

USSR

UDC: 621.317.77

GORSHKOV, A. I., VOYNO, L. V., GLEZER, Ya. V., MARLATOV, V. D.

"A Controllable Phase Shifter"

Moscow, Otkrytiya, izobreneniya, promyshlennyye obraztsy, tovarnyye znaki, No 12, Apr 71, Author's Certificate No 299947, Division H, filed 12 Jun 69, published 26 Mar 71, p 207

Translation: This Author's Certificate introduces a controllable phase shifter with integrating link. As a distinguishing feature of the patent, the phase shift is made independent of the change in frequency of the signal being regulated by connecting a phase switch at the output of the phase shifter, and connecting two limiters to the output of the integrating link through an amplifier with automatic gain control. These limiters are also connected to voltage sources of equal value and opposite sign. Connected to the outputs of the limiters through differentiating circuits and diodes are the opening and closing inputs of a flip-flop and an integrating link and limiter connected in series with the flip-flop.

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USSR

UDC 532.529.6

VOYNOV, O. V., PETROV, A. G., Moscow

"Motion of a Sphere of Variable Volume in an Ideal Fluid Near a Flat Surface"

Mekhanika Zhidkosti i Gaza, No 5, 1971, pp 94-103.

Abstract: The problem is studied of the motion of a spherical cavity in a liquid. The radius of the sphere changes under the influence of constant pressure at infinity. The problem of the collapsing of a bubble moving in an unlimited fluid and the collapsing of a bubble near a plane are solved in the precise statement. The presence of initial forward velocity or proximity of a solid surface in contrast to collapsing of a sphere at rest in an unlimited fluid lead to the appearance of a limiting radius, at which the bursting process stops. A sphere initially at rest near a plane always contacts the plane as a result of collapsing. With various initial distances from the plane, the radius and velocity with which the sphere reaches the plane are calculated. A possible mechanism of action of a cavitation bubble on a solid surface is discussed.

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USSR

UDC: 669.14.018.8.004.12

GAVRILENKO, Yu. V., CHERNYAKOV, V. A., VOYNOV, S. G., Central Scientific Research  
Institute of Ferrous Metallurgy

"Nonmetallic Inclusions in Chromium Stainless Steel"

Moscow, Izvestiya Vysshikh Uchobnykh Zavedeniy, Chernaya Metallurgiya, No 12,  
1973, pp 53-55.

Abstract: Nonmetallic inclusions in chromium stainless steel were studied by various methods in steels produced by ordinary steel making processes and in steels treated in the ladle with liquid synthetic slag. The studies showed the effectiveness of this technology for the production of metals with low content of sulfur, oxygen and nonmetallic inclusions. The inclusions were studied by metallographic testing, electrolytic dissolution and micro-spectral analysis. It was shown that the nonmetallic inclusions in the experimental metal include large quantities of alumina, some manganese oxide and ferrous oxide, creating good conditions for assimilation and removal from the metal. The mean and maximum percentages of oxides and globules, as well as the contents of oxygen and nonmetallic inclusions were lower in the metal treated by the synthetic slag, sharply reducing the danger of hairline cracking.

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USSR

UDC 612.886+612.58

BOKHOV, B. B. and VOYNOVA, I. I., Institute for Medical and Biological Problems, Moscow

"The Effect of Surface Hypothermia on Inhibitory Processes in the Vestibular Analyser"

Leningrad, Fiziologicheskiy Zhurnal SSSR, Vol 56, No 4, 1970, pp 570-574

Abstract: To induce oculo-gyric vestibular nystagmus (VN) the authors fixed rats to a rotating table. After a few rotations, the intensity and duration of VN was determined. With subsequent rotations a degree of tolerance was developed, with reduction in VN reaction. Testing these animals one day later showed some degree of retention of the acquired tolerance. However, cooling these animals to 30°C caused a complete loss of the previously acquired tolerance. Likewise, the animals who had acquired tolerance while in a state of hypothermia lost most of it upon returning to normal temperatures. It had been demonstrated by some workers that a disturbance in the vestibular apparatus can lead to a reduction of bodily temperature. It was concluded that all sudden disturbances, in either direction, impair the stabilizing functions of the vestibular apparatus.

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1/2 030 UNCLASSIFIED PROCESSING DATE--20NOV70  
TITLE--SURFACE HYPOTHERMIA EFFECT ON INHIBITION PROCESSES IN THE  
VESTIBULAR CENTER -U-  
AUTHOR--(02)-BCKHOV, B.B., VOYNOVA, I.I.  
COUNTRY OF INFO--USSR  
SOURCE--FIZIOLOGICHESKIY ZHURNAL SSSR IMENI I. M. SECHENOVA, 1970, VOL 56,  
NR 4, PP 570-574  
DATE PUBLISHED-----70  
SUBJECT AREAS--BIOLOGICAL AND MEDICAL SCIENCES  
TOPIC TAGS--HYPOTHERMIA, RAT, VESTIBULAR APPARATUS, INHIBITION  
CONTROL MARKING--NO RESTRICTIONS  
DOCUMENT CLASS--UNCLASSIFIED  
PROXY REEL/FRAME--3005/0391 STEP NO--UR/0239/70/056/004/0570/0574  
CIRC ACCESSION NO--AP0132620  
UNCLASSIFIED

2/2 030

CIRC ACCESSION NO--AP0132620

UNCLASSIFIED

PROCESSING DATE--20NOV70

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. SURFACE HYPOTHERMIA IN RATS WAS SHOWN TO AFFECT THE PROCESSES OF EXTINCTION INHIBITION IN THE VESTIBULAR CENTER LIKE AN EXTRA STIMULUS OR PHENAMINE. IN RATS WITH 30DEGREESC BODY TEMPERATURE, EXTINCTION OF THE NYSTAGMUS REFLEX SLOWED DOWN DURING REPEATED ROTATION. TRANSITION FROM THE NORMAL BODY TEMPERATURE TO THE SURFACE HYPOTHERMIA WAS FOLLOWED BY COMPLETE DESINHIBITION OF PREVIOUSLY EXTINGUISHED NYSTAGMUS. THE OBSERVED EFFECTS ARE REGARDED AS A RESULT OF INCREASING FUNCTIONAL ACTIVITY OF THE BRAIN STEM RETICULAR FORMATION DURING THE HYPOTHERMIA. FACILITY: INSTITUTE FOR MEDICAL BIOLOGICAL PROBLEMS, MOSCOW.

UNCLASSIFIED

USSR

UDC 632.95

SAMOSVAT, L. S., VOYNOVA, I. V.

"Colorimetric Method of Analyzing Amibene in Air, Water and Soil"

Tr. 2-go Vses. soveshch. po issled. ostatkov pestitsidov i profilakt. zagryazneniya imi produktov pitaniya, kormov i vnesh. sredy (Works of the Second All-Union Conference on the Investigation of Pesticide Residues and Preventive Contamination of Food Products, Fodder and Environment), Tallin, 1971, pp 116-119 (from RZh-Khimiya, No 12, Jun 72, Abstract No 12N505)

Translation: When analyzing air, the sample is sorted with an aerosol filter, the amibene (I) is extracted with acetone, it is diazotized with  $\text{NaNO}_2$  in an acid medium, and the salt obtained is combined with 1-napthol in an alkaline medium and colorimetrically analyzed on the FEK-56. When analyzing the water and soil, the sample is acidified, the I is extracted with ether and it is then treated as described above.

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USSR

UDC:669.187.5

ZAYTSEV, B. Ye., GOTIN, V. N., SHCHERBAKOV, A. I., SERGYEV, A. B., ZHITKOV, N. K., OKOROKOV, G. N., BOYARSHINOV, V. A., TULIN, N. A., VOYNOVSKIY, Ye. V., TOPILIN, V. V., POZDEYEV, N. P., SHALIMOV, A. G., OSIPOVA, L. A., CHERNOV, Yu. V., and RAZANOV, T. S.

"Specifics of Vacuum Arc Remelting of Nickel-Based Alloys and Stainless Steels With Reverse Arc Polarity"

Proizvodstvo Chernykh Metallov [Production of Ferrous Metals--Collection of Works], No 75, Metallurgiya Press, 1970, pp 181-183

Translation: Results are presented from a study of vacuum arc remelting of nickel alloys in a crystallizer 380-480 mm in diameter with thermocouples calked in length and height. The rate of melting with reverse polarity is 20% higher with identical bath depth of liquid metal. This is a result of more intensive heat transfer from the walls of the crystallizer during melting with reverse polarity. The macrostructure, chemical composition N, O, H and mechanical properties of the metal produced by melting with forward and reverse polarity are identical. The ingot produced with reverse polarity had no corona. 2 figures; 1 table; 1 biblio. ref.

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172 013 UNCLASSIFIED PROCESSING DATE--20NOV70  
TITLE--CN CORRELATION OF CLOUDINESS WITH TEMPERATURE AND HUMIDITY -U-  
AUTHOR--(03)-VOYOVA, K.V., KOLESNIKOVA, V.N., MONIN, A.S.  
COUNTRY OF INFO--USSR  
SOURCE--METEOROLOGIYA I GIDROLOGIYA, 1970, NR 5, PP 53-58  
DATE PUBLISHED-----70  
SUBJECT AREAS--ATMOSPHERIC SCIENCES  
TOPIC TAGS--CLIMATE, ATMOSPHERIC TEMPERATURE, ATMOSPHERIC HUMIDITY,  
ATMOSPHERIC CLOUD  
CENTRAL MARKING--NO RESTRICTIONS  
DOCUMENT CLASS--UNCLASSIFIED  
PROXY REEL/FRAE--3005/0090 STEP NO--UR/0050/70/000/005/0053/0058  
CIRC ACCESSION NO--AP0132383  
UNCLASSIFIED

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CIRC ACCESSION NO--AP0132383

UNCLASSIFIED

PROCESSING DATE--20NOV70

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. IMPORTANCE OF STUDYING CLIMATE  
CORRELATIONS IS EXPLAINED. INFORMATION ON CORRELATION OF CLOUDINESS  
WITH TEMPERATURE AND HUMIDITY FOR DIFFERENT CLIMATIC REGIONS OF THE  
SOVIET UNION IS GIVEN. THE CONCLUSION IS MADE ON THE NECESSITY OF  
ACCOUNTING SUCH CORRELATIONS WHEN COMPUTING NON LINEAR CLIMATE  
CHARACTERISTICS.

FACILITY: INSTITUT OKEANOLOGII AN SSSR.

UNCLASSIFIED

USSR

UDC 666.22:666.263:535.361.2

VOYSHVILLO, N. A., Candidate of Sciences

"New Glass for Diffusion of Directed Transmitted Radiation"

Leningrad, Optiko-mekhanicheskaya promyshlennost', No. 5, May 71, pp 40-43

Abstract: The basic photometric and spectral photometric characteristics of MS19 diffusing glass are described. The glass is recommended for use in situations when it is desirable to obtain a high coefficient of diffuse transmission of the scattering glass and the requirements on diffusivity of the transmitted radiation are not high. MS19 glass has been developed for application in solving all problems in which glasses MS12 and MS13 were previously used. It is distinguished by a lower diffusing ability, which leads to a relatively high transmission, but hence also to a smaller diffusivity of the light passing through the glass. A table is given showing the following characteristics of samples of MS19 glass 2-8 mm thick: the integral coefficient of diffusive transmission in the visible region, the presence or absence of directly transmitted light, and the deviation from neutrality of the coefficient of diffusive transmission. Figures are given for samples polished on both sides and frosted on both sides.

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VOYSHVILLO, N. A., Optiko-mekhanicheskaya promyshlennost', No. 5, May 71,  
pp 40-43

A graph of the coefficient of brightness of light with a wavelength of 546 nm plotted against the angle of observation shows that the brightness of the transmitted scattered light drops quite rapidly with an increase in the angle of observation, and that with a decrease in the thickness of the sample there is a spreading of the scattering index in the direction of the beam. There is a rise in the diffusivity of the transmitted radiation as a result of frosting of the surfaces. As regards the effect of the wavelengths of the incident light on the shape of the scattering index, measurements showed that the curves for the scattering of blue radiation are wider than the curves for the scattering of red light for MS19 glass in the visible range.

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USSR

UDC 669.71.046.44

LAGUNOV, YU. V., GLADKIKH, V. A., PETRUNOV, V. S., RUDEIKO, V. K., VOYTANIK, S. T., KLIMKOVICH, N. S., PORADA, A. N., and CHERNYSH, F. I.

"Investigation of the Kaolin Sintering Process"

Metallurgiya i koksokhimiya. Mezhd. resp. nauchno-tekhn. sb. (Metallurgy and Coke Chemistry -- Interdepartmental Republic - Collection of Scientific and Technical Works), 1970, vyp. 21, pp 47-55 (from RZh-Metallurgiya, No 3, Mar 71, Abstract No 3 G143 by authors)

Translation: The authors work out the parameters of the sintering process for kaolins of the Glukhovetskoye, Prosyanyaya, and Novoseletskoye deposits in a laboratory sintering cup of square section with a sintering area of  $0.1 \text{ m}^2$  and with an exhaustor having an efficiency of  $0.5 \text{ m}^3/\text{sec}$ . Fe concentrate was used as an additive to lower the melting point of the sintering charge. The hygroscopic moisture content of both primary and secondary kaolins intended for sintering should range from 13 to 18%. The sintering of both primary and secondary kaolins is shown to be possible in principle. 5 tables.

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USSR

UDC 632.954:631.411

VOYTEKHOVA, V. A., Scientific Institute of Fertilizers and Insectofungicides  
Izheniya. V. Samoylov

"The Effect of the Soil Adsorptive Complex on the Phytotoxicity of Herbicides"

Moscow, Khimiya v Sel'skom Khozyaystve, Vol 9, No 5, 1971, pp 39-43

Abstract: The phytotoxicity of herbicides with soil or root activity (derivatives of sym-triazine, urea, and phenylcarbamic acid) depends on the type of soil. Experiments in which oats were grown on various types of USSR soil showed that the toxicity ED<sub>50</sub> of atrazine and symazine introduced into the soil, as indicated by the amount of herbicide that caused a 50% decrease in the weight of the plants, varied with the extent to which the herbicide was adsorbed in the soil. The degree of adsorption depended on the content of organic matter in the soil. In plant-growing experiments with sym-triazine derivatives and phenuron, monuron, neburon, and diuron contained in mixtures of chernozem with sand in different ratios, the amount of herbicide not adsorbed by the soil decreased with decreasing amounts of the adsorbing complex (chernozem). The quantity of water retained in the soil per unit weight of organic matter increased with decreasing amounts of chernozem. The amount of unadsorbed herbicide that acted on the plants increased  
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USSR

VOYTEKHOVA, V. A., Khimiya v Sel'skom Khozyaystve, Vol 9, No 5, 1971, pp 39-43

linearly with the amount of  $H_2O$  in the soil per gram of organic matter. At very low amounts of chernozem in the mixtures, the relation changed to a curvilinear (presumably logarithmic) from the linear. Nomographs can be plotted for the amount of available herbicide (the amount exerting herbicidal action) as a function of the amount of water retained in the soil per gram of organic substance. These nomographs can then be used for determining the effective quantity of herbicide to be applied under consideration of the specific properties of the particular type of soil in regard to adsorption.

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USSR

UDC 632.954:631.411

~~VOYTEKHOVA, V. A.~~ Scientific Institute of Fertilizers and Insectofungicides  
Imeni Ya. V. Samoylov

"The Effect of the Soil Adsorptive Complex on the Phytotoxicity of Herbicides"

Moscow, Khimiya v Sel'skom Khozyaystve, Vol 9, No 5, 1971, pp 39-43

Abstract: The phytotoxicity of herbicides with soil or root activity (derivatives of sym-triazine, urea, and phenylcarbamic acid) depends on the type of soil. Experiments in which oats were grown on various types of USSR soil showed that the toxicity ED<sub>50</sub> of atrazine and symazine introduced into the soil, as indicated by the amount of herbicide that caused a 50% decrease in the weight of the plants, varied with the extent to which the herbicide was adsorbed in the soil. The degree of adsorption depended on the content of organic matter in the soil. In plant-growing experiments with sym-triazine derivatives and phenuron, monuron, neburon, and diuron contained in mixtures of chernozem with sand in different ratios, the amount of herbicide not adsorbed by the soil decreased with decreasing amounts of the adsorbing complex (chernozem). The quantity of water retained in the soil per unit weight of organic matter increased with decreasing amounts of chernozem. The amount of unadsorbed herbicide that acted on the plants increased  
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USSR

UDC 632.951+612.018

LEBEDEVA, K. V., and YUDOVSKAYA, T. K., All-Union Scientific Research  
Institute of Chemical Means for Plant Protection

"The Search for Insecticides With Juvenile Hormone Activity"

Moscow, Khimiya v Sel'skom Khozyaystve, Vol 9, No 5, 1971, pp 31-33

Abstract: Information given in the non-USSR literature on the constitution,  
mode of action, and synthesis of compounds with juvenile hormone activity  
is reviewed from the standpoint of prospects of application of these com-  
pounds in the control of insect pests (62 references)

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USSR

UDC 539.53

NOVIKOV, N. V., VOYTENKO, A. F., Kiev.

"Anisotropy of Elastic Properties of Titanium and Its Alloys During Cooling from 20 to  $-196^{\circ}\text{C}$ ."

Kiev, Problemy Prochnosti, No. 4, Apr 71, p. 47-48.

Abstract: Results are presented from a study of the anisotropy of elastic properties of titanium and certain titanium-based alloys, subjected to direct (VT1, AT2-2, OT4) and cross (APZ) rolling. The investigations performed indicated that the minimal Young-Modulus of VT1 titanium is in the direction of rolling, and Modulus E increases according to a nonlinear dependence by 12% as the cutting angle of the specimen increases from 0 to  $90^{\circ}$ . As the temperature decreases from 20 to  $-196^{\circ}\text{C}$ , the Young Modulus of VT1 titanium increases by 15%. As the degree of alloying of titanium with  $\beta$ -stabilizing elements increases, the anisotropy of the elastic properties and the temperature coefficient of the Modulus of elasticity ( $dM/dT$ ) decrease. In alloy ATZ, rolled in the cross direction, the anisotropy of elastic properties is practically 0 for the directions studied in the sheet.

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USSR

UDC:539.5

NOVIKOV, N. V., VOYTENKO, A. E., VOYNITSKIY, A. G., OVSEPYAN, Ye. S,  
NEKRASOVA, Z. P., Kiev, Moscow

"Influence of Technological Factors on Mechanical Properties of Molybdenum Alloys at Low Temperatures"

Kiev, Problemy Prochnosti, No. 12, Dec 70, pp. 69-71

Abstract: The elasticity, plasticity and strength characteristics of cast molybdenum alloy (0.1% Zr, 0.15% Ti, less than 0.6% W) are presented in the temperature interval between -196 and +20°C. A change is noted in the intensity of growth of strength and plasticity of the alloy with decreasing temperature depending on its structural state. The determining influence of peening on the mechanical properties of this alloy at low temperatures is demonstrated.

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USSR

UDC 539.4

KOZUB, Yu. I., VOYTENKO, A. F., Kiev

"Influence of Thermal Diffusion Coatings on the Physical and Mechanical Properties of Refractory Metals"

Kiev, Problemy Prochnosti, No 11, Nov 1972, pp 62-64.

Abstract: There is great practical interest in the study of the influence of coatings of various types on the physical and mechanical properties of a protected metal base at room temperature. With this in mind, the static strength, ductility and elasticity modulus of molybdenum was studied with thermal diffusion coatings based on silicon and boron, thickness 30-100  $\mu$ , cross section of coatings 3-5% of total cross section of specimen. Heat treatment of the material caused a slight increase in elasticity modulus (averaging 1%), apparently a result of a decrease in dislocation density. Application of coatings causes some change in elasticity modulus, the boron coating increasing and the silicide coating decreasing the modulus. The application of protective coatings was thus found to have a significant influence on the behavior of the material at room temperature and low temperatures.

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UDC 613.68:613.31

USSR

VOYTEENKO, A. M., Candidate of Medical Sciences, Basin Sanitary and Epidemiological Station of the Black Sea-Azov Sea Watershed, Odessa

"Quality of Drinking Water on Ships as a Function of Sailing Conditions"

Moscow, Gigiyena Sanitariya, No 10, 1972, pp 94-95

Abstract: A study was performed on six ships of the Black Sea Steamship Line under sail to establish the water composition and possible variation of its quality under dynamic conditions. The anticorrosive KhS-76 lacquer and also some foreign patented lacquers were tested and found to have high mechanical strength with no effect on water quality. The duration of the trips, the climatic conditions and the conditions under which the water is stored on board the ship have direct bearing on the water quality. A set of preventive measures and recommendations were developed which has been introduced on the ships of the Black Sea Steamship Line. These include a variety of inspections, decontamination measures and a procedure for stabilizing cement coatings by adding carbonic acid to the water. The tested measures resulted not only in the improvement of water quality on the ships but also a reduction in gastrointestinal diseases among the sailors.

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USSR

BABENKO, Z. I., VOYTENKO, A. N., LINNIK, L. I., PERMYAKOVA, N. M.,  
SERGEYEV, YE. V., Ukrainian Scientific Research Institute of Plant  
Protection, Kiev, Ukrainian Academy of Agricultural Sciences

"Study of the Acaricidal Properties of 1,1-Diphenyl-2,2,2-trichloro-  
ethanol"

Moscow, Khimiya v Sel'skom Khozyaystve, Vol 8, No 6, Jun 70, pp  
42-43

Abstract: The compound 1,1-diphenyl-2,2,2-trichloroethanol (I) is  
an analogue of a known acaricide, kel'tan, a long lasting contact  
agent. The effect of (I) on the mites Tetranychus urticae and  
Tetranychus viennensis Zacher was studied under laboratory and  
field conditions, respectively. In laboratory experiments (I) was  
slightly less effective than kel'tan. The opposite held true for  
the field tests: 90% of the mites had died by the second day when  
treated with (I), but only 48% died in three days when treated with  
kel'tan. After 15 days of treatment the activity of both compounds  
equilibrated with the number of surviving mites remaining around  
10%. Phytotoxic properties of both compounds were about the same.  
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USSR

UDC 538.4

BICHENKOV, Ye. I., VOYTENKO, A. Ye., LOBANOV, V. A., LYUBIMOVA, M. A.

"Experimental Studies of Rapid Compression of Magnetic Flux in Cumulative Magnetic Systems"

7-ye Soveshch. po Magnit. Gidrodinamike. T. 1 [Seventh Conference on Magnetic Hydrodynamics, Vol 1], Riga, Zinatnye Press, 1972, pp 214-216, (Translated from Referativnyy Zhurnal, Mekhanika, No 11, 1972, Abstract No 11 B16 by I. M. Rutkevich).

Translation: A description is presented of an experimental explosive magnetic installation, producing magnetic field intensities in an inductive load of around 2.6 Moe in a time of less than 100 usec. The working volume, from which the magnetic field is extracted into the load, is the space between eccentrically placed copper cylindrical rings. The interior of the smaller of the cylinders is filled with an explosive charge. An oscillogram of current and its derivative with respect to time is presented for one experiment.

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USSR

UDC 533.9.07

VOYTENKO, A. Ye., LYUBIMOVA, M. A., and MATOCHKIN, Ye. P., Institute of Nuclear Physics, Siberian Branch of Acad. Sc. USSR

"Explosion Shock Tube"

Moscow, Teplofizika Vysokikh Temperatur, Vol 10, No 6, Nov-Dec, pp 1280-1284

Abstract: Experiments were carried out on a model of explosion shock tube. A stream of dense air plasma with a velocity of 25-10 km/sec was obtained by means of an explosive gas compressor. Photographing of the model was carried out under conditions when the stream behind the front of the shock wave became nontransparent. The experiments were carried out in a laboratory explosion chamber.

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USSR

UDC 533.9

VISHNEVETSKIY, V.N., VOYTENKO, D. A., VOLKOV, YE. D., DIKIY, A. G., ZALKIND, V. M., KONOTON, P. I., MOISEYEV, S. S., PAVLICHENKO, O. S., PASHNEV, V. K., SUPRUNENKO, V. A., TOLOK, V. T., TERESHCHENKO, F. F., TONKOPRYAD, V. M., and TARASENKO, V. P., Physico-Technical Institute of Academy of Sciences Ukrainian SSR, Kharkov

"Energy Losses of Plasma in a 'Uragan' Stellarator With Large Shear"

Kiev, Ukrainskiy Fizicheskiy Zhurnal, Vol 16, No 8, Aug 71, pp 1320-1323

Abstract: Investigations of the rate of energy losses in plasma have shown that the holding time of particles significantly exceeds the energy life time when the plasma is of collision type. This article discusses the results of investigations on the rate of energy losses of collision-type plasma for the "Uragan" stellarator. The authors study the dependence of energy life time of the plasma on the amount of shear and the angle of conversion. They make extensive use of graphs to illustrate their findings and find that the experimental points lie on a straight line. The authors conclude that the results may be explained on the basis that a temperature-drift instability develops in the plasma. The article contains 5 figures and 8 bibliographic entries.

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USSR

UDC 615.28.099

VOYTENKO, G. A., and PODLINYAYEVA, M. YE., Kiev Institute of Sanitary Works and Medical Society

"Toxicity and Anticholinesterase Action of Some Pesticides - Derivatives of N-Methyl and N-Phenylcarbamic Acid"

Moscow, Farmakologiya i Toksikologiya, Vol 35, No 3, May/June 72, pp 356-360

Abstract: Tests were carried out using animals and in vitro, Animal tests were made with aqueous emulsions of mezurol, sevin and unden in polyethylene glycol. Solutions of carbin were prepared from 11.0% emulsions in a light oil and emulsifier. In vitro tests show that the derivatives of N-methyl and N-phenylcarbamic acid possess anticholinesterase activity.  $I_{50}$  for horse serum cholinesterase was as follows: mezurol  $5 \times 10^{-6} M$ , dicresyl  $7 \times 10^{-5} M$ , unden  $2.3 \times 10^{-4} M$  and carbin  $6 \times 10^{-4} M$ .  $DL_{50}$  for white mice was 33.6, 271, 100 and 322 mg/kg respectively. The Michaelis constant for the interaction of carbamates with acetylcholinesterase in rat brains was  $0.634 \times 10^{-7} M$  for sevin,  $0.407 \times 10^{-7} M$  for mezurol,  $0.845 \times 10^{-7} M$  for unden and dicresyl and  $2.91 \times 10^{-7} M$  for carbin. Depression of acetylcholinesterase activity is shown by unden, dicresyl, and particularly by mezurol and sevin, but essentially is not shown by carbin. Animal experiments show that sevin and

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USSR

VOYTENKO, G. A., and POBLINYAYEVA, M. YE., Farmakologiya i Toksikologiya,  
Vol 35, No 3 May/Jun 72, pp 356-360

mezurool depress the cholinesterase activity of the blood to a greater  
extent than in the brain.

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Acc. Nr: AP0052086 ✓

Ref. Code: UR0426

PRIMARY SOURCE: Zhurnal Nevropatologii i Psikhatrii imeni  
S. S. Korsakova, 1970, Vol 70, Nr 3,  
pp 376-382

CHANGES OF CORRELATIONAL FUNCTIONS IN DIFFERENT  
TYPES OF CHANGED BRAIN BIOELECTRICAL ACTIVITY

Ye. A. Zhirmunskaya, G. A. Vaitenko, G. P. Korunkhova

The paper deals with the study of distant synchronization of the cortical neuron activity, appearing as a result of morphological connections of some brain areas with the others. The amount of periodical and accidental components of the coefficient of cross correlations in 2 simultaneously registered oscillating processes was measured. These measurement were performed from identical leads of the hemispheres or from different points of one hemisphere. It was demonstrated that these indices change quite differently in different types of EEG disorders.

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CHEMICAL ABST.

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UR 0475

94514m Health of vineyard workers having contact with the fumigants hexachlorobutadiene and polychlorobutane-80. Krasnyuk, E. P.; Zaritskaya, L. A.; Boiko, V. G.; Voitenko, L. A.; Marokhnyuk, L. A. (Kiev. Nauch.-Issled. Inst. Hig. i Patribol., Kiev, USSR). *Vrach. Deln* 1969, (7), 111-15 (Russ). A study of working conditions and the effect of hexachlorobutadiene (I) and polychlorobutane-80 (II), two fumigants used for the control of aphids, on the health of vineyard workers was conducted. The fumigants are mainly applied in the spring-summer and autumn seasons. Investigations established that the concn. of the vapors of I in the air over the zone of its application varied from 0.009 on the 1st day to 0.1 mg./l. by the 5th day; that of II varied from 0.00015 on the 1st day to 0.0051 mg./l. on the 5th day, the concns. of both being considerably in excess of those of the allowable max. Along with the study of working conditions, medical exams. were made of 205 vineyard workers ( $\leq$  years of age) who have been working under conditions in which the fumigants were used. The exams. showed that both fumigants are highly toxic preps. and contribute to the development of such pathol. conditions as hypotension with arterial pressure down to 100/60 and lower; myocardial dystrophy; cardiac diseases of rheumatic, infectious, and sclerotic etiology; diseases of the respiratory organs in the form of diffused chronic bronchitis, and

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others; disturbances of the nervous functions as shown by increased fatigue, irritability, insomnia, headaches, dizziness, tremors; dyspeptic manifestations; hepatic disturbances in the form of chronic hepatitis and hepatocholecystitis, these liver afflictions being of particular interest because of their similarity to those induced by prolonged exposure to DDT, and considering the fact that exposure to the action of I and II is seasonal and of relatively brief duration. Hygienic measures for the prevention of intoxication by the fumigants are the strict observance of the suggested safety measures, and frequent medical examinations.

A. Roth

*Roth*

*3/2*

19520260

USSR

UDC 577.1:615.7/9

VOYTENKO, G. N.

"SH-Group and Erythrocyte Content of Whole Blood During Methemoglobinemia Caused by Aniline Poisoning"

Farmakol. i toksikologiya. Resp. mezhved. sb. (Pharmacology and Toxicology. Republic Interdisciplinary Collection), 1970, No 5, pp 178-182 (from Referativnyy Zhurnal-Biologicheskaya Khimiya, No 18, 25 Sep 70, Abstract No 18 F1893)

Translation: After introduction of aniline in an amount of 0.03 ml/kg into dogs, blood samples were taken after 30 min to 10 days. The increase in Mthb content was accompanied by a drop in the SH-group content and an increase in catalase activity. It is recommended to use preparations containing free SH-groups as reducing agents for Mthb during the action of aniline on the organism.

A. Ignat'ev

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RP0047331

Ref. Code: UR 0300

PRIMARY SOURCE: Ukrayn's'kiy Biokhimichniy Zhurnal, 1970,  
Vol 42, Nr 1, pp 81-85

ON PROBLEM CONCERNING PARTICIPATION OF SH-GROUPS  
IN THE PROCESSES OF METHEMOGLOBIN FORMATION

Yu. I. Loboda, G. N. Voutenko

Research Institute of Pharmacology and Toxicology, Kiev

Summary

The interrelation between methemoglobin formation in dog blood and changes in the SH-group content of erythrocytes and whole blood as well as the effect of thiol preparations on methemoglobin reduction with nitric and aniline methemoglobinemia were studied. The data obtained testify to the fact that methemoglobin formation with poisoning dogs by sodium nitrite or aniline is accomplished by decrease in the SH-group content of erythrocytes and whole blood. A single subcutaneous administration of cysteamine in combination with poisons in a dose of 0.5 g weakens to some extent the development of methemoglobinaemia but does not prevent from lesion of the enzymic systems containing SH-groups. These results may be a theoretical premise for searching new demethemoglobinemic remedies among compositions containing SH-groups.

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REEL/FRA  
ME 19790855

sh 2



USSR

UDC 633.511.631.527:632.484

VOYTENOK, F. V.

Selektsiya Khlopchatnika na Ustoychivost' k Viltu (Selecting Cotton for Wilt Resistance, Moscow, "Kolos," 1971, 135 pp)

Translation: Annotation: The book is devoted to questions of selecting cotton for resistance to Verticillium wilt. It presents detailed results of a study of species and varietal resistance of cotton and certain other plant species to Verticillium wilt. These materials can be used in choosing initial forms in selection for resistance to Verticillium wilt.

A great deal of attention is devoted to questions of the principles for choosing parental pairs, the nature of inheritance of the marker of wilt resistance in cotton with intraspecies hybridization, the role of the infectious medium, and methods of evaluating and selecting plants for wilt resistance.

The book gives basic information on the biology, ecology, and geographical distribution of the agent of Verticillium wilt in plants, the fungus *Verticillium dahliae*.

The reader will also find information here on basic methods and the most important achievements in the area of plant selection for disease resistance.

The book is intended for plant selection specialists working on creating varieties of cotton and other agricultural crops which are resistant to

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USSR

VOYTENOK, F. V., Seleksiya Khlopchatnika na Ustoychivost' k Viltu. Moscow, "Kolos," 1971, 135 pp

Verticillium wilt infection, and also other specialists working on the problem of plant immunity to various diseases.

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| Ecology of the Agent of the Disease   | 45 |
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USSR

VOYTENOK, F. V., Seleksiya Khlopchatnika na Ustoychivost' k Viltu, Moscow, "Kolos," 1971, 135 pp

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- END -

3/3  
CSO: 1840-N

- 112 -

Phytology

USSR

UDC 632.4:582.288.42:582.796

VOYTENOK, F. V.

"The Possibility of Forecasting Outbreaks of Verticillium Wilt of Cotton"

Leningrad, Mikologiya i Fitopatologiya, No 3, 1970, pp 259-261

Abstract: Study of weather data in the main cotton-growing regions of Uzbekistan showed that outbreaks of wilt were severe in those years in which the mean daily soil temperature rose to about +6°C in February. On the other hand, the disease was mild in those years in which stable mean daily soil temperatures were not encountered until the middle or end of March. Analysis of the winter-spring temperatures and the dynamics of development of the disease over a period of 16 years revealed a high correlation between the duration of the period with stable soil temperatures of 6 to 11°C (at a depth of 20 cm) from February to April and the degree of infestation of cotton. The correlation factor between the two indices was high ( $r=+0.89\pm 0.12$ ). The disease was mild when the duration of the period in the above-mentioned interval of soil temperatures was no longer than 25 days. Wilt appeared late and sometimes not at all in July. But in years when the period exceeded 30 days, outbreaks occurred at the end of the growing season. This relationship is so regular that long-range seasonal forecasts of the severity of the disease are possible.

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1/2 027

UNCLASSIFIED

PROCESSING DATE--02OCT70

TITLE--TREATMENT OF THE EXPERIMENTAL ACUTE RENAL INSUFFICIENCY BY THE  
HAEMODIALYSIS METHOD -U-  
AUTHOR--(02)-SHOTT, A.V., VOYTENOK, N.K.

COUNTRY OF INFO--USSR

SOURCE--ZDRAVOOKHRANENIYE BELORUSSII, 1970, NR 2, PP 6-9

DATE PUBLISHED-----70

SUBJECT AREAS--BIOLOGICAL AND MEDICAL SCIENCES

TOPIC TAGS--KIDNEY, DOG, THROMBOSIS, BLOOD CHEMISTRY, UREA, DIALYSIS,  
EMBOLISM

CONTROL MARKING--NO RESTRICTIONS

DOCUMENT CLASS--UNCLASSIFIED

PROXY REEL/FRAME--1988/1514

STEP NO--UR/0477/70/000/002/0006/0009

CIRC ACCESSION NO--APO106270

UNCLASSIFIED

2/2 027

CIRC ACCESSION NO--AP0106270  
ABSTRACT/EXTRACT--(U) GP-0-

UNCLASSIFIED

PROCESSING DATE--02OCT70

ABSTRACT. BEGINNING FROM 1967 THE AUTHORS GO ON CARRYING OUT EXPERIMENTAL STUDIES OF THE POSSIBILITIES OF HOMO, HETERO AND CADAVERIC KIDNEYS IN TREATING FOR THE EXPERIMENTAL ACUTE RENAL INSUFFICIENCY, ILO OPERATIONS WERE PERFORMED ON 40 DOGS. A MODEL OF THE DISEASE, THE METHODS OF SWITCHING ON THE DONOR'S KIDNEY TO THE RECIPIENT, PROPHYLAXIS FOR THROMBOSES, AIR EMBOLIA, CREATION OF THE OPTIMAL TEMPERATURE AND OSMOONCOTIC REGIME FOR THE DONOR'S KIDNEY AND SO ON WERE WORKED OUT. 36 DIALYSES WERE ACCOMPLISHED THROUGH A HJMKIDNEY, 3, THROUGH A HETEROKIDNEY AND 1, THROUGH A CADAVERIC ONE. A POSITIVE EFFECT WAS OBTAINED BY THE AUTHORS IN 17 EXPERIMENTS. THE GIVEN DIALYSIS, LED TO NORMALIZING THE ELECTROLYTIC BLOOD STRUCTURE AND TO REMOVAL OF THE UREA FROM THE DONOR'S ORGANISM. THE RESULTS OF INVESTIGATION ALLUDED TO THE POSSIBILITY TO USE THE ABOVE MENTIONED METHOD IN TREATING FOR ACUTE RENAL INSUFFICIENCY.

UNCLASSIFIED

USSR

UDC 616.931-02:616.9-036.2

BIRKOVSKIY, Yu. Ye., MELOVANOVA, L. P., SHEMANSKIY, O. V., KVITKO, Ye. G.,  
VOYTER, A. S., BAZILEVA, A. M., and MODOVSKAYA, F. Ya., Kiev

"Epidemiological Significance of Mild Atypical Forms of Diphtheria Under Present  
Conditions"

Kiev, Vrachebnoye Delo, No 8, Aug 70, pp 145-149

Abstract: The incidence of diphtheria in the USSR has declined sharply since the end of World War II, from 150 per 100,000 population in 1944 to only sporadic cases in 1966. However, this decrease in the diphtheria rate has not been matched by a corresponding decline in the number of carriers of diphtheria bacilli. Studies conducted in 1964 and 1965 in Kiev revealed that 2.5% of all healthy children examined, and about 15% of children in boarding schools and similar groups, were carriers. The disparity between the incidence of diphtheria and the number of carriers is thought to be due largely to a failure to diagnose mild, atypical forms of the disease. These forms are common in immunized children, in whom the characteristic symptoms include subfebrile temperature, mildly hyperemic throat, and slight enlargement of the lymph nodes. The number of cases of children with sore throat who also carry diphtheria bacilli is increasing from year to year. The carrier state and sore throat may be regarded as interrelated.

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USSR

UDC 621.125-529:629.123.56-181.2

VOYTETSKIY, V. V., GOL'DBERG, M. E., IGNAT'YEV, A. V., and SHRAYER, A. I.  
"Programmed Control of a Supertanker Steam-Turbine Plant Fitted With a  
Variable-Pitch Propeller"

Leningrad, Sudostroyeniye, No 11, Nov 72, pp 26-28

Abstract: On the basis of research conducted with regard to the steam-turbine unit of a tanker of the "Krym" type, a report is given on the particular features of the programmed control of a turbogear unit with a variable-pitch propeller in application to a supertanker, and recommendations are made concerning the structure of the automated remote control of the automated power unit. 3 figures.

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USSR

UDC 611.814.33:612.014.2]:617-001.28

VOYTKEVICH, A. A. and SOBOLEVA, E. L., Institute of Medical Radiology, Academy of Medical Sciences USSR, Obninsk

"Cytochemical Reactions of the Intermediate Lobe of the Pituitary in Acute Radiation Sickness"

Leningrad, Arkhiv Anatomii, Gistologii i Embriologii, No 1, 1973, pp 34-43

Abstract: Irradiation of Wistar and August rats (900 r, dose rate 55 r/sec) sharply intensified metabolic activity in the intermediate lobe of the animals' pituitary, producing in the period of acute radiation sickness cytochemical changes reflecting significant functional shifts. An initial increase in basophilia of the intermediate cells was accompanied by partial vacuolation and hypertrophy as well as by an increase in ribonucleoproteins and intensified activity of several oxidative enzymes, which decreased 24 hours after irradiation. At the height of radiation sickness, i.e., 72 hours after irradiation, the activity of the hydrolytic enzymes in the intermediate cells increased. In the terminal phase, i.e., 120 hours after irradiation (when many animals died), the ribonucleoprotein content in the cytoplasm of the hypertrophic cells was minimal and the activity of lactic and succinic dehydrogenases and coenzyme NADH<sub>2</sub> had disappeared. Thus, the terminal phase of radiation sickness

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USSR

VOYTKEVICH, A. A. and SOBOLEVA, E. L., Arkhiv Anatomii, Gistologii i Embriologii, No 1, 1973, pp 34-43

is characterized by exhaustion of the energy potential of the intermediate lobe cells as manifested by their loss of activity of NAD and related dehydrogenases.

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- 71 -

USSR

UDC 616.833-001-003.93-095.357.814.32

VOYTEVICH, A. A., and ZHUTAYEV, I. A., Laboratory of Radiation Neuroendocrinology, Institute of Medical Radiology, Academy of Medical Sciences USSR, Obninsk

"Effects of Adrenocortical Hormones on Posttraumatic Regeneration of Nerves"

Moscow, Problemy Endokrinologii, Vol 17, No 3, 1971, pp 76-79

Abstract: To study the effects of adrenocorticoids on the regeneration of nerves, the sciatic nerves of Wistar rats were severed aseptically, the wounds were closed, and the animals were given daily doses of either hydrocortisone or desoxycorticosterone acetate (2 mg per 100 g body weight); control animals received no medication after surgery. Histological, neurohistological, and histochemical investigations performed 7 days revealed that while hydrocortisone inhibited regeneration, DOCA stimulated the process to the point that many axis cylinders growing from the central stump through the channel of the connective tissue sheath had penetrated the distal stump. The conclusion is made that DOCA promotes nerve regeneration by stimulating the activity of connective tissue cells which form bridges between the two cut ends of each nerve.

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USSR

UDC 577.391

VOYTKEVICH, A. A. and SOBOLEVA, E. L., Institute of Medical Radiology, Academy of Medical Sciences USSR, Obninsk

"Lobes of the Adenohypophysis in Acute Radiation Sickness"

Moscow, Izvestiya Akademii Nauk SSSR, Seriya Biologicheskaya, No 1, 1971, pp 56-59

Abstract: A cytomorphological study was conducted of the effects of single whole-body irradiation (900 r) on the anterior and intermediate lobes of the adenohypophysis in rats. Attention was focused mainly on the reaction of the two lobes at the height of radiation sickness when the destructive changes were most pronounced. Degranulation of the oxyphilic cells gave way to cytological heterogeneity and transformation of the cytoplasm into a homogeneous colloid. Signs of destruction of the chromophilic elements and hypertrophy of the chromophobic elements were conspicuous in the anterior lobe. The cells of the intermediate lobe, on the other hand, exhibited considerable structural and

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USSR

VOYTKEVICH, A. A. and SOBOLEVA, E. L., Izvestiya Akademii Nauk SSSR, Seriya Biologicheskaya, No 1, 1971, pp 56-59

tinctorial stability, an indication of greater resistance to irradiation. The differences between the two lobes in this respect are apparently due to characteristics of morphological organization and physiological properties. The intermediate lobe comes in direct contact with the neurohypophysis while the anterior lobe is connected to the neural elements by the portal vessels. Another factor that may contribute to the greater radiosensitivity of the anterior lobe is that it is heavily vasculated.

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1/2 018 UNCLASSIFIED PROCESSING DATE--20NOV70  
TITLE--STRUCTURE OF SYNAPSES LOCALIZED IN SUPRAOPTIC NUCLEUS NEURONS, RAT  
-U-  
AUTHOR--(G2)-DECOV, I.I., VOYTKEVICH, A.A.  
COUNTRY OF INFO--USSR  
SOURCE--TSITO-LCGIYA 12(2): 243-245, 1970  
DATE PUBLISHED-----70  
SUBJECT AREAS--BIOLOGICAL AND MEDICAL SCIENCES  
TOPIC TAGS--RAT, NEURON, NUCLEUS  
CONTROL MARKING--NO RESTRICTIONS  
DOCUMENT CLASS--UNCLASSIFIED  
PROXY REEL/FRAME--3006/C286 STEP NO--UR/9053/70/012/002/0243/0245  
CIRC ACCESSION NO--AP0134091  
UNCLASSIFIED

2/2 018

UNCLASSIFIED

PROCESSING DATE--20NOV70

CIRC ACCESSION NO--AP0134091

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. THE PRESYNAPTIC PART OF ONE TYPE OF SYNAPSE HAS SMALL (200-400 ANGSTROM) SYNAPTIC VESICLES. SYNAPSES OF THE OTHER TYPE POSSESS, IN ADDITION, DENSE CORE VESICLES (600-800 ANGSTROM IN DIAMETER). THE SYNAPSES ON SUPRAOPTIC NUCLEUS NEURONS ARE POSSIBLY TERMINALS OF CHOLIN AND MONOAMINERGIC FIBERS OF RETICULAR FORMATION NEURONS. FACILITY: LAB. NEUROENDOCRINOL., INST. MED. RADIO., ACADEM. MED. SCI. USSR, OBNIINSK, USSR.

UNCLASSIFIED

1/2 021 UNCLASSIFIED PROCESSING DATE--13NOV70  
TITLE--INDIFFERENT EPITHELIUM IN HORMONOPDEIESTS OF THE ADENOPHYOPPHYSIS  
-U-  
AUTHOR--(021)-VOYTKEVICH, A.A., SOBOLEVA, E.L.  
COUNTRY OF INFO--USSR  
SOURCE--ARKH ANAT GISTOL EMBRIOL 53(1): 19-27. ILLUS. 1970.  
DATE PUBLISHED-----70  
SUBJECT AREAS--BIOLOGICAL AND MEDICAL SCIENCES  
TOPIC TAGS--ADRENAL GLAND HORMONE, BIOSYNTHESIS, INHIBITION, MEDICAL  
EXPERIMENT  
CONTROL MARKING--NO RESTRICTIONS  
DOCUMENT CLASS--UNCLASSIFIED  
PROXY REEL/FRAE--3002/1086 STEP NO--UR/9076/70/058/001/0019/0027  
CIRC ACCESSION NO--AP0128513  
UNCLASSIFIED



2/2 021

UNCLASSIFIED

PROCESSING DATE--13NOV70

CIRC ACCESSION NO--AP0128513

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. EXPERIMENTAL PROCEDURES AFFECTING THE SYSTEM OF NEUROSECRETION AND IMPAIRING THE BODILY HORMONE BALANCE (HORMONE ADMINISTRATION, IRRADIATION, THYROIDECTOMY, ADRENALECTOMY) CAUSE ACTIVATING OR INHIBITING EFFECTS ON THE CELLS OF THE TUBERAL LOBE OF ADENOHYPHYSIS IN DOGS AND RATS. STRUCTURAL AND STAINING PROPERTIES OF EPITHELIUM IN THE RESIDUAL HYPHYPHYSEAL CAVITY DEPEND ON ACCUMULATION OF COLLOID, INCREASING WITH EXCLUSION OF PERIPHERAL ENDOCRINE GLAND ACTIVITY. THE EPITHELIUM, LINING THE RESIDUAL CAVITY BORDERING THE HYPHYPHYSIS ON THE SIDE OF PARS INTERMEDIA, EVIDENTLY POSSESSES ENDOCRINE FUNCTION. FACILITY: LAB. NEUROENDOCRINOL., INST. MED. RADIOL., ACAD. MED. SCI. USSR, OBNINSK, USSR.

UNCLASSIFIED

1/2 015  
UNCLASSIFIED  
TITLE--SYSTEM OF PHYSIOLOGICAL COMMUNICATION: HYPOPHYSIS ADRENAL CORTEX  
TROPIN -U-  
AUTHOR--(02)-VOYTKEVICH, A.A., TKACHEVA, G.A.  
COUNTRY OF INFO--USSR  
SOURCE--USP. SOVREM. BIOL. 1970, 69(1), 142-57  
DATE PUBLISHED-----70  
SUBJECT AREAS--BIOLOGICAL AND MEDICAL SCIENCES  
TOPIC TAGS--RNA, ACTH, CORTICOSTEROID, ADRENAL CORTEX  
CONTROL MARKING--NO RESTRICTIONS  
DOCUMENT CLASS--UNCLASSIFIED  
PROXY REEL/FRAE--3008/0449  
CIRC ACCESSION NO--AP0137540  
STEP NO--UR/0221/70/069/001/0142/0157  
UNCLASSIFIED

2/2 015

UNCLASSIFIED

PROCESSING DATE--04DEC70

CIRC ACCESSION NO--AP0137540

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. REVIEWING PRESENT EVIDENCE ON THE WAY IN WHICH ACTH INCREASES THE SYNTHESIS AND SECRETION OF CORTICOSTEROIDS, IT IS POINTED OUT THAT NO CONCEPT PERMITTING A COMPREHENSIVE INTERPRETATION OF MOST EXPTL. DATA IS AVAILABLE. CYCLIC 3 PRIME, 5 PRIME AMP SEEMS A VERY LIKELY INTERMEDIATE IN THE MECHANISM OF ACTION OF ACTH ON THE ADRENAL CORTEX. THE EVIDENCE THAT ACTH ACTS BY CHANGING THE CONC. OF NADPH, THE ACTIVITY OF PHOSPHORYLASE, OR THE ACTIVITY OF GLUCOSE,6,PHOSPHATE DEHYDROGENASE IS CONTROVERSIAL. THE EFFECTS OF INCREASED CONCNS. OF ACTH ON THE ADRENAL CORTEX ARE SIMILAR TO BUT NOT IDENTICAL WITH EFFECTS OF INCREASED CONCNS. OF NADPH. ACTH INCREASES THE CONC. OF RNA IN THE ADRENAL CORTEX. DATA CONCERNING THE EFFECT OF ACTH ON THE RATE OF INCORPORATION OF LABELED AMINO ACIDS INTO THE PROTEINS OF THE ADRENAL CORTEX ARE CONTRADICTORY. SOME OTHER POSSIBLE MECHANISMS OF ACTION OF ACTH ARE MENTIONED. FACILITY: INST. MED. RADIOL., OBNINSK, USSR.

UNCLASSIFIED

USSR

UDC 612.434.018.014.482

~~VOYTKENICH~~ A. A. (Deceased), and DEDOV, V. I., Laboratory of Radiation Neuroendocrinology, Scientific Research Institute of Medical Radiology, Academy of Medical Sciences USSR, Obninsk

"Differentiation and Reaction of Pituitocytes of the Neurohypophysis Under Conditions of General Irradiation"

Moscow, Byulleten' Eksperimental'noy Biologii i Meditsiny, Vol 72, No 11, Nov 71, pp 107-109

Abstract: Rats 1-60 days old were subjected to irradiation with gamma-rays in a dose of 200 R. The effects of the irradiation on the differentiation of pituitocytes of the neurohypophysis were studied. Normally this differentiation is completed towards the age of 2 weeks. Irradiation produced changes in the pituitocytes, which consisted of a sharp increase in the number and volume of lipid inclusions in their cytoplasm and formation of characteristic cilia in differentiating pituitocytes. The increase in the amount of lipid inclusions was associated with an augmented release of neurosecretion into the blood, the latter being a phenomenon that is typical for stress conditions.

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USSR

UDC 612.127+612.111+612.460

VOLZHSKAYA, A. M., and VOYTKEVICH, V. I., Laboratory of Experimental and Clinical Hematology, Institute of Physiology imeni I. P. Pavlov, Academy of Sciences of the USSR, Leningrad

"The Effect of Hyperoxia on the Erythropoietic Properties of the Plasma of Blood Flowing From a Kidney"

Leningrad, Fiziologicheskii Zhurnal SSSR imeni I. M. Sechenov, Vol 57, No 11, 1971, pp 1,695-1,699

Abstract: In an attempt to study the role of the kidneys in erythropoiesis under the conditions of hyperoxia, rabbits were subjected to an environment containing 90 percent oxygen and 10 percent nitrogen at normal atmospheric pressure. It was discovered that the erythropoietic activity of the plasma of arterial blood from the kidneys of the rabbits decreased significantly after their exposure to hyperoxic conditions. The plasma of venous blood from the kidneys not only did not possess erythropoietic properties, but it even exhibited an inhibiting effect on the mitotic activity of the erythroblastic cells in bone marrow cultures. This data indicates that hyperoxia causes the kidneys to stop secreting erythropoietin and possibly to begin the formation of a substance to inhibit erythropoiesis. One of the causes of these phenomena is obviously the

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- 58 -

USSR

VOLZHSKAYA, A. M., and VOYTKEVICH, V. I., *Fiziologicheskiy Zhurnal SSSR imeni I. M. Sechenov*, Vol 57, No 11, 1971, pp 1,695-1,699

hemodynamic changes in the kidneys in the form of plethora that were discovered in the "hyperoxic" rabbits. The peripheral blood of the rabbits was also studied and an increase in the hemoglobin, erythrocytes, and the hematocrit was discovered. As the number of reticulocytes in the circulating blood and the percentage of normoblasts in the bone marrow did not change, this increase could not be attributed to the newly formed erythrocytes, but was most likely connected with the hemodynamic changes.

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1/2 013  
UNCLASSIFIED  
TITLE--METHOD OF IMPLANTING CANNULA INTO THE LEFT KIDNEY VEIN OF ANIMALS  
PROCESSING DATE--13NOV70  
-U-  
AUTHOR--VOYTKEVICH, V.I.  
COUNTRY OF INFO--USSR  
SOURCE--FIZIOL ZH SSSR IM I M SECHENOVA 56(1): 129-131. ILLUS. 1970  
DATE PUBLISHED-----70  
SUBJECT AREAS--BIOLOGICAL AND MEDICAL SCIENCES  
TOPIC TAGS--SURGICAL IMPLANT, KIDNEY BLOOD CIRCULATION, VEIN, BLOOD  
CONTROL MARKING--NO RESTRICTIONS  
DOCUMENT CLASS--UNCLASSIFIED  
PROXY REEL/FRAME--3005/1338  
STEP NO--UR/0239/70/056/001/0129/0131  
CIRC ACCESSION NO--AP0133294  
UNCLASSIFIED

2/2 013

CIRC ACCESSION NO--AP0133294

UNCLASSIFIED

PROCESSING DATE--13NOV70

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. THE CANNULA WAS SLIGHTLY CURVED  
 POLYETHYLENE TUBING WITH AN UPPER END CONNECTED TO A PART FOR FIXATION  
 OF THE CANNULA TO THE SKIN. THE THICKNESS OF THE CANNULA WAS DEPENDENT  
 ON THE EXPERIMENTAL DOG. PRIOR TO THE ADMINISTRATION, THE CANNULA WAS  
 FILLED WITH STERILE SALINE CONTAINING 50-100 UNITS OF HEPARIN IN 1 ML.  
 THE ABDOMEN CAVITY IN THE NARCOTIZED DOG WAS OPENED AT THE LINEA ALBA.  
 THE CANNULA WAS INTRODUCED INTO THE LEFT KIDNEY VEIN THROUGH SOME  
 SMALLER INCOMING VEIN. THE THICKNESS OF THE CANNULA WAS ABOUT 20 TIMES  
 SMALLER THAN THE THICKNESS OF THE LEFT KIDNEY VEIN. THE FIXATION PART  
 WAS FASTENED BETWEEN THE SKIN AND MUSCLES SO THAT THE CANNULAR ENDING  
 POINTS TO THE KIDNEY AND LIES FREE IN THE VEIN. THIS ALLOWS BLOOD  
 SAMPLES TO BE TAKEN FROM THE VEIN IN REQUIRED TIME AND AMOUNTS FOR A  
 LONG PERIOD OF WEEKS OR MONTHS. FACILITY: I. P. PAVLOV INST.  
 PHYSIOL., ACAD. SCI. USSR, LENINGRAD, USSR.

UNCLASSIFIED



USSR

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UDC 612.111.3+612.111.11+612.273+612.460

VOYTKEVICH, V. I. and VOLZHSKAYA, A. M., Institute of Physiology imeni I. P. Pavlov, Academy of Sciences USSR

"The Possible Appearance of an Erythropoiesis Inhibitor in Blood from the Renal Vein During Hyperoxia"

Moscow, Doklady Akademii Nauk SSSR, Vol 191, No 3, 1970, pp 723-725

Abstract: Experiments on rabbits exposed for 40 hours to an atmosphere containing 90 percent oxygen revealed a decrease (almost total disappearance) of erythropoiesis in arterial blood from the left ventricle and in renal blood. The mitotic activity of erythroblasts in a bone marrow culture was depressed, apparently because of the formation of an inhibitor of erythropoiesis in the kidneys. At the same time, the hemoglobin content, erythrocyte count, and hematocrit value were well above normal, an indication of the lack of redistribution of the erythrocytes due to hyperoxia. However, 24 hours after the end of exposure, the erythropoietic factor and other hematological indices were the same as in the controls.

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1/2 028

UNCLASSIFIED

PROCESSING DATE--30OCT70

TITLE--POSSIBILITY OF THE OCCURRENCE OF AN ERYTHROPOIESIS INHIBITOR IN THE BLOOD FROM THE KIDNEY VEIN DURING HYPEROXIA --U--  
AUTHOR--(02)--VOYTKEVICH, V.I., VOLZHSKAYA, A.M.

COUNTRY OF INFO--USSR

SOURCE--AKADEMIIA NAUK SSSR, DOKLADY, VOL. 191, MAR. 21, 1970, P. 723-725

DATE PUBLISHED-----70

SUBJECT AREAS--BIOLOGICAL AND MEDICAL SCIENCES

TOPIC TAGS--ATMOSPHERE COMPOSITION, HYPEROXIA, KIDNEY FUNCTION, BLOOD CHEMISTRY, ERYTHROPOIESIS, INHIBITION

CONTROL MARKING--NO RESTRICTIONS

DOCUMENT CLASS--UNCLASSIFIED

PROXY REEL/FRAE--1998/1023

STEP NO--UR/0020/70/191/000/0723/0725

GIRC ACCESSION NO--AT0121619

UNCLASSIFIED

2/2 028

UNCLASSIFIED

PROCESSING DATE--30OCT70

CIRC ACCESSION NO--AT0121619

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. INVESTIGATION OF THE ERYTHROPOEITIC ACTIVITY OF THE KIDNEY BLOOD OF A GROUP OF 22 RABBITS KEPT FOR 40 HR IN A NITROGEN OXYGEN ATMOSPHERE CONTAINING 90PERCENT OXYGEN. A NEARLY COMPLETE ARREST OF ERYTHROPOEITIC ACTIVITY WAS OBSERVED IN THE ARTERIAL BLOOD OF THE RABBITS IMMEDIATELY AFTER EXPOSURE, WHILE THE BLOOD PLASMA FROM THE KIDNEY SHOWED NO SUCH EFFECTS. IT IS SUGGESTED THAT AN ERYTHROPOIESIS INHIBITOR FORMED IN THE KIDNEY BLOOD UNDER HYPEROXIA MAY BE RESPONSIBLE FOR THE ABSENCE OF ERYTHROPOIESIS DEPRESSION IN THIS BLOOD. FACILITY: AKADEMIIA NAUK SSSR, INSTITUT FIZIOLOGII, LENINGRAD, USSR.

UNCLASSIFIED

1/2 009

UNCLASSIFIED

PROCESSING DATE--30OCT70

TITLE--COMPLEX OXALATES OF MANGANESE(III) STUDIED BY A SOLUBILITY METHOD  
-U-

AUTHOR--(03)-SMYSHLYAYEV, S.I., VOYTKO, L.M., TARASENKO, A.G.

COUNTRY OF INFO--USSR

SOURCE--IZV. VYSSH. UCHEB. ZAVED., PISHCH. TEKHNOL. 1970, (1), 49-5

DATE PUBLISHED-----70

SUBJECT AREAS--CHEMISTRY

TOPIC TAGS--OXALATE,--COMPLEX COMPOUND, MANGANESE COMPOUND, IONIC BONDING,  
SOLUBILITY

CONTROL MARKING--NO RESTRICTIONS

DOCUMENT CLASS--UNCLASSIFIED

PROXY REEL/FRAME--1495/1571

STEP NO--UR/0322/70/000/001/0049/0050

CIRC ACCESSION NO--AT0116979

UNCLASSIFIED

2/2 009

UNCLASSIFIED

PROCESSING DATE--30OCT70

CIRC ACCESSION NO--AT0116979

ABSTRACT/EXTRACT--(U) GP-0-

ABSTRACT.

THE SOLY. OF MNC SUB2 O SUB4 IN

AQ. SOLNS. OF NA AND K OXALATES (CONCNS. OF 0.0047-0.1128M) WAS STUDIED AT 25DEGREES. STABILITY CONSTS. KAPPA OF THE OXALATE COMPLEXES WERE

CALCD. FROM THE DEPENDENCE OF KAPPA ON IONIC STRENGTH MU THE KAPPA AT MU EQUALS 0 WAS DETD. AS KAPPA EQUALS 1.5 TIMES 10 PRIME NEGATIVE6 AND

2.5 TIMES 10 PRIME NEGATIVE6 FOR NA SUB2 C SUB2 O SUB4 AND K SUB2 C SUB2 O SUB4 SOLNS., RESP. SOLY. OF MNC SUB2 O SUB4 IN H SUB2 O AT 25DEGREES

WAS DETD. AS 0.003 MOLE PER L.

FACILITY: KRASNODAR. POLITEKH.

INST., KRASNODAR, USSR.

UNCLASSIFIED

USSR

UDC: 624.131.43+539.21.084-492

VOYTKOVSKIY, K. F.

"Mechanics of Avalanche Motion"

V sb. Inzh. glyatsiologiya (Engineering Glaciology--collection of works), Moscow, Moscow University, 1971, pp 80-87 (from RZh-Mekhanika, No 5, May 72, Abstract No 5V499)

Translation: The author considers application of the differential equation of motion of a material point

$$\frac{dv}{dt} = g \sin \psi - f_1 - f_2$$

to description of the behavior of a snowslide. Here  $v$  is the rate of motion of the avalanche,  $g$  is acceleration due to gravity,  $\psi$  is the angle of the slope,  $f_1$  is the force of friction, and  $f_2$  is the sum of other forces of drag. Certain assumptions relative to  $f_1$  and  $f_2$  are analyzed which enable determination of the maximum range of reach of an avalanche and its velocity in accordance with the known profile of the path of the avalanche. It is noted that this method cannot be used to evaluate the height of the leading

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USSR

VOYTKOVSKIY, K. F., Inzh. glyatsiologiya, Moscow, Moscow University, 1971,  
pp 80-87

edge of the avalanche or the distribution of velocities inside the flow. A brief outline is given of a hydraulic scheme for motion of an avalanche and certain phenomena (air waves, detachment of the avalanche body near projections, turning of avalanches) which can be treated within the framework of this scheme. Hypotheses of various authors relating to these phenomena are given. R. I. Nigmatulin.

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USSR

UDC 669.1

BOKSHEYN, B. S., and VOYTKOVSKIY, YU. B., Moscow Institute of Steel and Alloys

"Electron Structure of Iron Atoms in the Alpha- and Beta-Solid Solution of Titanium by the Mössbauer Method"

Sverdlovsk, Fizika Metallov i Metallovedeniye, Vol 29, No 4, Apr 70, pp 893-896

Abstract: It is known that titanium undergoes polymorphous transformation at 882°C from the alpha-modification with an h.c.p. lattice to the beta-modification with a b.c.c. lattice. Alloying elements affect the temperature of the polymorphous transformation of which iron is the strongest beta-phase stabilizer. To determine if there was any relationship between the change of electron structure and atoms of titanium in an alloy and the effect of impurities on polymorphism the Mössbauer spectrum was employed to study this problem. Co<sup>57</sup> in stainless steel was used as a tracer element. Sample chemical composition and heat treatment mode are as follows:

- Sample 1 Ti-Fe (0.1% Fe)--diffusion saturation at 1000°C, furnace cooled
- Sample 2 Ti-Fe (4.5% Fe)--water quenched from 1000°C
- Sample 3 Ti-Fe (9.5% Fe)--water quenched from 1000°C
- Sample 4 Ti-Fe (9.5% Fe)--furnace cooled from 1000°C
- Sample 5 Ti-Fe-O<sub>2</sub> (10% Fe, 0.6% O<sub>2</sub>)--water quenched from 1000°C

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USSR

BOKSHTEYN, B. S., and VOYTKOVSKIY, YU. B., Fizika Metallov i Metallovedeniye, Vol 29, No 4, Apr 70, pp 893-896

Sample 6 Ti-Fe-Sn (10% Fe, 16% Sn)--furnace cooled, heated to 550°C, quenched in liquid nitrogen

Two graphs are presented which plot the Mössbauer adsorption spectrum as percentage probability of an effect vs. chemical shift in mm/sec. Sample 1 shows a positive chemical shift and sample 6 -- a negative shift, while all the other samples had both positive and negative chemical shifts. It should be mentioned that sample 1 contained only the alpha-phase while sample 6 contained only the beta-phase. The other samples had both alpha- and beta-phases.

In all the samples the spectrum of the beta-solid solution has a doublet which is caused in the Mössbauer spectrum by quadrupole splitting. If this splitting was the result of the formation of a field gradient from the action of encircling of substitution atoms in the absorbing nucleus, one would expect appearance of a doublet in alpha-titanium but not in the beta-titanium since the alpha-phase is b.c.c. and the beta-phase is h.c.p. Oxygen, forming an interstitial solid solution in titanium, may be caused by splitting in the cubic crystal due to rupture of the spherical symmetry of electrons in the iron atoms. Since the solubility of oxygen in alpha-titanium is high (up to 30 at%), but comparatively low in beta-titanium, distortions, which oxygen gives rise to in beta-titanium, should be greater.

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BOKSHEYN, B. S., and VOYTKOVSKIY, YU. B., Fizika Metallov i Metallovedeniye, Vol 29, No 4, Apr 70, pp 893-896

However, evaluations show that this singular effect is not adequate to explain the observed splitting.

Apparently, the advent of a doublet can be caused by the formation of configurations, containing both ions of oxygen and "impurity" vacancies associated with them. These pairs in crystals with a b.c.c. lattice can be very stable. The splitting occurring should be large in intensity; however, precise calculations are extremely difficult because there are no qualitative or quantitative data on disorder of wave functions of transition metals having defects.

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1/2 016 UNCLASSIFIED PROCESSING DATE--04DEC70  
TITLE--ELECTRON STRUCTURE OF IRON ATOMS IN TITANIUM BASE ALPHA AND BETA  
SOLID SOLUTIONS: A MOSSBAUER STUDY -U-  
AUTHOR-(02)-VOYTKOVSKIY, YU.B., BOKSHEYN, B.S.  
COUNTRY OF INFO--USSR  
SOURCE--FIZIKA METALLOV I METALLOVEDENIE, APR. 1970, 29, (4), 893-896  
DATE PUBLISHED----APR 70  
SUBJECT AREAS--PHYSICS, MATERIALS  
TOPIC TAGS--ELECTRON STRUCTURE, TITANIUM IRON ALLOY, MOSSBAUER EFFECT,  
ALLOY PHASE TRANSFORMATION  
CONTROL MARKING--NO RESTRICTIONS  
DOCUMENT CLASS--UNCLASSIFIED  
PROXY REEL/FRAE--3002/1811 STEP NO--UR/0126/70/029/004/0893/0896  
CIRC ACCESSION NO--AP0129179  
UNCLASSIFIED

2/2 016

UNCLASSIFIED

PROCESSING DATE--04DEC70

CIRC ACCESSION NO--AP0129179

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. THE ELECTRON STATE OF THE FE ATOMS PRESENT IN TI BASE ALPHA AND BETA SOLID SOLUTIONS WAS STUDIED BY A METHOD BASED ON THE MOSSBAUER EFFECT, WITH SPECIAL REF. TO THE POSSIBILITY OF THERE BEING A CONNECTION BETWEEN THE ELECTRON STRUCTURE OF THE FE ATOMS AND THEIR PROPERTY OF STABILIZING THE BETA SOLID SOLUTION FORMED BY A POLYMORPHIC TRANSFORMATION AT 880DEGREESC. THE RESULTS INDICATED THAT THE FE,TI BOND IN THE BETA SOLUTION WAS MORE COVALENT THAN IN THE ALPHA SOLUTION, AND THIS PARTLY EXPLAINED THE BEHAVIOUR OF THE FE AS A BETA STABILIZER.

UNCLASSIFIED

1/5 015

UNCLASSIFIED

PROCESSING DATE--09OCT70

TITLE--LIGHT SCATTERING INDICATRICES FOR SEA WATER, (INDICATRIX OF SCATTERING FOR LIGHT IN SEA WATER) -U-

AUTHOR--(02)-VOYTOV, V.I., KOPELEVICH, O.V.

COUNTRY OF INFO--USSR

SOURCE--MUSCOW, DOKLADY AKADEMII NAUK SSSR, VOL 190, NO 4, 1970, PP 827-830

DATE PUBLISHED--70

SUBJECT AREAS--EARTH SCIENCES AND OCEANOGRAPHY

TOPIC TAGS--SEA WATER, LIGHT SCATTERING, INDEX, INDICATRIX, MAP

CONTROL MARKING--NO RESTRICTIONS

DOCUMENT CLASS--UNCLASSIFIED

PROXY REEL/FRAE--1993/1878

STEP NO--UR/0020/70/190/D04/0827/0830

CIRC ACCESSION NO--AT0114326

UNCLASSIFIED

2/3 015

UNCLASSIFIED

PROCESSING DATE--09OCT70

CIRC ACCESSION NO--AT0114326

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. IT IS STATED BY A. MOREL (ANN. GEOPHYS., 21 (2), 1965) THAT IN TRANSPARENT WATERS THE ELONGATION OF THE SCATTERING INDICATRIX BETA (GAMMA)-BETA (90) INCREASES WITH AN INCREASE IN THE SCATTERING INDEX AT AN ANGLE 90DEGREES-(BETA(90)). IT WAS POSTULATED THAT THE SCATTERING INDICATRIX FOR PARTICLES OF MARINE SUSPENSIONS IS CONSTANT FOR ALL WATERS AND THAT THE OBSERVED DIFFERENCES BETWEEN THE SCATTERING INDICATRICES FOR SEA WATER CAN BE ATTRIBUTED TO CHANGES IN THE RELATIONSHIP BETWEEN MOLECULAR SCATTERING AND SCATTERING BY SUSPENDED PARTICLES. A STUDY WAS UNDERTAKEN TO CHECK THIS HYPOTHESIS BY ANALYZING THE SCATTERING INDICATRICES MEASURED IN THE NORTHERN PART OF THE INDIAN OCEAN. THE 163 INDICATRICES WERE FOR TRANSPARENT WATER (TRANSPARENCY 78 PERCENT). THEY ARE REPRESENTED BY SMOOTH CURVES WITHOUT ANY LOCAL MAXIMA OR MINIMA SUCH AS ARE CHARACTERISTIC OF SCATTERING INDICATRICES FOR MONODISPERSE SUSPENSIONS. THE CURVES EXHIBIT APPRECIABLE DIFFERENCES, SIGNIFICANT IN THE REGION OF ANGLES LESS THAN 70DEGREES AND COMMENSURABLE WITH THE EXPERIMENTAL ERRORS WHEN GREATER THAN 70DEGREES. THERE WAS A SIGNIFICANT CORRELATION BETWEEN THE CHANGES OF LOG BETA (GAMMA)-BETA (90) FOR ANY FIXED SCATTERING ANGLE FOR THE REGION OF ANGLES 4-70DEGREES AND THE CHANGE IN THIS VALUE FOR AN ANGLE OF 15DEGREES, SELECTED AS A REFERENCE LEVEL, AND THEREFORE LOG BETA (GAMMA)-BETA (90) FOR AN ANGLE OF 15DEGREES CAN BE USED AS A PARAMETER CHARACTERIZING THE FORM OF THE INDICATRIX. ALL CURVES WERE DIVIDED INTO FOUR TYPES CORRESPONDING TO FOUR RANGES OF THE LOG BETA (15)-BETA (90) VALUE.

UNCLASSIFIED

373. 015

UNCLASSIFIED

PROCESSING DATE--09OCT70

CIRC ACCESSION NO--AT0114326

ABSTRACT/EXTRACT--TRANSITION FROM TYPE I TO TYPE IV IS ACCOMPANIED BY AN INCREASE IN ELONGATION OF THE INDICATRIX AND A SIMULTANEDUS DECREASE IN THE ABSOLUTE VALUE OF THE SCATTERING INDICATRIX AT 90DEGREES. THUS, THE HYPOTHESIS OF A CONSTANCY OF THE SCATTERING INDICATRIX FOR SEA WATER PARTICLES IS INCORRECT FOR THIS REGION. A MAP WAS CONSTRUCTED SHOWING THE DISTRIBUTION OF TYPES OF SCATTERING INDICATRICES FOR THE NORTHERN PART OF THE INDIAN OCEAN. FACILITY: INSTITUTE OF OCEANOLOGY.

UNCLASSIFIED

Acc. Nr:

AP0036435

Ref. Code: UR 0213

PRIMARY SOURCE: Okeanologiya, 1970, Vol 10, Nr 1, pp 48-50

RELATIVE WATER TRANSPARENCY OF THE INDIAN OCEAN

Voytov, V. I.; Dement'yeva, M. G.

Based on the observations of the depth of visibility of the white disc made mostly during the last years, a map of the relative water transparency in the northern and Antarctic portions of the Indian Ocean has been constructed. Relative transparency as a function of plankton concentrations and the relationship between the distribution of relative transparency and surface water circulation are analyzed.

D.H.

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REEL/FRAME  
19721279

12



1/2 026

UNCLASSIFIED

PROCESSING DATE--16OCT70

TITLE--OBSERVATION OF THE SUPPRESSION OF THE INELASTIC CHANNEL OF A NUCLEAR REACTION DURING RESONANCE NUCLEAR SCATTERING OF GAMMA RAYS IN A  
AUTHOR--(04)--VOYTOVETSKIY, V.K., KORSUNSKIY, I.L., NOVIKOV, A.I., PAZHIN, YU.F.

COUNTRY OF INFO--USSR

SOURCE--PISMA ZH. EKSP. TEOR. FIZ. 970, 11(3), 149-53

DATE PUBLISHED-----70

SUBJECT AREAS--PHYSICS

TOPIC TAGS--SINGLE CRYSTAL PROPERTY, GAMMA IRRADIATION, GAMMA SCATTERING, TIN ISOTOPE, RESONANCE SCATTERING, PARTICLE ABSORPTION, INELASTIC SCATTERING, RADIATION DETECTOR, COLLIMATOR

CONTROL MARKING--NO RESTRICTIONS

DOCUMENT CLASS--UNCLASSIFIED  
PROXY REEL/FRA--1988/0241

STEP NO--UR/0386/70/011/003/0149/0153

CIRC ACCESSION NO--AP0105317

UNCLASSIFIED

2/2 026

CIRC ACCESSION NO--AP0105317

UNCLASSIFIED

PROCESSING DATE--16OCT70

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. THE DEPENDENCE OF THE INTENSITY OF REFLECTION ON THE RELATIVE VELOCITY OF GAMMA RAYS IN THE SOURCE, AND IN A PERFECT SINGLE CRYSTAL, 420 MU THICK CONTG. 88PERCENT PRIME119 SN WAS STUDIED AT 90DEGREE SK IN AN ASSEMBLY, WHICH DIFFERED FROM THAT DESCRIBED PREVIOUSLY (VOITOVETSKII, ET AL., 1965) BY THE REPLACEMENT OF THE CRYSTAL MONOCHROMATOR BY A SLOT COLLIMATOR. IN THE SPECTRUM REGION WHERE RESONANCE SCATTERING MAGNITUDE OF F R OVER N IS LARGER THAN E SCATTERING, F SUBE, WHEN INDEPENDENT ABSORPTION ON SEP. NUCLEI IS AT A MAX., AND WAVES FORM PRIMARILY BY NUCLEI SCATTERING, ABSORPTION IS WEAK. THIS WAS ASCRIBED TO SUPPRESSION OF INELASTIC CHANNELS. IN THE REGION WHERE MAGNITUDE OF F R OVER N IS SMALLER THAN F SUBE, WAVE FIELDS ARE FORMED PRIMARILY BY F SUBE.

UNCLASSIFIED

Instruments and Equipment

USSR

VOYTOVICH, A.

"The 'Penguin' Is Not Afraid of Frost"

Moscow, Pravda, 13 Feb 72, p 3

Abstract:

One can wonder: New clothing for the Polar Regions was developed in Kiev, where hard frost is a rarity. A group of scientists from the Institute of Problems of Material Science of the Ukrainian Academy of Sciences developed an "electric suit" and called it the "Penguin." The model has already withstood tests under various conditions and the reactions to it have been good. The production of this suit is being organized. This is what the developers of this frostproof suit told Pravda correspondent A. Voytovich about it.

D. M. Karpinos, director of a division at the institute, doctor of technical sciences:

"Our suits were tested in various regions where there is hard frost, that is, on the route of the Messoyakha-Noril'sk gas pipeline, which is the

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USSR

VOYTOVICH, A., Pravda, 13 Feb 72, p 3

most northern gas pipeline in the world, and on the construction of the Kol'skaya Atomic Electric Power Station in Yakutiya. We rejoiced at the radiogram from the remote sixth continent, which was sent by the physician of an antarctic expedition. He reported that the 'Penguin' kept the winterers safely warm at the lowest temperatures.

"As is well-known, the idea to develop heatable winter clothing has long attracted scientists from different countries. There are several types of such suits. The principle of electric heating is used in some, that is, a nichrome spiral is interwoven into the fabric, and in others heat is released during chemical reactions among various substances. However, such suits have not become widespread, because they are bulky, unreliable in operation, and expensive. It was necessary to search for a new type of heating.

"We decided to use electroconductive fabric. Such material -- soft, thin, and possessing great heat transfer -- was developed. Three years ago our personnel in cooperation with specialists from a number of scientific research institutes and the laboratory of the Ukrainian Spetsodezhda Association and with Kiev hygienists developed the first model of this suit with the use of current-conducting fabric. The suit is warm and light, but its use is limited, because the heating elements need an external power supply.

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USSR

VOYTOVICH, A., Pravda, 13 Feb 72, p 3

"The 'Penguin' has an autonomous supply. It consumes five times less electric power than its predecessor. In such special-purpose clothing man can set out on a long trip into the depth of the Polar Regions or the taiga and move freely on a construction project. The storage batteries attached to the belt are sufficient for a full 24-hour period. Then they can be recharged."

I. M. Naumenko, candidate of medical sciences;

"What dictated our suit's 'style'? When studying the topography of skin temperatures and the effect of electric heating on man, medical hygienists arrived at the conclusion that it was not necessary to warm the whole body. In this case the body's defense reactions are dulled and it becomes 'soft.' It is sufficient to warm specific parts of the body, and man will not be afraid of the cold.

"Engineers and physicians jointly 'sewed' the new suit. Specialists from the Kiev Institute of Labor Hygiene and Occupational Diseases carefully thought out where to place the electrodes and how to make the suit more comfortable. The strips of the electroconductive fabric placed under ordinary lining are heated to 30 degrees in half a minute. If it becomes too hot for a person during this walk or work, a thermoregulator makes it possible to reduce the heat supply.

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USSR

VOYTOVICH, A., Pravda, 13 Feb 72, p 3

"I, as a physician, would like to note that the 'Penguin' is also suitable for therapeutic purposes. There are diseases which require constant warming. People suffering from radiculitis and chronic vascular and joint diseases are unable to be outdoors in winter. They badly need such clothing."

O. M. Izmalkov, chief designer of a division:

"We receive many letters with the same request: 'Give us your suits more quickly!'. Recently, we have received such orders from timber industry workers in Arkhangel'skaya Oblast, builders from Noril'sk and Salekhard, and from fishermen in the Far East. This is not surprising. Suits with electric heating are handy for members of polar expeditions, geologists, reindeer breeders, builders, helicopter pilots, and seamen -- one cannot enumerate all the occupations.

"The institute's design and technological office on orders from the USSR Ministry of the Gas Industry is manufacturing through its own efforts 1,000 'Penguins' for the builders of northern gas pipelines. The first batch has already been dispatched to Salekhard. The Moscow Experimental-Technical Sewing Factory of the Soyuzglavspetsodezhda [All-Union Main Administration for Special-Purpose Clothing] Association will manufacture a few thousand sets in the first half of this year with the help of our experimental section. However, this is only a drop in the bucket.

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USSR

VOYTOVICH, A., Pravda, 13 Feb 72, p 3

"We must more rapidly create the base for a mass production of heatable clothing. For example, it is not difficult for enterprises manufacturing special-purpose clothing for the North to master the sewing of such suits. At first, however, we must set up the output of a sufficient quantity of current-conducting fabric and devices for electric heating and power supply. The interested organizations, primarily the USSR Ministry of the Light industry, should undertake the solution of these problems. After all, it is a matter of people's health and of their high labor productivity."

5/5

USSR

UDC: 621.375.82

VOYTOVICH, A. P.

"Frequency Characteristics of a Gas Laser With Nonlinear Selective Losses"

Minsk, Chastotnyye kharakteristiki gazovogo lazera s nelineynymi selektivnymi poteryami. In-t fiz. AN BSSR (cf. English above. Institute of Physics, BSSR Academy of Sciences), preprint, 1972, 68 pp, ill., mimeo. (from RZh-Fizika, No 8, Aug 73, abstract No 8D988 [résumé])

Translation: A study is made of the way that the frequency composition of radiation emitted by a gas laser with nonlinear selective losses in the presence of strong competition and selection of modes depends on the position of natural oscillations of the cavity relative to the absorption line. The author investigates the influence which the longitudinal magnetic field applied to the absorbing medium has on frequency selection. The double optical resonance which arises in this case and the possibility of using it to measure Landé factors are considered. The author proposes using various nonlinear effects which occur in a single-frequency gas laser for purposes of high-resolution spectroscopy. Isotopic shift of the neon line is measured. It is shown that a laser with nonlinear losses displays hysteresis with transition from one-frequency emission to two-frequency and back. Bibl. 69.

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USSR

VOYTOVICH, A. P., et al

"Study of the Selection of Frequencies in a Helium-Neon Laser with an Absorbing Neon Cell Inside the Resonator"

Leningrad, Optika i Spektroskopiya, May 1971, pp 940-946

Abstract: The effect of the natural frequencies of a resonator with respect to the absorption and amplification circuits and the extent of break-up of the line of magnetic field absorption on the frequency structure of the generating radiation were studied in detail. By means of a theoretical approximation of a weak light field the concurrence of two frequencies in a laser with an absorbing cell in a magnetic field was examined.

The authors determined the parameters characterizing the self-saturation and the effect of radiation of one frequency on the generation of a second frequency, and they found the generation frequencies and the intensity of the longitudinal magnetic field for which these parameters have resonance features. It was shown experimentally that in a gas laser in which the

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USSR

VOYTOVICH, A. P., et al, Optika i Spektroskopiya, May 1971, pp 940-946

parameter of saturation of the absorbing medium is greater than unity the frequency structure of the generating radiation depends on the natural frequencies of the resonator with respect to the absorption line and the magnitude of the magnetic field. In such a laser a mode is possible in which one frequency generates only in a narrow range of frequencies and outside of this range two-frequency generation occurs. Measurements of this range gave a value of 350 kc.

USSR

UDC 621.373:535

VOYTOVICH, A. P. and SMIRNOV, A. Ya.

"The Generation of Two Frequencies in a Gas Laser with Nonlinear Selective Losses"

Leningrad, Optika i Spektroskopiya, Vol 34, No 5, May 73, pp 925-930

Abstract: An experiment was conducted to produce dual frequency oscillation in a helium-neon laser ( $\lambda = 0.63$  micrometers) with a neon absorbing cell within the laser resonator. The experimental apparatus made it possible to displace the natural frequencies of the resonator continuously or to place them in a known position with respect to the contour of the absorption line.

It is well known that the product of the self-absorption values will be greater than the cross absorption product only if the two frequencies of the resonator are nearly symmetrical with respect to the central frequency of the absorption contour. This is true if the frequency difference is greater than the uniform width of the absorption line contour. It would be interesting to know if dual frequency oscillation can be obtained only over a narrow range of frequency differences when the light field is not weak.

A conclusion from this and other studies is that the competition of frequencies in a gas laser can lead to resonance phenomena in the characteristics

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USSR

VOYTOVICH, A. P. and SMIRNOV, A. Ya., Optika i Spektroskopiya, Vol 34, No 5, May 73, pp 925-930

of the oscillations, and that the frequency range over which these phenomena occur is considerably less than the width of the absorption line contour of a low pressure gas. There are hysteresis phenomena in the transition from single to dual frequency oscillation and back. The second oscillation (and therefore the peak signal) disappears at a higher value of absorption than that at which it appears, while the peak signal amplitude is greater at its appearance than at its disappearance. This characteristic should be useful in stabilizing the two frequencies of oscillation.

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USSR

UDC 681.327.53

VOYTOVICH, I. D., Institute of Cybernetics, Academy of Sciences of the UkrSSR

"A Three-Cycle Cryotronic Decoder"

Moscow, Otkrytiya, Izobreteniya, Promyshlennyye Obratzsy, Tovarnyye Znaki,  
No 7, 4 Feb 70, Patent No 262953, Filed 28 Aug 68

Translation: This Author's Certificate introduces a three-cycle cryotronic decoder for memory devices with destructive readout. The decoder contains initial setting cryotrons, code circuits and load circuits connected by transfer circuits. It differs because to increase operational reliability and to simplify the design, the code and the load circuits are connected to independent power supplies, and adjacent transfer circuits have common sections.

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UDC: 681.325.65

USSR

KOCHUR, A. P., VOYTOVICH, I. D., MIKHAYLOV, G. A.

"Cryotron Logic NOR Element"

USSR Authors' Certificate No 248766, Filed 15 February 1968, Published 22 January 1970 (Translated from Reverativnyy Zhurnal Avtomatika, Telemekhanika i Vychislitel'naya Tekhnika, No 10, 1970, Abstract No 10B100P, by N. V.)

Translation: The element suggested contains a superconducting circuit with an input cryotron for each input, output and regulating cryotrons. It differs from known circuits in that the superconducting circuit contains two branches. One branch consists of the series-connected input cryotron tubes, while the other consists of the series-connected grids of the output cryotron and tube of the control cryotron. One output of the grid of this latter cryotron is connected to the cycling voltage supply; the other, to the point of connection of the two branches of the circuit. This assures functional compatibility with similar elements and decreases power consumption. Two illustrations.

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USSR

UDC 632.95

VERDEREVSKIY, D. D., VOYTOVICH, K. A., KOBZOV, F. N., KHAKHAM, I. B., and  
CHERNAYA, N. S.

"Copper Naphthenate Paste -- a Substitute for Bordeaux Mixture in Controlling  
Apple Tree Scab"

Tr. Kishinev, S.-kh. in-ta (Works of Kishinev Agricultural Institute),  
1971, 67, pp 32-34 (from RZh-Khimiya, No 1(II), Jan 72, Abstract No 1N431

Translation: In comparative tests, quadruple spraying of an apple orchard with  
a 0.6% suspension of copper naphthenate paste was only slightly less effective  
against scabs on the fruit and leaves than the same application of a 1%  
solution of Bordeaux mixture. P. Popov.

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USSR

UDC 621.396.67.001.5

VOYTOVICH, N.N.

"Concerning The Synthesis Of An Antenna According To A Specified Amplitude Diagram Of Radiation (V.V. Semenov's Method)"

Radiotekhnika i Elektronika, Moscow, Vol XVII, No 12, Dec 1972, pp 2491-2497

Abstract: A method based on ideas discussed in a paper by V.V. Semenov [Radiotekhnika i Elektronika, 1972, 17, 1. 23] and earlier applied to quasi-optical problems is used for solution of the problem of the synthesis of an antenna according to a specified amplitude diagram. Following Semenov's work, a special choice of conditions eliminates superdirectional solutions. The problem reduces to a nonlinear integral equation which permits a numerical solution by the method of successive approximations. The general case of a linear antenna is considered as well as the case with limitation at an unknown distribution of the current. Numerical results obtained on an electronic computer are presented for two specific amplitude diagrams -- isometric and with linear dependence on angular coordinates. The author thanks B.Z. Katsenelenbaum for assistance in fulfilling the work and Ya. N. Fel'd for interest in the work and valuable council. 3 fig. 7 ref. Received by editors, 1 Dec 1971.

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USSR

UDC 534.231.1

VOYTOVICH, N. N., and SHATROV, A. D., Institute of Radio Engineering and Electronics of the Academy of Sciences USSR, Moscow

"Series Expansion of a Field by Normal Waves in an Underwater Channel"

(Main results of this task were reported at the Fifth All-Union Symposium of Wave Diffraction and Propagation, Leningrad, Jun 70)

Moscow, Akusticheskiy Zhurnal, Vol 18, No 4, Oct-Dec 72, pp 516-523

Abstract: The problem of excitation of the layer of a liquid by a point source is analyzed. The source is assumed lying on a homogeneous liquid half-space and bounded above by an absolutely soft wall. Generally speaking, the layer is not uniform vertically. A representation in the form of a series is obtained for the whole innerlayer field, while each term of the series represents a product of functions of vertical and horizontal coordinates. The functions of the vertical coordinate are the same as functions of normal waves. However, the dependence of terms of the horizontal coordinate series is not reducing to the Hankel function. The effectiveness of the obtained series expansion is illustrated by numerical data of the most simple case of a layer homogeneous over the whole depth. Three illustrations, two tables, twenty seven formulas, sixteen bibliographical references.

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USSR

UDC: 621.372.8:535

VOYTOVICH, N. N.

"Statistical Analysis of Irregular Quasioptical Lines (Light Guides) With the Use of a Computer"

V sb. Antenny (Antennas--collection of works), Vyp. 9, Moscow, "Svyaz", 1970, pp 53-61 (from RZh-Radiotekhnika, No 12, Dec 70, Abstract No 12B248)

Translation: A method is outlined for analyzing quasioptical transmission lines with random nonhomogeneities. The method is based on computer simulation of such lines. Results are presented which were obtained by modeling light pipes with random transverse displacements of phase correctors. The effect of beam damping is explained (deviation of its trajectory from opticogeometric) and optimum focal distances are given. A comparison is made of the results of modeling light guides with and without self-adjustment. Four illustrations, bibliography of 13 titles. Resumé.

1/1

1/2 030 UNCLASSIFIED  
TITLE--QUASI OPTICAL FEEDER LINES --U-- PROCESSING DATE--11DEC70  
AUTHOR--(02)--VOYTOVICH, N.N., SEMENOV, V.V.  
COUNTRY OF INFO--USSR  
SOURCE--RADIOOTEKHNIKA I ELEKTRONIKA, VOL. 15, APR. 1970, P. 697-704  
DATE PUBLISHED--APR70  
SUBJECT AREAS--ELECTRONICS AND ELECTRICAL ENGR., PHYSICS  
TOPIC TAGS--TRANSMISSION LINE, OPTIC INSTRUMENT, ELECTRON LENS, WAVEGUIDE  
CONTROL MARKING--NO RESTRICTIONS  
DOCUMENT CLASS--UNCLASSIFIED  
PROXY REEL/FRAE--1996/1671 STEP NO--UR/0109/70/015/000/0697/0704  
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CIRC ACCESSION NO--AP0118649

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PROCESSING DATE--11DEC70

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. INVESTIGATION OF THE PROBLEM OF CONSTRUCTING MULTILENS QUASI OPTICAL TRANSMISSION LINES BY DETERMINING THE LENS PROFILE FOR OPTIMAL CONVERSION OF THE SOURCE FIELD INTO A SPECIFIED FIELD AT THE RECEIVER END. IT IS ASSUMED THAT THE ELECTRICAL DIMENSIONS OF THE LENS APERTURES ARE LARGE, THAT THE DISTANCE BETWEEN LENSES IS MUCH LARGER THAN THEIR DIMENSIONS, THAT THE LENSES ARE THIN ENOUGH TO CHANGE THE PHASE DISTRIBUTION WITHOUT AFFECTING THE AMPLITUDE DISTRIBUTION, AND THAT THE SOURCE AND RECEIVER FIELDS ARE IN PHASE AND IDENTICALLY POLARIZED. A PREVIOUSLY DESCRIBED ITERATIVE PROCEDURE IS APPLIED IN THE CALCULATION, AND AN EXAMPLE IS GIVEN FOR THE CONVERSION OF AN H SUB10 RECTANGULAR WAVEGUIDE MODE.

UNCLASSIFIED

VOYTOVICH, R. F.

JPRS 55032

28 April 1972

THE THERMODYNAMIC CHARACTERISTICS OF  
REFRACTORY COMPOUNDS

Translation of Russian-language book by R. F. Voytovich:  
Tepmodynamika Sovedimniva, Termodinamicheskiye Charakteristiki,  
1971, signed to press 1 December 1970, Naukova Dumka Publishing  
House, Kiev, 220 pages.

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[I - USSR - I]

USSR

UDC 669.094, 3:621.295

VOYTOVICH, R. F., and PUGACH, E. A., Institute of Problems of Material Science, Academy of Sciences Ukrainian SSR

"High-Temperature Oxidation of Titanium Carbide"

Kiev, Poroshkovaya metallurgiya, No 2, Feb 72, pp 63-68

Abstract: This study concerns the high-temperature oxidation of TiC in open air within 500-1200°C for 5 hrs. In the TiC interaction with oxygen, the most preferred reaction appears to be that of the formation of corresponding oxides and carbon accumulated under the layer of the scale. The thermodynamic calculation of equilibria in TiC-O(N) systems within 298-2000°K indicates Ti to be unstable in O and N media up to 1800°C. In the process of TiC oxidation carbon appears to promote the sintering of scale and stabilization of oxide phases. The metallography and x-ray diffraction analysis of the TiC sinter scale indicates the presence of metallic titanium which supports the complex model of the faulty structure of the oxides suggesting predominant diffusion of interstitial cations at high temperatures. (3 illustrations, 1 table, 20 bibliographic references).

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1/2 014 UNCLASSIFIED PROCESSING DATE--30OCT70  
TITLE--USE OF POLY, VINYL ACETATE, EMULSIONS FOR GLUING WOOD AT LOW  
TEMPERATURES -U-  
AUTHOR--VOYTOVICH, V.A.  
COUNTRY OF INFO--USSR  
SOURCE--DEREVOGBRAB. PROM. 1970, 19(3), 21-2  
DATE PUBLISHED--70  
SUBJECT AREAS--MATERIALS  
TOPIC TAGS--POLYVINYL ACETATE, EMULSION, GLUE, WOOD, LOW TEMPERATURE  
EFFECT, HYDROGEN ION CONCENTRATION  
CONTROL MARKING--NO RESTRICTIONS  
DOCUMENT CLASS--UNCLASSIFIED  
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CIRC ACCESSION NO--AP0124639

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PROCESSING DATE--30OCT70

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. WHEN POLY(VINYL ACETATE) (I) EMULSIONS ARE APPLIED TO THE SURFACE OF WOOD, THE WATER EVAPORATES AND IS ABSORBED BY THE POROUS SUBSTRATE, AND I IS CONVERTED INTO A SOLID FILM WHICH, HOWEVER, IS STRONG ONLY WHEN THE I GLOBULES COALESCE TO FORM A CONTINUOUS LAYER. THE TENDENCY TO COALESCE DEPENDS ON THE TEMP. AND THE PH. AT A PH EXCEEDING THE RECOMMENDED LEVEL OF 4-6, THE MIN. TEMP. OF FILM FORMATION INCREASES; AT PH 4, 5.5, AND 6, IT IS 5, 20, AND 30 DEGREES, RESP. ADDN. OF AN ACID, PREFERABLY H SUB3 PO SUB4, LOWERS THE PH OF I EMULSIONS AND INCREASES THE AVAILABLE TEMP. RANGE. AT PH 3, THE MIN. TEMP. IS LOWERED TO 1-2 DEGREES. AT THIS PH, THE PHYSICOMECH. PROPERTIES OF THE GLUED JOINT ARE IMPROVED, AND ITS WATER RESISTANCE IS INCREASED, APPARENTLY BECAUSE OF LOWER INTERNAL STRAINS DEVELOPING DURING THE FILM FORMATION. EXPTL. DATA SHOW THE DELAMINATION RESISTANCE, THE SOFTENING COEFF., AND WATER ABSORPTION OF GLUED JOINTS OBTAINED AT PH 5 AND 3, BY USING I EMULSIONS APPLIED TO THE SURFACE OF GLASS.

UNCLASSIFIED



USSR

UDC 576.809.53

VOYTOVICH, YA. V., GRIKHUTNIKOVA, G. P., MIKHAYLOV, V. I., and PONOMAREV, P. I., Institute of Physics, Siberian Branch, Academy of Sciences USSR

"Autotrophic Culturing of Hydrogen-Oxidizing Bacteria in Continuous Culture"

Moscow, Prikladnaya Biokhimiya i Mikrobiologiya, Vol. 7, No 2, Mar/Apr 71, pp 183-188

Abstract: Autotrophic assimilation of  $\text{CO}_2$  with simultaneous regeneration of  $\text{O}_2$ ,  $\text{H}_2\text{O}$ , and some food has been discussed in the literature. Use for this purpose of  $\text{H}_2$  bacteria capable of utilizing  $\text{CO}_2$  as a source of C while deriving energy from the oxidation of  $\text{H}_2$  is preferable to that of photo-autotrophs, because less energy is expended per unit amount of synthesized biomass. Hydrogenomonas eutropha Z-1 were culture continuously in a laboratory bessel with a capacity of 5-7 l. and was filled up to 2 l. A solution containing (in g/l.)  $\text{Na}_2\text{HPO}_4$  1,  $\text{KH}_2\text{PO}_4$  3,  $\text{MgSO}_4$  0.1,  $\text{CaCl}_2$  0.02, Fe citrate 0.25 was used, to which 10% urea and the trace elements B, Co, Cu, Mn, Zn, Mo, and Ni in the form of a Hoagland solution has been added. A mixture of  $\text{CO}_2$ ,  $\text{O}_2$ , and  $\text{H}_2$  was  
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USSR

VOYTOVICH, YA. V., et al., Prikladnaya Biokhimiya i Mikrobiologiya, Vol 7, No 2, Mar/Feb 71, pp 183-188

continuously pumped in. Automatic control based on continuous measurement of optical density was applied. When the optical density reached a certain level, a part of the culture was withdrawn and fresh nutrient medium added. The composition of the gas discharged from the apparatus was determined. The intensity of the process was determined on the basis of the hourly rate of growth and the amount of dry biomass produced per day per liter. On the basis of the data obtained, it was calculated that for an installation with a mass transfer of  $H_2$  up to 25 ml/min per 1 g effective bio mass, the maximum efficiency (maximum production of biomass per day per liter) will result when the gas mixture contains 2-3%  $CO$ , 15-30%  $O_2$ , 30-65%  $H_2$ , depending on the biomass concentration. The maximum rate of growth obtained was 0.2/hr. With increasing biomass concentrations, the rate of growth decreased, while the efficiency of the process increased linearly. Although culturing was conducted under non-sterile conditions, contamination of the culture with extraneous species did not exceed 1% under optimum intensive growth conditions. The apparatus was run for 105 days with continuous periods of operation amounting to 11 days.

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