621.396.61

GELLER, V. M., VITYUGOV, V. A.

"On the Problem of the Operating Stability of Distributed Power Amplifiers"

Tr. Novosib. elektrotekhn. in-ta (Works of the Novosibirsk Electrical Engineering Institute), 1970, vyp. 2, kn. 2, pp 137-150 (from RZh-Radiotekhnika, No 6, Jun 70, Abstract No 6D255)

Translation: The operating stability of power amplifiers is considered on the basis of the immittance stability condition. An expression is derived which gives the stability condition in the form of the limiting permissible power amplification of the stage. It is shown that the use of triodes is inadvisable because of low amplification stability. A number of recommendations are given on construction of the amplifier circuit. Two illustrations, bibliography of ten titles. N. S.

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USSR

UDC: 621.372.852.1

VASIL'YEV, V. V., VITYUGOV, V. A.

"An Asymmetric Transforming Two-Terminal Pair Network Based on Coupled Lines as a Matching Element for Opposed-Rod Filters"

Tr. Novosib. elektrotekhn. in-ta (Works of the Novosibirsk Electrical Engineering Institute), 1970, vyp. 2, kn. 2, pp 151-155 (from RZh-Radiotekhnika, No 6, Jun 70, Abstract No 6B211)

Translation: The authors consider the possibility of using a transforming link formed by short-circuited and open sections of coupled lines to match opposed-rod filters. A computational method is given and the validity of the procedure is experimentally confirmed. Six illustrations, bibliography of six titles. N. S.

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1/2 035

UNCLASSIFIED

PROCESSING DATE--11DEC70

TITLE--DIFFRACTION OF SURFACE WAVES ON A DOCK OF FINITE WIDTH -U-

AUTHOR--VITYUK, V.F.

COUNTRY OF INFO--USSR

SOURCE--MOSCOW, PRIKLADNAYA MATEMATIKA I MEKHANIKA, NO 1, 70, PP 32-40

DATE PUBLISHED-----70

SUBJECT AREAS--PHYSICS

TOPIC TAGS--HYDRODYNAMIC THEORY, HYDRODYNAMICS, ANCHORAGE EQUIPMENT, OCEAN WAVE, FLOW VELOCITY, VELOCITY DISTRIBUTION

CONTROL MARKING--NO RESTRICTIONS

DOCUMENT CLASS--UNCLASSIFIED

PROXY FICHE NO----FD70/605041/006 STEP NO--UR/0040/70/000/001/0032/0040

CIRC ACCESSION NO--AP0142728

UNCLASSIFIED

2/2 033

UNCLASSIFIED

PROCESSING DATE--11DEC70

CIRC ACCESSION NO--AP0142728

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. THE DIFFRACTION OF WAVES OF SMALL AMPLITUDE RUNNING FROM INFINITY AGAINST A STATIONARY SOLID DOCK OF FINITE WIDTH LOCATED ON THE SURFACE OF A LIQUID IS INVESTIGATED. THE VELOCITY POTENTIALS FOR NORMAL AND OBLIQUELY INCOMING WAVES ARE CALCULATED BY THE METHOD OF JONES. FROM A DEDUCED SYSTEM OF INFINITE ALGEBRAIC EQUATIONS AND THEIR REGULARITY CONDITION, FUNCTIONS CHARACTERIZING THE VELOCITY POTENTIAL ARE DERIVED BY THE METHOD OF SUCCESSIVE APPROXIMATIONS. THE DEDUCTION OF FUNCTIONS FOR THE VELOCITY POTENTIAL OF A PAST WAVE, THE MOTION OF THE LIQUID UNDER THE DOCK, AND THE REFLECTED WAVE ARE INDICATED. FORMULAS ARE DERIVED FOR THE REFLECTION AND TRANSMISSION COEFFICIENTS AND THE PRESSURE OF THE LIQUID UNDER THE DOCK FOR NORMALLY INCOMING WAVES AND THE CONDITION THAT THE WIDTH OF THE DOCK IS GREAT IN COMPARISON WITH THE DEPTH OF THE LIQUID. THE CALCULATION OF THE PRESSURE DISTRIBUTION FOR GIVEN PARAMETERS SHOWS THAT THE DOCK AFFECTS THE WAVES LIKE A DAMPER. THE NONLINEAR PRESSURE DISTRIBUTION IS EXPLAINED BY THE FACT THAT THE HYDRODYNAMIC AND NOT THE HYDROSTATIC PRESSURE IS CONSIDERED.

UNCLASSIFIED



USSR

VITYUTSKIY, V. P.

UDC 577.4

"Synthesis in Tape Structures"

Sintez v lentochnykh strukturakh (cf. English above), Institute of Mathematics and Mechanics of the Academy of Sciences USSR, Sverdlovsk, 1971, 14 pp, ill., 1 ref. (No 3654-71 Dep) (from RZh-Matematika, No 9, Sep 72, Abstract No 9V428)

Translation: The problem of producing logic devices in tape structures is solved as a problem in expressing the reflection from a symmetrical subgroup by the product of mappings from a given generating set. Various algorithms for solution of this problem are proposed with the condition that the generating sets are on the simplest cascades of tape structures. These algorithms are a step-by-step procedure for constructing the solution. Machine programs are discussed. Authors abstract.

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USSR

UDC 631.8 + 632.954:633

CHESALIN, G. A., FILIPPOVA, N. V., and TIMOFEYEVA, A. A., VIUA [An unknown abbreviation]

"The Role of Mineral Nutrition in Detoxification of Herbicides in Plants"

Moscow, Khimiya v Sel'skom Khozyaystve, Vol 11, No 10 (120), 1973, pp 47-50

Abstract: It has been shown that the absorption, accumulation, and detoxification of herbicides depended to a large extent on the conditions of mineral nutrition of the plants. The nutrition level affects the residual quantity of herbicides in the plant organs. In this fashion, regulating the nutrition of cultured plants, it is possible to lower the content of residual levels of herbicides in the crop and even to inactivate them completely in some plants during their period of vegetation.

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1/2 025 5

UNCLASSIFIED

PROCESSING DATE--11SEP70

TITLE--PHASE COMPOSITION OF NEODYMIUM, IRON AND ALUMINUM ALLOYS IN THE 0 TO 33.3 AT. PERCENT NEODYMIUM RANGE -U-

AUTHOR--VIVCHAR, D.I., ZARECHNYUK, D.S., RYABOV, V.R.

COUNTRY OF INFO--USSR

SOURCE--IZV. AKAD. NAUK SSSR, METAL. 1970, (1), 211-13

DATE PUBLISHED-----70

SUBJECT AREAS--MATERIALS

TOPIC TAGS--NEODYMINUM ALLOY, ALUMINUM ALLOY, IRON ALLOY, CRYSTAL LATTICE STRUCTURE, ALUMINUM CONTAINING ALLOY

CONTROL MARKING--NO RESTRICTIONS

DOCUMENT CLASS--UNCLASSIFIED

PROXY REEL/FRAME--1988/0537

STEP NO--UR/0370/70/000/001/0211/0213

CIRC ACCESSION NO--AP0105522

UNCLASSIFIED

2/2 025

CIRC ACCESSION NO--AP0105522  
ABSTRACT/EXTRACT--(U) GP-0-

UNCLASSIFIED

PROCESSING DATE--11SEP70

ABSTRACT. VARIOUS ND-FE-AL ALLOYS WERE ANNEALED FOR 2500<sup>h</sup> HR AT 500 DEGREES AND THEN QUENCHED. THE TERNARY PHASE PHI SUB2 SOLID SOLN. OF AL IN THE COMPD. ND SUB2 FE SUB17. THE PSI PRIME PHASE CAN BE EXPRESSED BY THE APPROX. FORMULA ND<sub>2</sub>FE SUB2 AL SUB10. THE PSI PHASE HAS A VARIABLE COMPN., ND<sub>2</sub>FE SUB3.3-4 AL SUB8.7-8, AND A TETRAGONAL STRUCTURE WHICH IS THM<sub>2</sub> SUB12 TYPE. ITS LATTICE PERIODS VARY FROM A EQUALS 8.84, C EQUALS 5.05, C-A EQUALS 0.571 TO A EQUALS 8.78, C EQUALS 5.04 ANGSTROM, C-A 0.574. THE STRUCTURE OF THE N SUB2 PHASE IS NOT KNOWN, AND ITS COMPN. VARIES (ND<sub>2</sub>FE SUB1.2-1.65 AL SUB0.8-0.35). THE SOLID SOLN. ND SUB2 (FE, AL) SUB17 IS CHARACTERIZED BY A CONSIDERABLE EXTENSION. THE MAX. AL CONTENT IN THE SOLID SOLN. IS 45 AT. PERCENT. THUS, THE SYSTEM ND-FE-AL IS VERY SIMILAR TO THE LA-FE-AL SYSTEM (O. S. ZARECHNYUK, ET AL., 1968), AND THE CE-FE-AL SYSTEM (O. S. ZARECHNYUK, ET AL., 1969).

UNCLASSIFIED

1/2 019

UNCLASSIFIED

PROCESSING DATE--23OCT70

TITLE--EXPERIMENTAL MANUFACTURE OF ALL WELDED PANELS OF THE AVERAGE RADIATOR PART OF THE PK-38-2 BOILER -U-

AUTHOR--(03)-VIVSIK, S.N., GODZHIYEVA, YE.M., KHARIN, V.P.

COUNTRY OF INFO--USSR

SOURCE--LENINGRAD, ENERGO MASHINOSTROYENIYE, NO. 2, 1970, PP 32-34

DATE PUBLISHED-----70

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

TOPIC TAGS--WELDING TECHNOLOGY, BIBLIOGRAPHY, STEAM BOILER/(U)PK382 BOILER

CONTROL MARKING--NO RESTRICTIONS

DOCUMENT CLASS--UNCLASSIFIED

PROXY REEL/FRA--1997/1843

STEP NO--UR/0114/70/000/002/0032/0034

CIRC ACCESSION NO--AP0120520

UNCLASSIFIED

272 019

UNCLASSIFIED

PROCESSING DATE--23OCT70

CIRC ACCESSION NO--AP0120520

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. THE EXPERIMENTAL MANUFACTURE OF COMMERCIAL ALL WELDED BLOCKS OF THE AVERAGE RADIATOR PART OF THE PK-38-2 BOILER (270 TONS-HOUR, 140 GAGE ATMOSPHERE, 570DEGREESC) MADE FROM TELESCOPIC PIPES IS CONSIDERED. THE BASIC TECHNOLOGICAL OPERATIONS OF THEIR MANUFACTURE ARE DESCRIBED WITHOUT THE USE OF SPECIALIZED TECHNOLOGICAL EQUIPMENT AND CERTAIN CONCLUSIONS ARE DRAWN CONCERNING THE MANUFACTURE OF ALL WELDED PANELS. ON TABLE, TWO ILLUSTRATIONS, BIBLIOGRAPHY CONTAINS SIX CITATIONS.

UNCLASSIFIED

USSR

UDC 612.823.5

BRYTVAN, Ya. M., VIYEVS'KIY, M. A., KROKHMAL', S. S., MAKAROVA, Z. O.,  
NIKIFOROVA, I. P., POPLAV'SKA, L. I., and SLOVODYANYUK, Chair of Pathological  
Physiology, Vinnitsa Medical Institute

"Functional Response of Different Sections of the Brain to Extreme Stimuli"  
Kiev, Fiziologicheskii Zhurnal, No 5, 1972, pp 644-653

Abstract: Experiments on cats and rabbits showed that electrical activity of the cortex and subcortex, respiration, and arterial pressure are dependent on the original and present functional state of the nervous system. The effects of prolonged compression of soft tissues, increased intracranial pressure, alcoholic intoxication, asphyxia, blood loss, and various forms of hypertension were studied. Functional shifts were induced by preliminary injection of amphetamine sulfate or chlorpromazine, electrocoagulation of the anterior hypothalamus, and denervation of the sinocarotid and aortic vascular zones. Along with generalized and phasic reactions of electrical activity, cortical-subcortical dissociations occurred with signs of induction of the adjacent regions. A stress rhythm appeared quite often in the dien-cephalon and brainstem. The onset and course of the experimental pathology and accompanying electrical activity were dependent on both the original and

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BRYTVAN, Ya. M., et al., *Fiziologicheskij Zhurnal*, No 5, 1972, pp 644-653

present functional state of the nervous system. The mechanisms of the observed phenomena cannot be ascribed solely to the generalized influence of the reticular formation or to corticofugal impulses. Various neurogenic components are involved and it is through their interaction that the integral reaction of the brain is achieved.

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USSR

UDC 669.017.539.67

VIYK, U. I., SHCHEGLOV, N. N., and MASS, V. G.

"A System for Internal Friction Measurements"

Tr. Tallin. politekhn. in-ta (Works of Tallin Polytechnic Institute), 1970, A, No 294, pp 99-102 (from RZh-Metallurgiya, No 3, Mar 71, Abstract No 31895 by authors)

Translation: A system is described for measuring the logarithmic decrement of vibrations (internal friction) in free torsional vibrations of a steel specimen. The system is used to study plastic deformations which occur in the fatigue testing of steel specimens. Three illustrations. Bibliography with one title.

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USSR

UDC 581.132.8

VOSKRESENSKAYA, N. P.; ~~VIVL', Yu. A.~~; GRISHINA, G. S.; PYARNIK, T. P.; Institute of Plant Physiology imeni K. A. Timiryazev, Academy of Sciences USSR, and Institute of Experimental Biology, Academy of Sciences Estonian SSR, Kharku

"Distribution of Tracer Carbon in Products of the Photosynthesis in Bean Plant Leaves in Red and Blue Light Depending on the Content of Oxygen in the Medium"

Moscow, Fiziologiya Rasteniy, Vol 18, No 3, May/June 71, pp 488-493

Abstract: The intensity of photosynthesis and  $C^{14}O_2$  metabolism were studied in experiments on bean plant (*Phaseolus* sp.) leaves in which discs from the leaves were exposed to  $C^{14}O_2$  in red or blue light in air and  $N_2$ . In air on the light plateau, the intensity of photosynthesis was the same in red and blue light. It was increased in either kind of light in  $N_2$ , but to a greater extent in blue than red light. In air blue light activated incorporation of  $C^{14}$  into glycine, serine, alanine, aspartic acid, and glutamic acid, while inhibiting its inclusion, as

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VOSKRESENSKAYA, N. P., et al, Fiziologiya Rasteniy, Vol 18,  
No 3, May/June 71, pp 488-493

compared with red light, into starch. In  $N_2$  in either kind of light there was a change in the principal path by which C left the Calvin cycle; the way over phosphoglyceric acid was activated (particularly in red light), while that over glycolate was inhibited. The activating effect of blue light on the inclusion of  $C^{14}$  into the amino acids mentioned above was retained in  $N_2$ , being increased greatly in the case of serine. Furthermore, blue light had an activating effect in  $N_2$  on the incorporation of  $C^{14}$  into phenylalanine, while reducing greatly, vs. red light, the incorporation of  $C^{14}$  into alanine. The inhibiting effect of blue light on the biosynthesis of starch disappeared in  $N_2$ . While  $O_2$  had only a small effect on the activation of the biosynthesis of amino acids by blue light, it enhanced greatly the inhibiting effect of this light on the synthesis of starch. The reasons for the latter phenomenon are not quite clear.

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USSR

UDC 621.762.002.5(088.8)

ZHERDEV, A. V., VIYNTRAUB, S. S., RYBINOV, V. A., MCSIASHVILI, V. V., and  
TOKMAKOV, M. K.

"Installation for Granulation of Metal Melts"

USSR Author's Certificate No. 265152, Filed 27/01/69, Published 17/06/70  
(Translated from Referativnyy Zhurnal-Metallurgiya, No. 2, 1971, Abstract  
No. 2 G470 P)

Translation: The installation consists of a granulator body with cooler,  
filling device and transporter for removal of granulate. In order to pro-  
duce a granulate with an even fractional composition, the upper portion  
of the granulator body over the cooler carries metal rods, washed by the  
cooler, and a powered blade drum beneath the pouring spout.

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USSR

UDC 576.095.14:577.391

VIZDALOVA, M., YANOVSKAYA, Ye., and ZHESTYANIKOV, V. D., Laboratory of Bacteriophage Biophysics, Institute of Biophysics, Czechoslovak Academy of Sciences, Brno, and Laboratory of Radiation Cytology, Academy of Sciences USSR, Leningrad

"Postirradiation Recovery of Cells. III. Survival of Escherichia coli in the Presence of Dark Repair Inhibitors Under Various Growth Conditions After UV- and X-Ray Irradiation"

Leningrad, Tsitologiya, Vol 14, No 1, 1972, pp 113-120

Abstract: After irradiation with X-rays and ultraviolet light, the maximum survival of E. coli containing 5-bromouracil in their DNA is significantly decreased. The sensitization factors at LD<sub>50</sub>-LD<sub>99</sub> are 2.4-1.6 in the complete medium at 44°C and 3.0-2.0 in the minimum M-9 medium. However, when the cells are grown in the complete medium at 19 and 37°C, the radiosensitization effect of 5-bromouracil is insignificant: the sensitization factors are 1.0-0.9 and 1.0-1.2 at the respective temperatures after UV irradiation and 1.3-1.2 and 1.7-1.5 after X-ray irradiation. When the postirradiation growth proceeds in the complete medium containing 0.3% caffeine, the survival of the bacteria is somewhat reduced at 44°C but unchanged at 19 and 37°C. Acriflavine added to the nutrient media decreases the survival of UV- and X-ray-irradiated bacteria

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VIZDALOVA, M., et al., Tsitologiya, Vol 14, No 1, 1972, pp 113-120

under all growth conditions. It is concluded that the repair of the damaged cell division mechanism, which normally takes place in the complete medium at 44°C and in the minimum medium, is inhibited in the presence of 5-bromouracil, caffeine, and acriflavine.

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USSR

UDC 621.382.2

PIL'DON, V.I., VICEL', A.A.

"Semiconductor Diodes For Frequency Multiplication"

V sb. Poluprovodn. pribory i ikh primeneniye (Semiconductor Devices And Their Application--Collection Of Works), No 23, Moscow, "Sov.radio," 1970, pp 82-108 (from RZh--Elektronika i yeye primeneniye, No 12, December 1970, Abstract No 12B148)

Translation: Various mechanisms for frequency multiplication are considered and the most promising trends are shown in the development of semiconductor devices intended for frequency multiplication--semiconductor diodes based on variable capacitance, semiconductor diodes based on the effect of charge storage, and combined varicaps. Basic results are considered which were attained abroad in the development and use of multiplier semiconductor diodes based on silicon and gallium arsenide, as well as typical designs of devices and the methods for their tests. On the basis of an analysis of development, the basic trends in the development of devices in the next years are shown. 16 ill. 10 Tab. 36 ref. Summary.

USSR

UDC 621.374.4.029.65:621.382.2

VIZEL', A.A., NAVROTSKIY, V.I., BERLIN, A.S., VORONINA, L.A., VORONENKO, V.P.

"Frequency Multipliers Based On GaAs Diodes For Millimeter Wavelengths"

Radiotekhnika i elektronika, Vol XVII, No 6, June 1972, pp 1337-1339

Abstract: The results are presented of a study of frequency triplers and quadruplers of millimeter wavelengths (27-36 GHz) based on GaAs diodes. The subject of the study was diffusion diodes with junction capacitance  $C_{jv} = 0.24-0.4$  pf,  $T_{-6v} = (C_{p-n} \cdot R_B) = 0.6-0.8$  nsec and a breakdown voltage of 40-60 v in an ordinary metalceramic casing; and also diodes with a metal-semiconductor barrier with  $C_{jv} = 0.5-1.0$  pf,  $T_{-2v} = 0.5-0.8$  nsec and a breakdown voltage of 13-24 V (in a small-size metalceramic casing). The experimental study of the diodes was conducted in a frequency multiplier of the waveguide "cross overlap" [krest vnakhlest] type, with open circuits which have a high efficiency and a satisfactorily high output power. It is shown that on the base of GaAs diodes with a metal-semiconductor barrier and also of diffusion GaAs diodes it is possible to create effective frequency multipliers for millimeter wavelengths. The principal results of the work were reported at the 1971 European Microwave Conference. 3 fig. 3 ref. Received by editors, 9 September 1971.



Amplifiers

USSR

UDC 612.374.4.029.6

KOZLOV, V. A., NAVROTSKIY, V. I., and VIZEL', A. A.

"Study of the Operation of a Varactor Frequency Doubler at the Temperature of Liquid Nitrogen"

Moscow, Radiotekhnika i Elektronika, Vol XVI, No 3, March 1971, pp 441-443

Abstract: This paper contains the results of an experimental study of the operation of a germanium diffusion diode frequency doubler with an output of 20 gigahertz at 77°K. The frequency doubler was designed as a cross wave guide overlapping a diode operating under no-load conditions. The amplitude characteristics of an ordinary diode frequency doubler and one made of diodes operating at low temperatures are compared, and the output power of the frequency doubler is presented as a function of temperature. From these data it is clear that no improvement of the characteristics of the ordinary doubler is observed on lowering the temperature to 77°K. The conclusion is drawn that ordinary parametric germanium diodes can be used to develop cooled signal sources if the frequency multiplier can be tuned at 77°K, and their efficiency in this case is approximately equal to the efficiency of a multiplier at room temperature. The efficiency of the frequency doubler with diodes designed 1/2

USSR

KOZLOV, V. A., et al., Radiotekhnika i Elektronika, Vol XVI, No 3, March 1971, pp 441-443

for operation under cooling conditions increases by 4-5 times at 77°K by comparison with the efficiency for these diodes at room temperature; further tuning is not required in this case. In addition, it is theoretically possible to supply more power to the frequency multiplier submerged in liquid nitrogen.

2/2

- 1 -

USSR

UDC: 621.374.4:621.382.2

TABACHNIKOV, I. Ya., FRID, I. R., KAUSOV, S. F., VIZEL', A. A.

"Calculation of the State of a Varactor in a Parallel Frequency Multiplication Circuit"

V sb. Poluprovodn. pribory i ikh primeniye (Semiconductor Devices and Their Application--collection of works), Vyp. 23, Moscow, "Sov. radio", 1970, pp 172-191 (from RZh-Radiotekhnika, No 10, Oct 70, Abstract No 10D25)

Translation: Formulas are derived which can be used to determine the efficiency, input and output impedance, and also the external bias voltage across the semiconductor diode, in a varactor with gradual and sharp junction from the breakdown voltage, maximum frequency and capacitance for doubling, tripling and quadrupling the frequency in a parallel circuit. A theoretical comparison is made of the effectiveness of a semiconductor diode with sharp and gradual junction in a frequency doubler. Experimental investigations of semiconductor diodes with abrupt junction in a frequency tripler up to 10 GHz, and semiconductor diodes with gradual junction in a doubler in the decimeter wavelength range showed agreement with the proposed computational formulas. Bibliography of nine titles. Authors' abstract.

1/1

USSR

UDC 621.374.44

NAVROTSKIY, V. I., VIZEL', A. A., VORONENKO, V. P.

"Experimental Investigation of Frequency Multipliers Based on Semiconductor Diodes in the 18-70 GHz Frequency Range"

V sb. Poluprovodn. pribory i ikh primeneniye (Semiconductor Devices and Their Application--collection of works), Vyp. 23, Moscow, "Sov. radio", 1970, pp 246-260 (from RZh-Radiotekhnika, No 10, Oct 70, Abstract No 10D26)

Translation: The authors give the results of an experimental investigation of some types of germanium and gallium arsenide diodes for the case of operation in the frequency doubling, tripling and quadrupling mode in various waveguide multiplier designs: "in-line", with parallel waveguides, and "crossed and overlapped." Relationships are given for the output power of the harmonics as a function of the input power and as a function of the input signal. Bibliography of twelve titles. Authors' abstract.

USSR

UDC 661.718.1' + 547.77

ARBUZOV, B. A., VIZEL', A. O., IVANOVSKAYA, K. M., and GOL'DFARB, E. I.,  
Institute of Organic and Physical Chemistry imeni A. Ye. Arbuzov, Academy  
of Sciences USSR

"Reaction of 2-Oxo-2-chloro-3,3,5-trimethyl-1,2-oxaphospholene-4 With  
Ethylene Glycol"

Leningrad, Zhurnal Obshchey Khimii, Vol 43 (105), No 10, Oct 73, pp 2134-2137

Abstract: The reaction of 2-oxo-2-chloro-3,3,5-trimethyl-1,2-oxaphospholene-4 with ethylene glycol was studied under various conditions: with or without solvent, different ratios of the reagents, with or without triethylamine. In all cases only one acyclic product was obtained: 2-oxo-2-(1,1-dimethyl-3-oxobutyl)-1,3,2-dioxaphospholane, b.p. 140-141°/0.01 mm,  $n_D^{20}$  1.4727,  $d_4^{20}$  1.2221. Formation of a cyclic dioxaphospholane structure requires more vigorous reaction conditions.

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- 23 -

USSR

UDC 547.26'11

VIZEL', A. O., KRUPNOV, V. K., ARBUZOV, B. A., and FADEYEVA, L. M., Institute of Organic and Physical Chemistry imeni A. Ye. Arbuzov, Academy of Sciences USSR

"Production of 1-Halophosholenes With a Trivalent Phosphorus Atom and Syntheses Based on These Compounds"

Leningrad, Zhurnal Obshchey Khimii, Vol 43 (105), No 10, Oct 73, pp 2137-2143

Abstract: A simple, one stage synthesis of 1-halophosholenes with a trivalent phosphorus has been described based on the reaction of a conjugated diene hydrocarbon with phosphorus trihalide and white phosphorus, best results being obtained with the reagent ratio of 3:1:2. The products are very reactive compounds which could be used in synthesis of novel phosholene derivatives: ethers, thioethers, and amides with trivalent phosphorus; they also react easily with conjugated dienes via a 1-4 cycloaddition, yielding novel spirophosphonium salts. The cyclic phosphonates obtained undergo easily the Arbuzov and Perkov rearrangement reactions.

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USSR

UDC 542.91:547.1'118

ARBUZOV, B. A., MUSLINKIN, A. A., VIZEL', A. O., KOVALENKO, V. I., VYRINA, N. N., and KAPUSTINA, N. M., Institute of Organic and Physical Chemistry imeni A. Ye. Arbuzov, Academy of Sciences USSR

"Phospholene Glycolacrylates and Some of Their  $\alpha$ -Substituted Analogs"

Moscow, Izvestiya Akademii Nauk SSSR, Seriya Khimicheskaya, No 8, Aug 73, pp 1828-1833

Abstract: Experimental results are reported on the synthesis of new acrylic derivatives containing organophosphoric heteroring -- phospholeneglycolacrylates and some of their  $\alpha$ -substituted analogs. These products were obtained by reacting 1-chloro-1-oxophospholenes with glycolmonoacrylate and  $\alpha$ -substituted acrylates in inert organic solvents, in presence of triethylamine as an acceptor of HCl. Several synthetic routes have been proposed for the synthesis of phospholeneglycol- $\alpha$ -fluoroacrylates.

1/1

USSR

UDC 542.91:547.1'118

ARBUZOV, B. A., KRUPNOV, V. K., and VIZEL', A. O., Institute of Organic and Physical Chemistry Imeni A. Ye. Arbuzov, Acad. Sc. USSR

"A new Method for Synthesis of 1-Halo-1-thioxophospholenes"

Moscow, Izvestiya Akademii Nauk SSSR, Seriya Khimicheskaya, No 5, May 73, pp 1176-1177

Abstract: A one stage synthetic method for 1-halo-1-thioxophospholene is described. Best results were obtained by using a 3:3:1 ratio of the diene:  $PX_3:P_2S_5$ . As a rule mixtures of phospholenes-2 and phospholenes-3 were obtained. Only in the reaction of 2,3-dimethylbutadiene-1,3 with  $PBr_3$  and  $P_2S_5$  a single product was obtained -- 1-bromo-1-thio-3,4-dimethylphospholene-3.

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USSR

UDC 542.91:547.1'118

VIZEL, A. O., KRUPNIV, V. K., and ARBUZOV, B. A., Institute of Organic and Physical Chemistry imeni A. Ye. Arbuzov, USSR Academy of Sciences

"1-Chlorophospholines with Trivalent Phosphorus"

Moscow, Izvestiya Akad. Nauk SSSR, Seriya Khimicheskaya, No 1, Jan 72, p 181

Abstract: The P-chlorides of phospholene with trivalent phosphorus are quite reactive substances which offer new possibilities in the chemistry of organophorus, five-membered heterocycles. The authors were able to secure an effective transformation of 1-thioxo-1-chlorophospholene into a series of three 1-chloropholenes. Analytical for these are given.

1/1

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USSR

UDC 547.76:241:542.952.1

ARBUZOV, B. A., ~~VIZEL, A. O.~~, GINIYATULLIN, R. S., and SHCHUKINA, L. I.,  
Institute of Organic and Physical Chemistry imeni A. ye. Arbuzov, Academy of  
Sciences USSR, Kazan'

"Isomerization of 1-Oxo-chlorophosphenes in Presence of Phosphorus Trichloride"  
Riga, Khimiya Geterotsiklicheskikh Soyedineniy, No 12, Dec 71, pp 1616-1619

Abstract: The effect of phosphorus trichloride on 1-oxo-1-chlorophosphenes was studied. Heating the phosphenes to 130-160° in presence of PCl<sub>3</sub> leads to a migration of the double bond; phosphenes-3 are converted to derivatives of phosphenes-2 at a high conversion yield. The reverse process is difficult. Further experiments have shown that dry hydrogen chloride is incapable of causing similar double bond migration. No migration was observed also in case of 3-methyl- and 4-methylphosphenes. Anotherwords, during the synthesis of phosphene derivatives, isomerization may occur due to the presence of PCl<sub>3</sub>, leading to a mixture of products.

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USSR

UDC 547.1'118'112

ARBUZOV, B. A., VIZEL', A. O., VERESHCHAGIN, A. N., RAYEVESKIY, O. A., and ZVEREVA, M. A., Institute of Organic and Physical Chemistry imeni A. Ye. Arbuzov, Academy of Sciences USSR

"1-Halogen-1-thioxophosphenes"

Moscow, Izvestiya Akademii Nauk SSSR, Seriya Khimicheskaya, No 11, Nov 71, pp 2489-2493

Abstract: For the purpose of synthesizing isomeric 1-halogen-1-thioxophosphenes and studying some of their properties, the authors isolated three pairs of isomers containing chlorine and bromine at the phosphorus atom. The chlorides were obtained by the interaction of the corresponding isomers of 1-chloro-1-oxophosphenes with  $P_2S_5$  bromides by the interaction of the diene adduct of phosphorus tribromide with  $H_2S$ . A mixture of isomers with a preponderance of 3-phosphenes was formed in this case. All the products were considered pure when further distillations failed to change physicochemical characteristics and their IR spectra contained no signs of isomeric products. IR and Raman spectra were taken of the oxygen- and sulfur-containing derivatives of 2-phosphenes and 3-phosphenes and their dipole moments determined.

1/1

USSR

UDC 542.91:661.718.1

ARBUZOV, B. A., RAKOV, A. P., and VIZEL', A. O., Institute of Organic and Physical Chemistry imeni A. Ye. ARBUZOV, Academy of Sciences USSR, and Chuvash State University imeni I. N. Ul'yanov

"Phospholenols and Other Phospholene Derivatives"

Moscow, Izvestiya Akademii Nauk SSSR, Seriya Khimicheskaya, No 9, Sep 71, pp 1999-2002

Abstract: The article describes a method for the one-stage synthesis of 2-phospholen-4-ol derivatives by the reaction of 3-phospholene derivatives with peracetic acid in the presence of alkali metal salts. The hydroxy group of the phospholenes is highly reactive, which makes it possible to obtain other phospholene derivatives. Acylation with Acetic anhydride and oxidation with chromic acid gave the unsaturated heterocyclic ketone 2-phospholen-4-one, which was then converted to its 2,4-dinitrophenylhydrazone.

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USSR

UDC 542.91:561.718.1

ARBUZOV, B. A., KRUPNOV, V. K., and ~~VIZEL, A. O.~~ Institute of Organic and Physical Chemistry imeni A. Ye. Arbuzov, Academy of Sciences USSR

"Reaction of Acyl Derivatives of Phosphorous Acid with Dienes"  
Moscow, Izvestiya Akademii Nauk SSSR, Seriya Khimicheskaya, No 6, Jun. 71,  
pp 1327-1329

Abstract: Cyclic anhydrides -- derivatives of salicylphosphorous acid -- react with conjugated diene hydrocarbons and form phospholene derivatives which contain no residue of salicylic acid.

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USSR

UDC 542.91 + 661.718.1

ARBUZOV, B. A., RIZPOLCZHENSKIY, N. I., VIZEL', A. O., IVANOVSKAYA, K. M., MUKHAMEDOV, F. S., and GOL'DFARB, E. I., Institute of Organic and Physical Chemistry imeni A. Ye., Arbuzov, Acad. Sc. USSR

"Synthetic Routes of 1,2-Oxaphospholene Derivatives in the Reaction of  $\beta$ -Ketoalcohols With Acid Chlorides of Trivalent Phosphorus Acids"

Moscow, Izvestiya Akademii Nauk, SSSR, Seriya Khimicheskaya, No 1, Jan 71, pp 117-125

Abstract: In studying the reaction of  $\beta$ -ketoalcohols with acid chlorides of trivalent phosphorus acid, a series of 1,2-oxaphospholene derivatives was obtained. The reaction took place in several definitely marked stages. For example, dropwise addition of phenyldichlorophosphine to cooled diacetone alcohol resulted in an initial exothermic reaction producing a precipitate; the liquid portion becoming yellow, and an odor of mesitylene oxide becoming noticeable. The second half of the process occurred slowly, the precipitate disappeared, the reaction mixture becoming again almost colorless. When the volatile pro-

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USSR

ARBUZOV, B. A., et al., Izvestiya Akademii Nauk SSSR, Seriya Khimicheskaya, No 1, Jan 71, pp 117-125

ducts were removed, the reaction mixture crystallized, and finally liquefied again on distillation. A five stage mechanism has been proposed for this reaction: the first stage consisting of an alcoholysis of acyl chloride leading to the formation of an acid which then reacts with more starting material to produce a new acyl chloride, a very reactive compound which adds rapidly to the unsaturated ketone formed in the first stage to yield a ketochloride  $RF(:O)Cl-CR_2CH_2COCH_3$  which isomerizes to 1,2-oxaphospholane. In the final step a molecule of  $HCl$  are not conjugated yielding 1,2-oxaphospholene.

2/2

172 014

UNCLASSIFIED

PROCESSING DATE--23OCT70

TITLE--ISOMERIZATION OF 3,4,EPOXYPHOSPHOLANES -U-  
AUTHOR--(03)-ARBUZOV, B.A., RAKOV, A.P., VIZEL, A.O.

COUNTRY OF INFO--USSR

SOURCE--IZV. AKAD. NAUK SSSR, SER. KHIM. 1970, (1), 85-90

DATE PUBLISHED-----70

SUBJECT AREAS--CHEMISTRY

TOPIC TAGS--ISOMERIZATION, ORGANIC PHOSPHORUS COMPOUND, HYDROXYL RADICAL,  
EPOXY COMPOUND, HYDRAZONE

CONTROL MARKING--NO RESTRICTIONS

DOCUMENT CLASS--UNCLASSIFIED

PROXY REEL/FRAME--1984/1589

CIRC ACCESSION NO--AP0100206

STEP NO--UR/0062/70/000/001/0085/0090

UNCLASSIFIED



2/2 014

CIRC ACCESSION NO--AP0100206 UNCLASSIFIED

PROCESSING DATE--23OCT70

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. 3,4,EPOXYPHOSPHOLANES ARE  
 ISOMERIZED IN BASIC MEDIA TO 2,PHOSPHOLEN,4,OLS. THE UNSYM. MEMBERS  
 FORM THE ISOMER WITH PREDOMINANT TERTIARY HO GROUPING. TREATING  
 3,ETHOXY,3,OXO,6,3,OXAPHOSPHABICYCLO(3.1.0)HEXANE WITH ETONA-ETOH; 12 HR,  
 THEN REFLUXING 25 HR, GAVE ON ACIDIFICATION WITH HCL 74PERCENT  
 1,ETHOXY,1,OXO,2,PHOSPHOLEN,4,OL (I) (R EQUALS ETO, R PRIME1 EQUALS R  
 PRIME2 EQUALS H), B SUBO.03 141-3DEGREES, N PRIME2O SUBD 1.4950, D  
 PRIME2O 1.2294.  
 1,METHYL,3,ETHOXY,3,OXO,6,3,OXAPHOSPHABICYCLO(3.1.0)HEXANE SIMILARLY  
 GAVE 53.3PERCENT I, ETO, H, ME, B SUBO.045 116-17DEGREES, 1.4860,  
 1.1672, AND 4.4PERCENT I, ETO, ME, H, B SUBO.035 139-40DEGREES, 1.4960,  
 1.1799. 1,5,DIMETHYL,3,ETHOXY,3,OXO,6,3,OXAPHOSPHABICYCLO(3.1.0)HEXANE  
 HEATED WITH ACOH-ACONA 15 HR GAVE 35PERCENT I, ETO, ME, ME, B SUBO.03  
 138-9DEGREES, 1.4908, 1.1501, WHILE  
 1,5,DIMETHYL,3,PHENYL,3,OXO,6,3,OXAPHOSPHABICYCLO(3.1.0)HEXANE HEATED  
 WITH ETOH-ET SUB3 N GAVE 50PERCENT I, PH, ME, ME, M. 198.5-9.5DEGREES.  
 I, ETO, ME, H, OXIDIZED WITH K SUB2 CR SUB2 O SUB7-H SUB2 SO SUB4 TO A  
 CRUDE CARBONYL COMPD. WHOSE 2,4,DINITROPHENYLHYDRAZONE, M. 184-5DEGREES,  
 WAS IDENTIFIED AS II.

UNCLASSIFIED

USSR

VIZEL', Ye. P.

UDC 629.78.0.5:533.6.015.04

"Study of Free Vortices on a Short-Span Wing with End Plates Near Screen"

Uch. Zap. Tsentr. Aero-gidrodinam. In-ta [Scientific Writings of Central Aerohydrodynamic Institute], 1971, 2, No 3, pp 12-19. (Translated from Referativnyy Zhurnal Raketostroyeniye, No 1, 1972, Abstract No 1.41.119, from the resume).

Translation: Results are presented from studies of the spatial distribution of velocities near a wing with elongation  $\lambda=0.72$  in the area of an end plate. The basic peculiarities of flow around the wing resulting from the shielding effect are determined. The experimental values of velocity are used to determine the circulation of free vortices and its dependence on the position of the wing over the shielding surface. 5 figs, 5 biblio refs.

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USSR

UDC 615.837.3:616.322-002.2:612.017

BATYUK, D. F., and VIZERENKO, L. V., Kiev Scientific Research Institute of Otolaryngology

"Some Criteria of Immunological Reactivity in Patients With Chronic Tonsillitis During Ultrasound Treatment"

Kiev, Zhurnal Ushnykh Nosovykh i Gorlovykh Boleznay, No 2, Mar/Apr 71, pp 38-46

Abstract: Ultrasound is used to cure chronic tonsillitis. It has been observed that low-intensity ultrasound waves activate biological processes in the tonsils. The present study was made to examine the effect of ultrasound on the specific and nonspecific immunological activity of the palatine tonsil tissues and to determine the time when certain changes occurred. Forty patients 12-50 years old who had been afflicted for 2-15 years were included in the study; 31 patients had the subcompensated form and 9 had the decompensated form of the disease. The dynamics of the cellular composition of the contents of the tonsillar lacunae was studied. For this purpose, the patients were divided into two groups: a group of persons more than 19 years old whose cytograms showed a low lymphocyte and neutrophil content before the ultrasound treatment; the other group consisted of patients aged 12-19 whose tonsillar lacunae contained larger counts of the above species. The changes

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USSR

BATYUK, D. P., and VIZERENKO, L. V., Zhurnal Ushnykh Nosovykh i Gorlovykh Bolezney, No 2, Mar/Apr 71, pp 38-46

affected by the ultrasound treatment in both groups of patients were tabulated in detail. In the first group, the amount of epithelial cells in the lacunae was reduced and young lymphoid cells were observed. In the second group practically no change in the amount of epithelial cells was affected by the treatment. The latter caused a considerable decrease in macrobiotically altered neutrophils and an increase in the number of phagocytic neutrophils. Stimulation of immunological activity was indicated by the appearance of hemocytoblasts, blasts, and plasma cells as a result of the treatment. The authors propose that when small doses of ultrasound are applied, restoration of normal tonus and trophic function of the vegetative nervous system are produced. It is considered possible that the ultrasound waves have reflectory effect on the palatine tonsils and thereby affect the primary physicochemical processes which play a role in the interaction of receptors of the cellular shell of tonsillar lymphocytes controlling cell proliferation. According to contemporary theories, the lymphocytes are cells of immunological memory which under the action of ultrasound can produce the beginning of a new clone of this cellular population. The authors suggests that further studies are required along these lines.

2/2

USSR

UDC 539.434

VIZERSKAYA, G. Ye., Kiev, Institute of the Problems of Strength  
of the Academy of Sciences UkrSSR

"The Temperature Effect on the Actual Dispersion of Energy of  
Heat-Resistant EI893 Nickel Alloy"

Kiev, Problemy Prochnosti, No 5, May 73, pp 120-122

Abstract: The deformation properties of heat resistant EI893  
nickel alloy were investigated at uniform state of stress ten-  
sion-compression in the 20-720°C temperature interval. The re-  
sults are discussed by reference to diagrams showing the loga-  
rithmic decrement of oscillations dependence on the amplitude  
of cyclic deformation and on the investigation temperature at  
 $\xi_a = 10 \cdot 10^{-4}$ . With increasing amplitude of cyclic deformation,  
the actual dispersion of energy increased continuously in  
in tests of the first and second cycle both when heating  
the specimen from 20-720°C and when cooling it from 720-200°C.  
The logarithmic decrement of oscillations rose on heating from  
20-720°C by three times (from 0.36 to 1%), but in the 20-200°C

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USSR

VIZERSKAYA, G. YE., et al., Problemy Prochnosti, No 5, May 73, pp 120-122

temperature interval a decrease of damping properties of the material was observed, which is probably related to deformation aging of the investigated material. Two figures, one table, eleven bibliographic references.

2/2

USSR

UDC 539.434

VIZERSKAYA, G. Ye., Kiev. Institute of Strength Problems, Academy of Sciences, Ukrainian SSR

"The Damping Properties of Some Nickel-Base Heat-Resistant Alloys at High Temperatures"

Kiev, Problemy Prochnosti, No 6, 1971, pp 23-27

Abstract: The article deals with research on the influence of high temperatures upon the characteristics of the true energy dispersion of nickel-base heat-resistant steels EP539 and EI826, used for producing critical machine parts which, while in operation, are subjected to intensive cyclical force and thermal influences. As an evaluation of the true energy dispersion of the alloys under consideration was selected the logarithmic decrement of oscillations, which was obtained with the corresponding processing of vibrograms of attenuating longitudinal oscillations of thin-walled tubular samples of the material under investigation. It was found that under conditions of normal and high temperatures the damping of the indicated materials increases with an increase of the amplitudes of cyclical deformations over the entire range of considered temperatures, as well as with an increase

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USSR

VIZERSKAYA, G. Ye., Problemy Prochnosti, No 6, 1971, pp 23-27

of the test temperature. The detected anomalies of the relationship of the logarithmic decrement to the temperatures for the alloys under investigation in the first heating are linked to cold-hardening as a result of mechanical processing and deformation aging of the material during heating. It should also be noted that the damping of the materials under investigation under conditions corresponding to the conditions of their use considerably exceeds the damping of these materials at normal temperatures. Data on the logarithmic decrement of oscillations for the two alloys are given. 6 figures, 5 bibliographic entries.

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USSR

UDC 547.569.2.341.26'118.07

VOLOSHIN, M. P., VIZCERT, R. V., SKRYPNIK, YU. G., L'vov, "Order of Lenin"  
Polytechnical Institute

"A Method of Making O,O-Dialkyl Phosphonomethylene Aryl Sulfides"

Moscow, Otkrytiya, Izobreteniya, Promyshlennyye Obratzsy, Tovarnyye Znaki,  
No 22, Aug 72, Author's Certificate No 345166, Div C, filed 18 Sep 70,  
published 14 Jul 72, p 97

Translation: This Author's Certificate introduces a method of making O,O-dialkylphosphonomethylene aryl sulfides. As a distinguishing feature of the patent, the process is simplified by reacting a O,O-dialkylphosphonomethylene diaryl sulfonate with thiophenol in an inert organic solvent such as acetone in the presence of potassium carbonate with subsequent isolation of the goal product by conventional methods.

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USSR

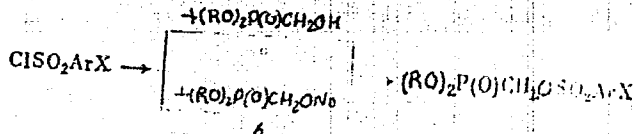
UDC 547.541.6+547.26'118.07

VIZGERT, R. V., and VOLOSHIN, M. P., L'vov Polytechnic Institute

"Aromatic Sulfonate Esters. Synthesis and Properties of Dialkylphosphonomethyl Aranesulfonates"

Leningrad, Zhurnal Obshchey Khimii, Sep 71, Vol 41, No 9, pp 1991-1994

Abstract: In furthering the study on the effect of the nature of alcohol alkyl on the reactivity of aromatic sulfonates in nucleophilic substitution, a synthesis was made of dialkylphosphonomethyl aranesulfonates of the general formula (RO)<sub>2</sub>P(O)CH<sub>2</sub>OSO<sub>2</sub>ArX from various aromatic sulfonyl chlorides and dialkyl α-hydroxymethyl phosphonates or their sodium derivatives. Two methods of synthesis are described. The reaction follow the scheme



USSR

VIZGERT, R. V., et al.; Zhurnal Obshchey Khimii, Sep 71, Vol 41, No 9, pp 1991-1994

Ether or benzene were used as inert solvents, finely ground KOH served as the HCl acceptor and the reaction mixture temperature was maintained at 0-10°C. The eleven compounds obtained are transparent, viscous liquids or crystalline substances soluble in alcohol, ether, acetone and benzene but insoluble in water and petroleum ether. Tables in the original article cite analytical data, yields, formulas, and NMR spectral results. It is suggested that dialkylphosphonomethyl aranesulfonates can phosphonomethylate.

2/2

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USSR

UDC: 621.317.3:2

BRAYKO, V. V., KOTSYUBA, Ye. N., VIZHENSKIY, A. D., TARANOV, S. G.

"A Precision Device for Measuring Weak Signals of Primary Converters"

Dokl. Vses. nauchno-tekhn. konferentsii po radiotekhn. izmereniyam. T. 3 (Reports of the All-Union Scientific and Technical Conference on Radio Engineering Measurements. Vol. 3), Novosibirsk, 1970, pp 75-76 (from RZh-Radiotekhnika, No 1, Jan 71, Abstract No 1A307)

Translation: Excellent resistance to interference and high precision in this measuring device are achieved by virtue of the selective properties of the circuit, in which differential feedback is used. A block diagram of the device is given and its operation is described. The error of the device, excluding the error of the output instrument, is no more than 0.05 percent in the range of signals up to 1 mV at a carrier frequency of 1 kHz. E. L.

1/1

USSR

UDC: 621.375.132.3(088.8)

VIZIR, Yu. V., Odessa Electrical Engineering Institute of Communications

"A Voltage Repeater"

USSR Author's Certificate No 280552, filed 7 May 68, published 7 Dec 70  
(from RZh-Radiotekhnika, No 6, Jun 71, Abstract No 6D122 P)

Translation: This Author's Certificate introduces a voltage repeater which contains a tracking bias holder and three transistorized amplification stages with series-parallel negative feedback at the input. To increase the input impedance and bring the transfer constant close to unity, the emitter and collector of the second transistor are connected to the emitter of the first transistor through a capacitor and a resistor respectively, and the emitter of the second transistor is connected to the collector of the third transistor through a resistor.

1/1

- 2 -

Acc. Nr:

A70107990

Abstracting Service: 6/70  
INTERNAT. AEROSPACE ABST.

Ref. Code:

UR0441

A70-27552 # Numerical methods of solving the bending problem of an orthotropic rectangular plate (Pro chisel'ni metodi rozv'iazuvannia zadachi pro prugin ortotropnoi priamokutnoi plastini). G. I. Viznyuk (Akademija Nauk Ukrain'skoi RSR, Institut Kibernetiki, Kiev, Ukrainian SSR). *Akademiia Nauk Ukrain'skoi RSR, Dopovidi, Serija A - Fiziko-Tekhnichni i Matematichni Nauki*, vol. 32, Feb. 1970, p. 113-116. In Ukrainian.

Discussion of two iteration procedures for numerically solving the boundary value problem of an orthotropic rectangular plate under bending loads. It is assumed that the plate rests on an elastic base and that its edges are clamped. Several theorems are formulated and proved to demonstrate the convergence of these procedures and to determine the rate of convergence.

V.Z.

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REEL/FRA  
19891570

USSR

UDC: 8.74

VIZNYUK, A. N., TOLSTUN, A. I.

"An Algorithm for Laying out Computer Wiring"

Kiev, Konstruirovaniye i vnedreniye novykh sredstv vychisl. tekhn.--  
sbornik (Designing and Introducing New Computer Facilities--collection  
of works), t. 1, 1971, pp 177-184 (from RZh-Kibernetika, No 7, Jul 73,  
abstract No 7V594)

Translation: The paper is devoted to the question of automating the  
compilation of wiring tables. An algorithm is proposed for laying out  
high-speed computer wiring. The algorithm is based on an attempt to  
simulate the thinking of the designer in compiling wiring tables.

1/1

- 51 -

Acc. Nr:

AP0036441

Abstracting Service:

CHEMICAL ABST.

4/70

Ref. Code:

CR 0366

78324q Keto aldehydes. VIII. Acetylenic hydroxy acetals.  
 Kovalev, B. G.; Vlad, L. A.; Shamshurin, A. A. (*Izv. Khim. Kishinev, USSR*), *Khim.* 1970, 6(1), 27-31 (Russ).  
 Condensation of  $\text{Ac}(\text{CH}_2)_n\text{CH}(\text{OEt})_2$  with  $\text{RC}\equiv\text{CNa}$  in liq.  $\text{NH}_3$  gave 34-51%  $\text{RC}\equiv\text{CCMe}(\text{OH})(\text{CH}_2)_n\text{CH}(\text{OEt})_2$  (I) ( $n$  is 3 or 4, R is H, amyl, or hexyl). At room temp. in the presence of dil.  $\text{H}_2\text{SO}_4$  I ( $n = 3$ , R = H) underwent intermol. transesterification to give 80% 2-methyl-2-ethynyl-6-ethoxytetrahydropyran. At 70-80° in 15%  $\text{H}_2\text{SO}_4$  I ( $n = 3$ , R is H, amyl, or hexyl) gave the corresponding 2-(R'-substituted)-2-methyl-6-hydroxytetrahydropyrans (II) [ $\text{R}'$  is  $\text{HC}\equiv\text{C}$ ,  $\text{Me}(\text{CH}_2)_2\text{C}\equiv\text{C}$ , or  $\text{Me}(\text{CH}_2)_3\text{C}\equiv\text{C}$ ] and only small amts. of 6-ethoxy analogs (III) of II, which are very readily hydrolyzed to II. The hydrolysis of I ( $n = 4$ , R =  $\text{Me}(\text{CH}_2)_2$ ) gave  $\text{Me}(\text{CH}_2)_2\text{C}\equiv\text{CCMe}(\text{OH})(\text{CH}_2)_4\text{CHO}$ , which was condensed with  $\text{Ph}_3\text{P}\cdot\text{CHCO}_2\text{Et}$  to give  $\text{Me}(\text{CH}_2)_2\text{C}\equiv\text{CCMe}(\text{OH})(\text{CH}_2)_4\text{CH}\cdot\text{CHCO}_2\text{Et}$  (IV). Alk. hydrolysis of IV gave  $\text{Me}(\text{CH}_2)_2\text{C}\equiv\text{CCMe}(\text{OH})(\text{CH}_2)_4\text{CH}\cdot\text{CHCO}_2\text{H}$ . CPJR

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REEL/FRAME

19721287



Acc. Nr.: AP0046497

Ref. Code: UR0094

UDC 628.977.1:621.316.722

USSR

KUTIGUS, YA. A., VOLOSATOV, V. V., VLADENTSEV, V. N., Engineers, and TROSHIN, V. A.  
Candidate of Technical Sciences, Central Electrical Engineering Research Labora-  
tory for Non-Ferrous Metallurgy

"Thyristor Voltage Regulator for Lighting Systems"

Moscow, Promyshlennaya Energetika (Industrial Power Engineering), No 1, 1970,  
pp 24-27

Translation: Questions associated with the damage caused by voltage step up in lighting systems are discussed, and a formula for determination of this damage is presented. The possibility of using simple and economical thyristor regulators to maintain voltage constancy in lighting lines is shown. Formulas are given for determining the power factor and efficiency of the regulator and also the changes of these values in regulation. The electric circuit of the thyristor regulator is described, and results of tests of experimental models are presented. (3 illustrations, 4 biblio. ref.)

REEL/FRAME

19781750

1/2

023

UNCLASSIFIED

PROCESSING DATE--20NOV70

TITLE--A STUDY OF THE ANTIMYORELAXANT EFFECT OF CHOLINOPOTENTIATING AGENTS  
-U-

AUTHOR--(04)--PRIZUROVSKIY, V.B., VLADEYEVA, N.V., KHROMOVA, O.N.,  
DUBOVITSKAYA, S.I.

COUNTRY OF INFO--USSR

SOURCE--BYULLETEN' EKSPERIMENTAL'NOY BIOLOGII I MEDITSINY, 1970, VOL 49,  
NR 6, PP 51-54

DATE PUBLISHED-----70

SUBJECT AREAS--BIOLOGICAL AND MEDICAL SCIENCES

TOPIC TAGS--MUSCLE RELAXANT, INHIBITION, CHOLINESTERASE, BRAIN, MUSCLE  
PHYSIOLOGY

CONTROL MARKING--NO RESTRICTIONS

DOCUMENT CLASS--UNCLASSIFIED

PROXY REEL/FRAME--3004/0703

STEP NO--UR/0219770/049/006/0051/0054

CIRC ACCESSION NO--APC131302

UNCLASSIFIED

UNCLASSIFIED

PROCESSING DATE--20NOV70

212 023

CIRC ACCESSION NO--AP0131302  
ABSTRACT/EXTRACT--(U) GP-0-

ABSTRACT. THE ANTICURARE AND ANTIPARAMIONIC EFFECT OF CHOLINOPOTENTIATING AGENTS (ARMIINE, GALANTAMINE, OXASYL, PROSERINE, PHOSPHACOL, ESERINE) WAS STUDIED IN EXPERIMENTS ON FROGS AND RATS. THE ANTIMYORELAXANT ACTIVITY DID NOT CORRELATE WITH ANTICHOLINESTERASE TO TOTAL CHOLINESTERASE OF FROG MUSCLES AND ACETYLCHOLINESTERASE OF RAT BRAIN. THE MARKEDNESS OF ANTIPARAMIONIC ACTIVITY OF PREPARATIONS IN EXPERIMENTS ON RATS DOES NOT CORRESPOND WITH DIAPHRAGMATIC CHOLINESTERASE INHIBITION CAUSED BY THEM. ANTIMYORELAXANT ACTIVITY IN EXPERIMENTS ON FROGS CLOSELY CORRELATE WITH THE ABILITY OF PREPARATIONS TO SENSITIZE FROG MUSCULAR ABDOMINIS RECTIS TO ACETYLCHOLINE. A CONCLUSION IS MADE THAT ANTICURARE AND, PARTICULARLY, ANTIPARAMIONIC EFFECTS OF CHOLINOPOTENTIATING AGENTS DEPEND NOT ONLY ON CHOLINESTERASE INHIBITION, BUT ALSO UPON THE CHOLINSENSITIZING ACTION.

FACILITY: LENINGRAD PEDIATRIC MEDICAL INSTITUTE.

UNCLASSIFIED

VLADIMIROV, A.

Nuclear Engines -  
Space Related

NUCLEAR ENGINES IN SPACE

[Article\* by Candidate of Technical Sciences A. Vladimirov,  
Moscow, Nakhla I Zil'mn, Aviaslan, No 8, 1972, pp 20-31]

JPRS 58457  
13 March 1973

The second half of the 20th Century will re-  
main forever in the memory of civilization as  
the beginning of the space age.

Yongues are penetrating deeper and deeper in-  
to space. We began with the Moon, Venus, and  
Mars. Mercury and Jupiter are next, followed  
by Uranus and Pluto, and tomorrow space ships  
will travel beyond the Solar System to the  
stars.

But without reliable, economical engines the  
conquest of space is inconceivable.

To alter the notion of any sort of body (where rest is  
a particular case of motion) we must apply a force to this  
body, we must create a thrust. Thrust, as we know, is gener-  
ated by an engine. In more precise terms it is generated by  
a thrust system, since every type of self-propelled vehicle  
must have a propelling agent in addition to an engine that  
transforms some sort of energy into the mechanical movement  
of its own parts. For example the aircraft propeller serves  
as the propelling agent on an aircraft with a reciprocating  
engine. Wheels are the propelling agents for the bicycle,  
motor vehicle, or diesel locomotive. For the marine vessel  
it is the ship's propeller. However, the propelling agent  
can serve its purpose only if it is capable of grasping and  
repelling some sort of external medium such as air or water.  
But what does a motor vehicle repel? Or, let us say, a pod-  
estrian? Paradoxical though it may seem, they repel the Earth  
itself. In this case the mass of our planet is so great that  
its "repulsion" is not felt. The planet is "repelled" through  
friction between the tires or soles and the Earth's surface.  
\*Based on foreign publications

The General Principle of motion can be conceived of in the following form: "Every noninertial movement is no-active." In simpler terms this means that creation of thrust involves the repulsion of some sort of mass (we will subsequently refer to it as reactive mass).

It stands to reason that if the external medium's density is too low or if it is absent altogether, a reserve of reactive mass (also referred to as working fluid) to be used in creating thrust would have to be stored aboard the vehicle. In addition to a supply of working fluid we would have to possess a certain quantity of onboard energy.

In principle there can be cases in which the functions of the working fluid and the power-producing substance are combined within the same product. This is precisely the situation in the liquid propellant rocket engine (LPRE). Consisting of a combustible substance and an oxidizer, its combustion provides a flow of energy (by way of a chemical combustion reaction) this is why the LPRE is placed in the vehicular structure category) and simultaneously exists as the working fluid: Combustion products are ejected from the LPRE, creating thrust. In the way, utilization of engine and propelling agent is typical of any other sort of rocket engine.

Thus if we define the concept "thrust system" precisely it would include the engine, propelling agent, the needed power and working fluid supply, and the structure bearing all of these components.

The LPRE and Its Possibilities

Our choice to begin discussion of space thrust systems with the LPRE is not random. Such engines have been serving the business of studying and conquering space faithfully for a long time. And perhaps it may not be a great exaggeration to say that the LPRE is thought by most laymen to be just about the only means for generating thrust in space. This is far from so, however. Moreover, exaggeration of the LPRE's role in space flight (unfortunately even some specialists take this extreme) may retard the search for new ways to generate thrust.

It is these now, promising types of thrust systems that we will discuss.

At first we will examine the main principles by which thrust is generated in the rocket engine in more detail. It can be easiest to do this with the widely used LPRE as an example. Fuel components -- the combustible substance and

1/2 011 UNCLASSIFIED PROCESSING DATE--27NOV70  
TITLE--THE MINIMUM FLOW OF RIVERS IN THE USSR -U-

AUTHOR--VLADIMIROV, A.M. ✓

COUNTRY OF INFO--USSR

SOURCE--MINIMAL'NYY STOK REK SSSR LENINGRAD. GIDROMETEOROLOG. IZO. 1970.  
212 PP  
DATE PUBLISHED-----70

SUBJECT AREAS--EARTH SCIENCES AND OCEANOGRAPHY, ATMOSPHERIC SCIENCES

TOPIC TAGS--RIVER WATER, HYDROMETEOROLOGY

CONTROL MARKING--NO RESTRICTIONS

DOCUMENT CLASS--UNCLASSIFIED  
PROXY REEL/FRAME--3003/0074

STEP NO--UR/0000/70/000/000/0001/0212

CIRC ACCESSION NO--AM0129344

UNCLASSIFIED

2/2 011

UNCLASSIFIED

PROCESSING DATE--27NOV70

CIRC ACCESSION NO--AM0129344

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. TABLE OF CONTENTS: INTRODUCTION  
3. CHAPTER I GENERAL INFORMATION FROM THE HISTORY OF THE STUDY OF  
MINIMUM FLOW 7. II PERIODS OF SMALL WATER CONTENT IN THE RIVERS OF  
THE USSR 19. III MINIMUM 30 DAY (MEAN MONTHLY) FLOW OF THE RIVERS OF  
THE USSR 44. IV COMPUTATION OF THE MINIMUM RIVER FLOW BY MEANS OF  
HYDROMETRIC OBSERVATIONS 58. V DETERMINATION OF THE MINIMUM 30 DAY  
FLOW IN THE ABSENCE OF HYDROMETRIC OBSERVATIONS 72. VI DISTRIBUTION  
OF MINIMUM 30 DAY RIVER FLOW ON THE TERRITORY OF THE USSR 139. VII  
MINIMUM DAILY AVERAGE FLOW 158. VIII PERIODS OF ABSENCE OF FLOW IN  
THE RIVERS 169. IX FORECASTING A MINIMUM FLOW OF RIVERS 184.  
CONCLUSION 196. LITERATURE 201. APPENDICES 208. THIS BOOK HAS  
AN ENGLISH SUMMARY.

UNCLASSIFIED

USSR

UDC 621.375.024(088.8)

VLADIMIROV, A. N. ✓

"DC Amplifier"

USSR Author's Certificate No 259164, Filed 11 Jul 69, Published 23 Apr 70  
(from RZh-Radiotekhnika, No 9, Sep 70, Abstract No 9D89P)

Translation: This author's certificate introduces a DC amplifier containing a summator and a memory. The amplifier is distinguished by the fact that in order to realize the null voltage drift correction with an open input of the amplifier, a device for separation of this voltage executed from two electron tubes with a common anode and with cathodes joined in series by the coupling contacts of the relays between which a capacitor is connected, is used in it. The control grid of the input tube of the indicated separating device is connected jointly with the same grid of one of the tubes of the summator to a common input terminal, and the grid of the other tube of the separating device is connected via a resistive divider to the output terminal of the amplifier.

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1/3 011 UNCLASSIFIED PROCESSING DATE--02OCT70  
 TITLE--GULDER OF DIAMOND BEARING ECLOGITE FROM THE MIR KIMBERLITE PIPE  
 -U-  
 AUTHOR--(04)-MIKHEYENKO, V.I., VLADIMIROV, B.M., NENASHEV, N.I.,  
 SELDISHEVA, YE.B.  
 COUNTRY OF INFO--USSR  
 SOURCE--DOKL. AKAD. NAUK SSSR 1970, 190(6), 1440-3  
 DATE PUBLISHED-----70  
 SUBJECT AREAS--EARTH SCIENCES AND OCEANOGRAPHY  
 TOPIC TAGS--DIAMOND, GEOCHEMISTRY  
 CONTROL MARKING--NO RESTRICTIONS  
 DOCUMENT CLASS--UNCLASSIFIED  
 PROXY REEL/FRAE--1990/0274 STEP NO--UR/0020/70/190/006/1440/1443  
 CIRC ACCESSION NO--AT0108576  
 UNCLASSIFIED

2/3 011

UNCLASSIFIED

PROCESSING DATE--020CT70

CIRC ACCESSION NO--AT0108576  
ABSTRACT/EXTRACT--(U) GP-0-

ABSTRACT. THE 1ST LARGE XENOLITH OF DIAMOND BEARING ECLOGITE WAS FOUND IN 1967. IT HAD THE FORM OF TYPICAL BOULDER 15 TIMES 10 TIMES 6 CM. FIVE DIAMONDS, 1-3 MM LONG, WERE FOUND ON ITS SURFACE, THE 6TH DIAMOND, 13 MM LONG, WAS FOUND IN THE WALL OF AN OPEN FRACTURE, AND THE 7TH, WEIGHING 8 MG, WAS FOUND IN THE ECLOGITE PROTRUSION. THE ECLOGITE FROM THE MIR PIPE CONSISTED OF FRESH GARNET AND ALTERED PYROXENE. THE ROCK HAD PORPHYROBLASTIC TEXTURE, D. 3.20, AND CONTAINED: SIO SUB2 40.50, TIO SUB2 0.96, AL SUB2 0 SUB3 10.47, FE SUB2 0 SUB3 2.86, FEO 10.45, MN 0.014, MGO 9.95, CAO 10.35, NA SUB2 0 1.32, K SUB2 0 0.89, H SUB2 0 PLUS 2.84, H SUB2 0 MINUS 0.30, P SUB2 0 SUB5 0.27, CR SUB2 0 SUB3 0.41, NIO 0.024, AND S 0.32 PERCENT. THE DIAMONDS ON ECLOGITE XENOLITHS WERE XENOCRYSTALS AND THEIR APPEARANCE IN KIMBERLITE WAS CONTROLLED TO A LARGE DEGREE BY THE SIZE AND SHAPE OF KIMBERLITE BODY. THE SERPENTINE CARBONATE COMPN. OF KIMBERLITE, THE COMPLETE ABSENCE OF MAGMATIC EFFECT ON THE NEAR CONTACT ROCKS, AND XENOLITHS WITH ORG. BITUMENS PRESERVED WITHOUT ALTERATION, INDICATE THAT THERMAL ENERGY WAS NOT A FACTOR CONTROLLING FORMATION OF THESE DIAMONDS. THE EFFECTS OF POWERFUL MECH. ENERGY, DURING FORMATION OF PIPE, WERE OBSD. IN KIMBERLITE. THE CRYSTAL STRUCTURE OF MINERALS PROBABLY CAN DISINTEGRATE TO AMORPHOUS AND IONIZED STATE OF SUBSTANCE UNDER EFFECT OF SUFFICIENTLY STRONG DYNAMIC PRESSURE. THE EXCITED ATOMS AND IONS ARE CAPABLE TO BUILD NEW AND STRONGER CRYST. FORMS. THE DIAMONDS WERE CRYST. TOGETHER WITH GRAPHITE IN KIMBERLITE INTRUSIONS WHICH ARE A CONTINUOUS ZONE OF CATACLISM.

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PROCESSING DATE--02OCT70

CIRC. ACCESSION NO--AT0108576

ABSTRACT/EXTRACT--NATURAL DIAMONDS ARE THUS THE PRODUCTS OF HUGE DYNAMIC PRESSURE GENERATED DURING VISCOUS PLASTIC DEFORMATION OF KIMBERLITE. THE HIGH PHYS. DYNAMICAL PARAMETERS IN KIMBERLITE OF LARGE PIPES AND DIKES WERE THE MAIN CAUSES OF GENERATION AND GROWTHS OF DIAMOND CRYSTALS BOTH IN SERPENTINE CARBONATE ROCKS AND ON THE SURFACE OF ECLOGITE XENOLITHS.

UNCLASSIFIED

1/2 007 UNCLASSIFIED PROCESSING DATE--18SEP70  
TITLE--GENERAL FEATURES OF THE GEOLOGICAL HISTORY OF THE WEST OF AFRICAN  
AND SIBERIAN PLATFORMS -U-  
AUTHOR--(04)-VLADIMIROV, B.M., ODINTSOV, M.M., RASSKAZCHIKOV, A.N.,  
TVERDUKHLEBOV, V.A.  
COUNTRY OF INFO--USSR  
SOURCE--GEOLOGIYA I GEOFIZIKA, 1970, NR 1 (121) PP 50-56  
DATE PUBLISHED-----70  
SUBJECT AREAS--EARTH SCIENCES AND OCEANOGRAPHY  
TOPIC TAGS--STRUCTURAL GEOLOGY, MAGMA, OROGENY  
CONTROL MARKING--NO RESTRICTIONS  
DOCUMENT CLASS--UNCLASSIFIED  
PROXY REEL/FRAE--1986/1318 STEP NO--UR/0210/70/000/001/0050/0056  
CIRC ACCESSION NO--AP0103200  
UNCLASSIFIED

2/2 007

UNCLASSIFIED

PROCESSING DATE--18SEP70

CIRC ACCESSION NO--AP0103200

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. THE MAIN FEATURES OF GEOLOGICAL STRUCTURE OF THE BASEMENT, SEDIMENTARY COVER AND MAGMATISM OF THE WEST AFRICAN CRATON AND LIBYAN NIGERIAN OROGENIC BELT ARE CONSIDERED. THEIR BELONGING TO THE SINGLE WEST AFRICAN COMPLICATED EPIBAIKALIAN PLATFORM STRUCTURE WITH DIFFERENT AGE OF HETEROGENE BASEMENT IS ESTABLISHED. THE ANALOGOUS FEATURES OF GEOLOGICAL DEVELOPMENT OF THE WEST AFRICA AND SIBERIAN PLATFORM WITH INCLUDED BAIKALIDES ARE ESTABLISHED BY COMPARATIVE ANALYSIS.

UNCLASSIFIED

1/2 013 UNCLASSIFIED PROCESSING DATE--30OCT70  
TITLE--EXPERIMENTAL DETERMINATION OF HEAT FLUXES IN THE WALLS OF MOLDS FOR  
THE CONTINUOUS CASTING OF METALS -U-  
AUTHOR--VLADIMIROV, E.A. ✓  
COUNTRY OF INFO--USSR  
SOURCE--INZH. FIZ. ZH. 1970, 17(2), 270-7  
DATE PUBLISHED-----70  
SUBJECT AREAS--MATERIALS, MECH., IND., CIVIL AND MARINE ENGR  
TOPIC TAGS--CONTINUOUS CASTING, FOUNDRY TECHNOLOGY, HEAT FLUX PICKUP,  
STEEL MANUFACTURE PROCESS  
CONTROL MARKING--NO RESTRICTIONS  
DOCUMENT CLASS--UNCLASSIFIED  
PROXY REEL/FRAE--1997/1514 STEP NO--UR/0170/70/017/002/0270/0277  
CIRC ACCESSION NO--AP0120295  
UNCLASSIFIED

2/2 013

UNCLASSIFIED

PROCESSING DATE--30OCT70

CIRC ACCESSION NO--AP0120295

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. THEORETICAL CONSIDERATION ENABLING THE EVALUATION OF EXPTL. DATA OBTAINED FROM A DIFFERENTIAL THERMOCOUPLE ON TEMP. TIME DEPENDENCE IN A TEMP. FIELD FORMING ON A FLAT WALL OF THE MOLD. THE FORMULAS WERE DEVELOPED FOR A TEMP. FIELD ON THE INSIDE WALL OF THE MOLD. THE WALL IS WASHED FROM OUTSIDE CONSTANTLY BY COOLING LIQ. OF CONST. TEMP., THE TEMP. ON THE OTHER SIDE OF THE TUBE VARIES ACCORDING TO AN HARMONIC LAW. THE SOLN. STARTS FROM THE PARTIAL DIFFERENTIAL EQUATION OF HEAT CONDUCTION, AND IS CARRIED OUT FOR THE FOLLOWING 2 BOUNDARY CONDITIONS: WALL SIDE TOWARDS THE CAST:  $T(0, \tau) = T_{SUBO} + T_{SUBA} \sin \omega \tau$ , COOLING MEDIUM:  $\alpha(T(\delta, \tau) - T_{SUBB}) = \lambda \frac{\partial T(x, \tau)}{\partial x}$ . THE RESULTING RELATION FOR MAX. TRUE HEAT FLUX IS ALSO SOLVED GRAPHICALLY.  $T$  IS THE ABS. TEMP.,  $\omega$  IS ANGULAR FREQUENCY OF TEMP. CHANGES,  $\tau$  IS TIME,  $\lambda$  IS THERMAL COND. OF CRYSTALLIZER WALL,  $\delta$  IS WALL THICKNESS,  $\alpha$  IS THE HEAT TRANSFER COEFF. THROUGH THE WALL ON THE SIDE OF THE COOLING MEDIUM,  $x$  IS A DISTANCE, INDICES  $0, A, B$  DENOTE MEAN TEMP. ON THE CASTING SIDE, VALUE OF TEMP. AT AMPLITUDE  $A$ , AND TEMP. OF THE COOLING MEDIUM, RESP. FACILITY: UKR. ZAOCH. POLITEKH. INST., ARTEMOVSK, USSR.

UNCLASSIFIED

USSR

UDC 533.601.135

VLADIMIROV, F. S., Tomsk

"Influence of Closeness of the Ground on Lifting Force Created by Vertical Continuous Streams"

Zhurnal Prikladnoy Mekhaniki i Tekhnicheskoy Fiziki, No 5, 1971, pp 123-131.

ABSTRACT: In connection with the development of vertical takeoff and landing aircraft, as well as air cushion vehicles, the influence of the closeness of the earth on the lifting force created by continuous vertical streams is studied. Earlier works have performed similar studies and generalized the results produced for the case of a compressible fluid. In this work, the planar problem of flow around a 2-sided obstacle by a stream of gas leaving a nozzle with parallel walls is solved by a method of Chaplygin and Fal'kovich. Calculations are performed clarifying the influence of closeness of the ground and the effect of compressibility of the fluid on characteristics of the flow at subsonic speeds.

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USSR

UDC 669.12-154.046.5:669.717

VLADIMIROV, L. P., and KOPITSA, N. M., Kommunarsk Mining Metallurgical Institute

"Theoretical and Experimental Determination of the Deoxidizing Ability of Aluminum by the Newest Investigation Methods"

Moscow, Izvestiya Vysshikh Uchebnykh Zavedeniy, Chernaya Metallurgiya, No 11, 1971, pp 18-22

Translation of Abstract: The interaction of Al and  $O_2$  dissolved in liquid Fe was investigated in the 1,550-1,650 °C temperature interval. A new single-step method was applied for the calculation of the equilibrium by using the thermodynamic functions M and N which take into account the process of smelting Al, the dissolution of  $O_2$  in Al and liquid Fe, and the effect of concentrations of reacting media. Parallel with it 1 K was determined experimentally by the electromotive force method with measurement of the temperature and sampling of the metal for analysis. Calculated and experimentally derived values of the deoxidizing ability of Al are compared with investigation results of Soviet and non-Soviet authors. The new theoretical method and the emf method are reliable means for determining the thermodynamic principles of the metal deoxidation process. Four illustrations, two tables, five biblio. refs. 1/1

USSR

UDC 669.014.7:536.7:541.12

VLADIMIROV, L. P.

Termodinamicheskiye Raschety Ravnovesiya Metallurgicheskikh Reaktsii  
(Thermodynamic Calculations of the Equilibrium of Metallurgical Reactions)

Moscow, "Metallurgiya," 1970, 527 pp

Translation of Annotation: This book describes modern methods of thermodynamic investigations of metallurgical processes. It presents the modernized method of an accelerated calculation of the equilibrium of chemical reactions developed by the author. The new single-step calculation of equilibrium makes it possible to obtain the numerical end result in one step, eliminating the need for additional correction calculations.

Detailed summaries of thermodynamic characteristics of the processes of polymorphic and aggregate transformations and processes of dissolution of impurities in iron are published in the book.

This book is intended for scientific workers and metallurgical and chemical engineers, and may also be used by students in advanced courses of

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USSR

VLADIMIROV, L. P., "Metallurgiya," 1970, 527 pp

metallurgical and chemical higher educational institutions.

Tables: 86. Illustrations: 28. Bibliography: 204 entries

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USSR

VLADIMIROV, L. P., "Metallurgiya," 1970, 527 pp

Part II: Ways of Improving Accelerated Methods of Calculating  
Equilibrium

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Chapter V. Thermodynamics of Aggregate Transformations 147

Chapter VI. Thermodynamics of Melts (Quasi-Ideal Solutions) 187

Chapter VII. Thermodynamics of Melts (Regular Solutions) 213

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Part III. Thermodynamic Investigations

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Thermodynamics of Homogeneous Gas Reactions 273

3/4

USSR

VLADIMIROV, L. P., "Metallurgiya," 1970, 527 pp

Part II: Ways of Improving Accelerated Methods of Calculating  
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Thermodynamics of Homogeneous Gas Reactions 273

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USSR

VLADIMIROV, L. P., "Metallurgiya," 1970, 527 pp

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Chapter XII. Thermodynamics of Vacuum Processes	361
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acc. Nr.

AA0108180

Abstracting Service:  
CHEMICAL ABST. 6-70

Ref. Code  
UR 0482

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135549t Steel. Ozerskii, A. D.; Solntsev, Yu. P.; Galkin, M. F.; Myagkoy, V. I.; Vladimirov, N. E.; Yurasov, S. A.; Nikonov, V. F.; Yakovenko, A. I.; Parfenovskii, A. B.; Kunitsa, S. S. U.S.S.R. 260,899 (Cl. C 22c), 06 Jan 1970, Appl. 02 Dec 1968; From *Otkrytiya, Izobret., Prom. Obratsty. Tovarnye Znaki* 1970, 47(4), 81. Steel with improved mech. properties consisted of: C 0.40-0.45, Si 0.5-0.7; Mn 0.5-0.8, Cr 1.5-1.8, V 0.3-0.5, Mo 0.9-1.2, impurities of S <0.03, and P <0.02%, and Fe the remainder. MSCL

REEL/FRAME

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VLADIMIROV, N.V

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6-73

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XI-5. OBTAINING COMPENSATED MATERIALS IN THE MERCURY TELLURIDE AND CADMIUM TELLURIDE SYSTEM

Article by N. V. Vladimirov, Ye. V. Kaloshnikova, V. I. Kaprey, G. A. Kuznetsov, V. N. Porosov, A. A. Ryzantsev, N. A. Selezneva, E. K. Shabrov, G. V. Kravtsov, I. I. Stetsko, Po Protsessam Kholi i Sinteza Poluprovodnikov s Merkurym, Uchenye Zapiski Kazanskogo Universiteta Seriya Khimicheskie Nauki, 1972, p. 130

In this paper a study is made of the possibility of obtaining materials with maximum compensation of the characteristic electrically active states by the large crystalline and monocrystalline bars were obtained by the Bridgman method. Determination of the composition along the bar permitted some refinement of the position of the solidus line on the diagrams of state.

A study was made of the compensation of electrically active centers by alloying in a melt and by annealing the crystals in the vapors of the elements. The properties of the materials obtained were determined both by optical and by EPR measurements.

There is a detailed discussion of the problem of determining the composition of solid solutions by different methods.



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Analysis and Testing

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UDC 621.771:539.4

VISHNYAKOV, YA. D., VLADIMIROV, S. A., and IGNAT'YEVA, YE. G., Moscow

"Change in the Dislocation Structure of Nickel and Its Alloy with 20% Cobalt During High-Reduction Rolling"

Moscow, Fizika i Khimiya Obrabotki Materialov, No 4, Jul-Aug 73, pp 93-97

Abstract: Samples of nickel and nickel with 20% Co, deformed by rolling at room temperature with degrees of reduction from 50 to 90%, were investigated by x-ray diffraction analysis. Calculations of the fine structure parameters were made using a Nairi computer with the calculation error amounting to 5% for the magnitudes of relative mean-square microdeformations  $\langle \epsilon^2 \rangle$ . It was found that, in the course of cold rolling samples of pure nickel and the Ni-Co alloy, a decrease occurs in the internal stresses for 6-65 and 75-80% deformations which leads to an "anomalous" change in the magnitudes of  $H_{100}$  (microhardness),  $\langle \epsilon^2 \rangle$  and  $\bar{l}$  (average cell size). The observed process is a consequence of dislocation redistribution during plastic deformation leading to growth of the average cell size. The formation of stretched configurations is apparently the result of

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VISHNYAKOV, YA. D., et al., Fizika i Khimiya Obrabotki Materialov, No 4,  
Jul-aug 73, pp 93-97

the union of several equiaxial cells in directions  $\langle 100 \rangle$ ,  $\langle 110 \rangle$  and  $\langle 111 \rangle$ .  
The change in stacking fault energy from 250 erg/cm<sup>2</sup> for nickel down to  
160 erg/cm<sup>2</sup> for the Ni-20% Co alloy did not have any substantial effect  
on the external characteristics of the process of internal stress diminution.  
Two figures, five bibliographic references,

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- 1 -

1/2 013 UNCLASSIFIED PROCESSING DATE--02OCT70  
TITLE--CHEMICALS DROPPED INTO CLOUDS -U-  
AUTHOR--VLADIMIROV, V. ✓  
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ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. IN EXPERIMENTS CONDUCTED IN THE Leningrad Oblast by the Leningrad Scientific Research Institute of Forest Economy one charge of 100-120 GS of copper sulfide of 7-14 GS of lead iodide dropped from an airplane was sufficient to precipitate a 10 cubic kilometer rain cloud 10 minutes after the drop. The affected area measures 10 to 300 square kilometers. It has been found that a high rate of precipitation can be created in 2500 to 6000 ms thick clouds. When the temperature of the supercooled zone is seven degrees below zero centigrade the charge never fails to trigger rain.

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VLADIMIROV, V.

*Classified*

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Source: APN, Vol. XIV

1-3 (4/15)

1973

MAPS OF THE COASTAL ZONE

V. Vladimirov

When you see these pictures for the first time, they look like a landscape of a strange planet: cones of dead volcanic rock oval-shaped craters, piled-up rocks of vast variety. However, Vladimir Sharovarov, laboratory head at the Novosibirsk Research Institute of Applied Geodesy, explains that these are closed pictures of the ocean floor taken from the Russian ship Sergei Yavlov. Sharovarov indicates a trench dug by some inhabitants of the ocean depths, hardened lava and other features.

The stereoscopic pictures have been shot from three kilometers below the surface in rich darkness by an automatic camera and a flash lamp controlled from the ship. Now experts have to decide them in order to compile maps and contours of the ocean floor.

The more man exploits the ocean, the more facts and details he needs to know about it. Already today settlements and drilling built off the coast, and in the Caspian Sea tank networks or pipelines have been laid on the sea bed in some places. In two or three years the north seas, shalyers will be developed, and geologists of Lyman today have to explore the sea bed for oil and gas. The pictures I have seen also showed tracks that turned out to be iron and manganese concretions with 10 percent pure metal content. Exploration of these deposits will require no ore dressing mills and access roads. But one has to know whether ore formation processes have ended or still go on.

In a word, the demand for large-scale maps is growing, which is why the Novosibirsk Institute is developing methods of underwater large-scale stereophotogrammetric survey and census of underwater stereophotography.

To check out a new technique for processing photo images from an unusual experiment was staged in the Black Sea. A big metal frame painted in different colors was submerged to great depths and pictures were taken of it. It turned out that the new technique made it possible to determine the size of various parts of the frame with an accuracy of up to a few millimeters.

Some problems of processing information were altogether new and the Novosibirsk researchers successfully coped with them. Photo information is fed into a computer which of itself produces results in graphic form taking into account a whole range of factors which affect the index of light refraction in water and change the overall picture: saltness of water, its



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AUTHORS-- VLADIMIROV, V., ENGINEER, AND ZHURAVLEV, V.  
CORRESPONDENT *419 0533*

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TITLE-- THE MAGIC LASER BEAM

NEWSPAPER-- SOTSIALISTICHESKAYA INDUSTRIYA, JANUARY 18, 1970, P 4

ABSTRACT-- THE ARTICLE REVIEWS IN VERY POPULAR TERMS THE STATE OF THE LASER ART IN THE SOVIET UNION. IN THE SEARCH OF THE INFORMATION, THE AUTHOR VISITED ONE OF THE RESEARCH INSTITUTES OF THE MINISTRY OF ELECTRONIC INDUSTRY, U.S.S.R., WHOSE RESPONSIBILITY IS TO DEVELOP NEW LASER SYSTEMS. A PHOTOGRAPH IS ALSO GIVEN WHICH SHOWS CANDIDATE OF PHYSICAL-MATHEMATICAL SCIENCES YE. P. MARKIN OPERATING A GAS LASER AT THE LABORATORY OF QUANTUM RADIOPHYSICS OF THE PHYSICAL INSTITUTE IMENI LEBEDEV. IT IS CLAIMED THAT THIS LASER CAN BE USED TO DEVELOP AN AUTOMATIC PILOT.

EXPERIMENTS IN USING LASERS AS DRILLING TOOLS ARE CONDUCTED AT A PLANT OF ABRASIVES AND DIAMOND TOOLS IN ROSLAVL. A LASER TOOL, "KVANT-9", HAS RECENTLY BEEN INSTALLED AT THE PLANT.

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LASER TELEPHONE LINES ARE OPERATING TODAY BETWEEN THE MOSCOW STATE UNIVERSITY AND THE CENTRAL TELEPHONE EXCHANG, MOSCOW AND KRASNOGORSK, AND YEREVAN AND BYURAKAN.

THE LABORATORY OF ACADEMICIAN N. G. BASOV HAS DEVELOPED SEMICONDUCTOR LASERS USED IN COMPUTER LOGICAL ELEMENTS.

THE LENINGRAD OPTICAL-MECHANICAL CORPORATION, "LOME", HAS PUT INTO SERIAL PRODUCTION LASER SYSTEMS TO BE USED BY CHEMISTS, PHYSICISTS, DOCTORS AND BIOLOGISTS.

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UDC 615.849.2.015.25.038

VLADIMIROV, V. G., DZHARAK'YAN, T. K., BERLIN, L. B., GOLUBENTSEV, D. A.,  
and SMIRNOV, A. D., Military Medical Academy imeni S. M. Kirov, Leningrad

"Some Criteria for Evaluating the Effectiveness of Radioprotective Agents  
in Man"

Moscow, Meditsinskaya Radiologiya, Vol 16, No 9, Sep 71, pp 54-60

Abstract: Since cystamine hydrochloride effectively protects mice from radiation sickness, the dose given per unit of body surface was extrapolated to the average size of man, and a dose of 3 g was calculated (taken internally) as the probable, optimum protective dose for man. Tolerable doses of cystamine (0.8-1.2 gm) given to patients with pulmonary or pelvic tumors prior to single local treatments with x-rays and gamma-rays reduced the number of chromosome aberrations in myeloid cells and lymphocytes in the peripheral blood by 40%. Evidence indicates that a prophylactic intake of the tolerable dose of cystamine hydrochloride will significantly protect men in cases of accidental exposure to ionizing radiation.

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VLADIMIROV, V. I., KHANNANOV, SH. KH.

UDC 539.375

"Effect of the Interaction of the Edges of a Crack on Its Nucleation Conditions"

Tr. Leningr. politekhn. in-ta (Works of Leningrad Polytechnical Institute),  
1971, No. 322, pp 12-17 (from RZh-Mekhanika, No 3, Mar 72, Abstract No 3V780)

Translation: Conditions for the nucleation of a dislocation crack in the head of a hindered dislocation pile-up was previously considered by the authors, taking into account the mobility and discreteness of the dislocations but not considering the interaction of the edges of the crack. The effect of attraction of the edges of the crack on its configuration in the Leonov-Panasyuk model is taken into account. This interaction may be considerable considering an incipient microcrack with dimensions comparable to the radius of action of the forces of interaction of the edges. According to this model the forces of interaction between the edges of the crack have a constant density  $\sigma_0$  (the limit of the theoretical density of the material) independent of the distance between the edges in a range less than the radius of action of these forces  $v_0(\sigma_0 v_0 = 2\gamma$ ,  $\gamma$  is the specific surface energy). Also studied in the paper is the effect of this attraction of the edges on the nature of the interaction of the crack with

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VLADIMIROV, V. I., KHANNANOV, SH. KH., Tr. Leningr. politekhn. in-ta, 1971, No. 322, pp 12-17

dislocations of a pile-up. To determine the two unknown constants entering into the solution (the length of the crack and the length of the region of interaction of the edges) the condition of finite stresses at the end of the crack and its constant opening is used. The results obtained are used to study the incipient crack, when the number of dislocations in the crack is equal to 2 for various radii of the action of the binding forces of the edges of the crack. In addition to this the interaction of a single breakdown dislocation with a crack is studied to investigate conditions for the generation of cracks. It is concluded by the authors that calculations of small cracks with a length of the order of the radius of action of atomic forces can be fairly accurately carried out in the approximation  $\nu_0 \rightarrow 0$ . 7 ref. V. Z. Parton.

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USSR

UDC 621.771.001

VLADIMIROV, V. I., SADOVNIKOV, B. V., and SMIRNOV, V. S., Leningrad

"Investigation of Aluminum Failure in Cross Rolling by the Method of Density Measuring"

Moscow, Fizika i Khimiya Obrabotki Materialov, No 1: Jan-Feb 72, pp 76-82

Abstract: The density change in cross rolling of specimens of aluminum (brand A99, All-Union State Standard 11069-64) was experimentally investigated. The results are discussed by reference to diagrams showing the density changes in cross rolling of specimens annealed at 500 and 600°C, annealed in air, and cross-rolled annealed in air. In deformations up to 2-2.2%, a density increase during rolling up to a maximum takes place. In deformations higher than 3.5-4%, a density decrease results. In a density decrease up to  $10^{-3}$  g/cm<sup>3</sup>, a healing of defects takes place. In a density change of  $\Delta \rho \approx (1-2) \cdot 10^{-3}$  g/cm<sup>3</sup>, healing can originate at the expense of plastic deformation by the action of internal residual stresses. With  $\Delta \rho = (2.5-10) \cdot 10^{-3}$  g/cm<sup>3</sup>, stable pores develop in the center of the specimen. At  $\Delta \rho > 10^{-2}$  g/cm<sup>3</sup>, the developed pore, after ceasing of active deformation, grows under the action of residual stresses in direct proportion to the initial  $\Delta \rho$  and can intergrow up to the outer surface of the specimen. In combination with any

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