

1/2 013 UNCLASSIFIED PROCESSING DATE--04DEC70  
TITLE--PRODUCTION OF HIGH PURITY GERMANIUM TETRACHLORIDE BY REMOVING  
PHOSPHORUS IMPURITY -U-  
AUTHOR-(05)-FEDOROV, P.I., MOLOCHKO, V.A., KURDYUMOV, G.M., GALOCHKINA,  
V.G., SMIRNOVA, T.YU.  
COUNTRY OF INFO--USSR

SOURCE--IZV. VYSSH. UCHEB. ZAVED., TSVET. MET. 1970, 13(1), 82-6

DATE PUBLISHED-----70

SUBJECT AREAS--CHEMISTRY

TOPIC TAGS--CHEMICAL PRODUCTION, GERMANIUM COMPOUND, CHLORIDE, PHOSPHORUS,  
CHEMICAL SEPARATION, CRYSTALLIZATION, PHOSPHORUS CHLORIDE

CONTROL MARKING--NO RESTRICTIONS

DOCUMENT CLASS--UNCLASSIFIED  
PROXY REEL/FRAME--3008/0632

STEP NO--UR/0149/70/013/001/0082/0086

CIRC ACCESSION NO--AT0137717

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UNCLASSIFIED

PROCESSING DATE--04DEC70

CIRC ACCESSION NO--AT0137717

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. DTA INDICATED THAT PCL SUB3, POCL SUB3, AND PCL SUB5 ARE INACTIVE COMPONENTS AND ARE PRESENT IN THE EUTECTIC. VERY SMALL QUANTITIES OF PCL SUB3 AND POCL SUB3 ARE SOL. IN GECL SUB4 SOLID PHASE. THE EQUIL. DISTRIBUTION COEFF. AND THE SOLIDUS LINE ARE DEFINED FOR VERY SMALL AMTS. OF POCL SUB3 AND PCL SUB3 IN GECL SUB4. THE MEANS FOR CALCG. THE THICKNESS OF A DIFFUSION LAYER DURING RECRYSTN. IS THE MOST SUITABLE METHOD. FOR PURIFICATION OF GECL SUB4, TONKOI KHIM. TEKHNOL., MOSCOW, USSR. FACILITY: MOSK. INST.

UNCLASSIFIED

1/2 C30 UNCLASSIFIED PROCESSING DATE--11DEC70  
TITLE--BIONICS -U-  
AUTHOR--FLDROV, R.  
COUNTRY OF INFO--USSR  
SOURCE--PRAVDA, SEPTEMBER 20, 1970, P 3, COLS 1-3  
DATE PUBLISHED--20SEP70  
SUBJECT AREAS--BIOLOGICAL AND MEDICAL SCIENCES  
TOPIC TAGS--BIONICS, PROSTHETIC DEVICE, STATE PRIZE  
CENTREL MARKING--NO RESTRICTIONS  
DOCUMENT CLASS--UNCLASSIFIED  
PROXY FICHE NO----FD70/605037/806 STEP NO--UR/9012/70/000/000/0003/0003  
CIRC ACCESSION NO--AN0142435  
UNCLASSIFIED

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UNCLASSIFIED

PROCESSING DATE--11DEC70

CIRC ACCESSION NO--AN0142435

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. THE ARTICLE GIVES THE BRIEF  
ACCOUNT OF BIONICS RESEARCH DONE AT THE CENTRAL SCIENTIFIC RESEARCH  
INSTITUTE OF PROSTHETICS AND PROTHESIS CONSTRUCTION. ACCORDING TO BORIS  
PETROVICH POPOV-IL, IN, DIRECTOR OF THE INSTITUTE, THE FIRST MOCKUP OF  
THE BIONIC PROTHESIS OF THE ARM WAS MADE IN THE INSTITUTE IN 1958. ONE  
OF THE INITIATORS OF THIS PROJECT IS PROFESSOR A. YE. KOBRINSKIY,  
LAUREATE OF THE STATE PRIZE AND LABORATORY HEAD AT THE INSTITUTE OF  
MACHINE SCIENCE.

UNCLASSIFIED

USSR

YAKOVLEV, V. V., FEDOROV, R. F.

"Computer Elements with Probabilistic Representation of Information"

Avtomatika i Vychisl. Tekhn. [Automation and Computer Technology], 1972, No 5, pp 80-84 (Translated from Referativnyy Zhurnal Kibernetika, No 4, 1973, Abstract No 4V616, by the authors).

Translation: The principles of construction of certain elements of computer equipment using the probabilistic method of coding of information are studied. The relationship between the accuracy and speed of these elements is estimated. Results of mathematical modeling are presented.

USSR

UDC: 621.374.335

FEDOROV, R. F.

"Analysis of the Static Accuracy of Voltage Comparison by Means of a 'Matched Pair' of Tunnel Diodes"

Sb. tr. Leningr. in-t inzh. zh.-d. transp. (Collected Works of the Leningrad Institute of Railway Transportation Engineers), 1971, vyp. 314, pp 90-98 (from RZh-Radiotekhnika, No 6, Jun 71, Abstract No 6G302)

Translation: Conditions of achieving maximum accuracy of voltage comparison in a circuit with two tunnel diodes are considered as well as basic parametric relations. Bibliography of two titles. Resumé.

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USSR

UDC 621.762:520.17

FEDOROV, R. I., TSYRKIN, A. T., and SAKOYLOV, V. A.,  
Voroshilovgradsk Diesel Locomotive Plant imeni October Revolution,  
Kommunarsk Mining and Metallurgical Institute

"Method of Determining Plasticity and Strength of Powder-Metal-  
lurgy Materials"

Moscow, Zavodskaya Laboratoriya, Vol 37, No 12, 1971,  
pp 1503—1505

Abstract : A method has been developed for determining the plasticity and strength of powder-metallurgy materials directly on the fabricated articles, on bushings. The method is based on impressing a spherical punch into the bushing or a sample which has been cut out from the bushing. As plasticity criterion is considered the diameter of the impression produced on the specimen by loading it up to development of the first crack. The developed special testing device is illustrated. Parallel with the impression, experiments of determining the plasticity by tension were carried out. Both methods provide quite satisfactory results, but the impression method is more technological. Three illustr., one table, three biblio. refs.

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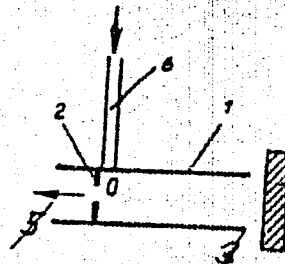
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UR 0482

Soviet Inventions Illustrated, Section III Mechanical and General, 3  
Derwent, 223452

PNEUMATIC DISPLACEMENT SENSOR the device offers a simple design providing an improvement over the known pneumatic sensors which work with an output pressure varying from feed pressure to atmospheric. The assembly consists (see diagram) of a vortex tube 1 containing a perforated diaphragm 2, nozzle 3, and in front of the latter a baffle 4. 5 is the output channel, and 6, which enters tangential to the curved surface of 1, the input. When a large opening is present at 3, suction of air takes place through diaphragm 2, so causing the pressure in the output channel 5 to become less than atmospheric.

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G.I. ANTONOV, Yu. V.  
and PEDOSEEV, R. Yu.  
(13.II.68) Bul. 24/  
2.8.68. Class 42m2  
Int. Cl. G 06d.

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1/2 014 UNCLASSIFIED PROCESSING DATE--30OCT70  
TITLE--ELEMENTS OF GENERAL THEORY OF QUALITY --U-  
AUTHOR--FEDOROV, S.A. F  
COUNTRY OF INFO--USSR  
SOURCE--STANDARTY I KACHESTVO, 1970, NR 5, PP 68-70  
DATE PUBLISHED-----70  
SUBJECT AREAS--BEHAVIORAL AND SOCIAL SCIENCES, MECH., IND., CIVIL AND  
MARINE ENGR  
TOPIC TAGS--QUALITY CONTROL, INDUSTRIAL STANDARD, MODEL, INDUSTRIAL  
PLANNING, PRODUCTION STANDARD  
CONTROL MARKING--NO RESTRICTIONS  
DOCUMENT CLASS--UNCLASSIFIED  
PROXY REEL/FRAME--1999/0118 STEP NO--UR/0422/70/000/005/0068/0070  
CIRC ACCESSION NO--AP0122384  
UNCLASSIFIED

2/2 014

UNCLASSIFIED

PROCESSING DATE--30OCT70

CIRC ACCESSION NO--AP0122384

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. THIS IS A FURTHER DEVELOPMENT OF SOME OF THE THESES FORMULATED BY THE AUTHOR PREVIOUSLY (SEE "STANDARTY I KACHESTVO", 1969, NO. 12) WITH THE VIEW TO DESIGNING A COMPLEX MODEL OF PRODUCTION WITH DUE ACCOUNT TO BOTH QUANTITY AND QUALITY OF PRODUCTS.

UNCLASSIFIED

1/2 024 UNCLASSIFIED PROCESSING DATE--02OCT70  
TITLE--REPLACEMENT OF THE CORNEA AND CRYSTALLINE LENS WITH ALLOPLASTIC  
PROSTHESES -U-  
AUTHOR--FEDOROV, S.N. F  
COUNTRY OF INFO--USSR  
SOURCE--VESTNIK OFTAL'MOLOGII, 1970, NR 2, PP 38-41  
DATE PUBLISHED-----70  
SUBJECT AREAS--BIOLOGICAL AND MEDICAL SCIENCES  
TOPIC TAGS--CORNEA, SURGICAL IMPLANT, VISUAL ACUITY  
CONTROL MARKING--NO RESTRICTIONS  
DOCUMENT CLASS--UNCLASSIFIED  
PROXY REEL/FRAME--1986/0835 STEP NO--UR/0357/70/000/002/0038/0041  
CIRC ACCESSION NO--AP0102797  
UNCLASSIFIED

2/2 024

UNCLASSIFIED

PROCESSING DATE--02OCT70

CIRC ACCESSION NO--AP0102797

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. THE AUTHOR DESCRIBES 2 PATIENTS WITH DEVELOPMENT OF ENDOTHELIAL DYSTROPHY OF THE CORNEA FOLLOWING IMPLANTATION OF INTRAOCULAR LENS. THE AUTHOR BELIEVES THIS COMPLICATION TO BE CAUSED BY MECHANICAL INJURIES (A BLOW IN THE EYE, TRAUMA OF THE CORNEAL ENDOTHELIUM DURING IMPLANTATION OF THE INTRAOCULAR LENS). KERATOPLASTY PERFORMED IN BOTH PATIENTS PROVED INEFFECTIVE. THIS WAS FOLLOWED BY IMPLANTATION OF THE CARDONA MODEL KERATOPROSTHESIS, WITH INTRACULAR LENSES LEFT IN PLACE. IN BOTH INSTANCES GOOD RESULTS WERE SCORED; ENDOTHELIAL DYSTROPHY BEING ELIMINATED AND PSEUDOSCOPIC VISION (0.5) RESTORED. IN FUTURE VISUAL ACUITY CAN BE RAISED BY DISSECTION OF THE POSTERIOR CONDENSED CAPSULE OF THE LENS.

UNCLASSIFIED

USSR

SEMENOV, L., and FEDOROV, V.

"The Air Which Cosmonauts Breathe"

Trud, 11 Jun 70, p 3

Translation: Extra-atmospheric flights must be performed under conditions in which cosmonauts can work and rest. They must get the right amount of food, drink, air, rest, and sleep. This simple, commonplace matter on earth becomes a complex scientific and technological problem in the cosmos.

Man can survive a fairly long time without food, several days without water, but only a few minutes without air. Breathing is a vital function of the human body. How is it ensured in spaceflights?

The free volume in spaceships is small. The most spacious ship -- Soyuz -- has about 9 cubic meters of air on board. Outside the ship's walls, there is almost a complete vacuum or just remnants of the atmosphere with a density a million times less than on the earth's surface.

Nine cubic meters is all that the cosmonauts have available for breathing on the Soyuz. However, this is sufficient. The question is only what fills this volume and what do the cosmonauts breathe.

The atmosphere surrounding man on earth consists, of 78.09% nitrogen, 20.95%

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SEMEROV, L., and FEDOROV, V., Trud, 11 Jun 70, p 3

oxygen, 0.93% argon, and 0.03% carbon dioxide. The concentration of the other gases is insignificant.

This is the gas mixture human beings and all other living creatures on earth are accustomed to breathe. However, the adaptability of the human body is great. Of the total atmospheric pressure of 760 mm Hg at sea level, only about 160 mm are due to oxygen (the so-called partial pressure of oxygen). What happens when the oxygen concentration in the air decreases? Man can breathe even when the partial pressure of oxygen is as low as 98 mm Hg: only when the value falls below this level does "oxygen starvation" begin. The opposite is also possible, that is, oxygen concentration in the air can be greater than normal. The highest partial pressure of oxygen at which man can breathe normally is 425 mm Hg. Higher concentrations cause oxygen poisoning. Thus, the human body can tolerate a fourfold change in oxygen content. As far as the total atmospheric pressure is concerned, the human body can tolerate even greater fluctuations: from 160 mm Hg to several atmospheres.

Nitrogen and argon are inert constituents of the air. Only oxygen participates in oxidative processes. This gave rise to the following idea: in the spaceship, we could perhaps replace nitrogen with a lighter gas, for example, helium. One cubic meter of nitrogen weighs 1.25 kg while the same volume of helium weighs  
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SEMENOV, L., and FEDOROV, V., Trud, 11 Jun 70, p 3

only 0.18 kg, that is, seven times less. This makes quite a difference for a spaceship where each extra kilogram counts. Experiments demonstrated that man can breathe normally in an oxygen-helium atmosphere. This was verified by American aquanauts in prolonged submersions.

From the technical viewpoint, a single-gas atmosphere consisting of pure oxygen is also interesting. In American spaceships, astronauts breathe pure oxygen at a pressure of about 270 mm Hg. This requires simpler and easier instruments to control the pressure and composition of the atmosphere. However, pure oxygen has its shortcomings: fire hazard in the spaceship increases, and the prolonged inhalation of pure oxygen causes unpleasant complications in the astronauts' respiratory passages.

The normal atmosphere on earth was taken as the basis for establishing an artificial environment on the Vostok, Voskhod, and Soyuz ships. Our specialists, especially medics, insisted that the spaceships must be a miniature duplicate of earth, with characteristics as similar as possible to those surrounding man on earth. All technical advantages ensuing from a single-gas atmosphere, and oxygen-helium mixture, and other mixtures were sacrificed for the sake of the cosmonauts' full comfort.

After the cosmonauts board the ship and the compartments are locked and sealed, the composition of the atmosphere in the ship begins to change. In one hour, two

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SEMENOV, L., and FEDOROV, V., Trud, 11 Jun 70, p 3

cosmonauts consume about 50 liters of oxygen and produce 80-100 g of water vapor, carbon dioxide, volatile metabolites, and so on. At that time, the airconditioning system turns on and adjusts the atmosphere to the "required condition," that is, it maintains all atmospheric parameters at the optimum level.

Regeneration of the atmosphere is based on tested, effective physical and chemical processes. There are chemical substances which, upon combining with water or carbon dioxide, release oxygen. These are superoxides of the basic metals sodium, potassium, and lithium. To release 50 liters of oxygen -- the hourly requirement of two cosmonauts -- these substances must bind 26.4 g of water. As mentioned before, two cosmonauts exhale into the atmosphere 100 of water vapor per hour.

A portion of this water vapor is used to produce oxygen, another portion is left in the atmosphere to keep the relative humidity at 40-60%, and the rest is absorbed by special desiccators.

Activated carbon is used to absorb volatile metabolites and odors.

No dust, crumbs, or other debris must be present in the air. During weightlessness, these particles do not fall to the floor but freely float in the atmosphere and may enter the cosmonauts' respiratory tracts. Special filters are used to purify the air from mechanical pollutants.

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SEMENOV, L., and FEDOROV, V., Trud, 11 Jun 70, p 3

Thus, regeneration of the atmosphere in the ship is accomplished by fans which continuously draw air from the inhabited compartments and conduct it through various installations of the airconditioning system. There, the air is purified, its chemical composition, humidity, and temperature are restored, and then it is returned to the cosmonauts' cabin. This circulation of air goes on continuously, and the speed of circulation and effectiveness of reconditioning are constantly controlled by automatic mechanisms.

For example, when the oxygen concentration in the ship's atmosphere increases above the preset level, the control instruments notice it immediately. They send orders to appropriate equipment, and their performance level is changed to decrease the release of oxygen.

The effectiveness of the atmosphere regeneration system developed by Soviet specialists has been repeatedly tested under real space conditions.

All parameters are very close to the norms of the earth's atmosphere. This proves that the system is highly sensitive and maintains all variables within a very narrow range. The cosmonauts breathe almost the pure air of the earth.

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USSR

UDC: 621.371.332.3

BABAYEV, A. B., LOGACHEV, V. P., PARFENT'YEV, V. N., FEDOROV, V. A., SHELO-MANOVA, G. P.

"Some Problems of Reflection of a Frequency-Modulated Signal From Forest Cover"

Tr. Mosk. energ. in-ta (Works of the Moscow Power Engineering Institute), 1972, vyp. 110, pp 84-86 (from RZh-Radiotekhnika, No 8, Aug 72, Abstract No 8G57)

Translation: Using an experimental model of a radio altimeter with frequency modulation (waveband of 7 cm, deviation of 100 MHz, width of the polar diagram at half power in both planes 25-30°), the authors studied the errors in measurement of flight altitude over a forested surface. The experiments were done over hills of various heights with different types of trees. A singularity was found in the signal reflected from the forest -- beats with two maxima showed up in the signal spectrum. The error in altitude measurement depending on the density and height of forest cover is determined. Three illustrations. H. S.

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USSR

UDC: 535.34

ZAVADOVSKAYA, Ye. K., LISITSYN, V. M., BARANOV, A. I., FEDOROV, V. A.,  
STEPANOV, V. G., Tomsk Polytechnical Institute imeni S. M. Kirov

"Radiation-Induced Transformation of Defects in  $\text{CaF}_2$ ,  $\text{SrF}_2$ , and  $\text{BaF}_2$ "

Tomsk, Izvestiya VUZov: Fizika, No 2(129), 1973, pp 110-112

Abstract: The paper presents the results of an investigation of radiation-stimulated processes of transformation of defects in fluorides of alkali-earth metals. The crystals were grown from purified natural fluorides and also from synthesized, chemically pure salts. The crystals were subjected to electron bombardment at 1-1.8 MeV at room temperature and also in a stream of low-temperature plasma at an air pressure of 1-2 mm Hg. The EPR spectra were measured at room temperature on a Thomson-251 spectrometer. It is found that radiation in these crystals converts simple electron defects with active participation of holes to radiation-stable and heat-stable defects. The greatest effect of the radiation-stimulated processes is observed in  $\text{CaF}_2$ .

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USSR

UDC: 621.396.96:681.32

FEDOROV, V. A., POPOV, D. I., REPIN, N. K.

"A Device Based on Potential Logic Elements for Amplitude-Time Quantization With Respect to the Center of Pulses"

Tr. Ryazan. radiotekhn. in-ta (Works of the Ryazan Radio Engineering Institute), 1972, vyp. 33, pp 219-227 (from RZh-Radiotekhnika, No 8, Aug 72, Abstract No 8G17)

Translation: The paper presents the circuit of a device in which the time position of a standard pulse is determined by the center of the input pulse rather than by the edge of the pulse. The operation of the individual elements of the device is considered. Six illustrations, bibliography of two titles. N. S.

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USSR

UDC: 621.371.332.3.01

BABAYEV, A. B., LOGACHEV, V. P., FEDOROV, V. A., PARFENT'YEV, V. N.

"Experimental Investigation of the Characteristics of Reflection From Uneven Ground Surfaces"

Tr. Mosk. energ. in-ta (Works of the Moscow Power Engineering Institute), 1972, vyp. 110, pp 87-89 (from RZh-Radiotekhnika, No 8, Aug 72, Abstract No 8G56)

Translation: An investigation was made of the power of a signal reflected from a ground surface with forest cover as a function of the angle of irradiation of the surface for various types of forest cover (heavy coniferous forest, deciduous, mixed, and so on), and also of the influence which the moisture content of the reflecting surface and cover has on the power amplitude and degree of depolarization of the reflected signal. The results are presented in juxtaposition with data found for the surface of the sea, ice, and plowed ground without cover. Three illustrations, two tables. N. S.

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USSR

UDC: 621.396.96:681.32

POPOV, D. I., AVDEYEV, V. V., FEDOROV, V. A., SHESTAKOV, N. D.

"Effectiveness of a Device for Digital Two-Dimensional Filtration of Radar Images"

Tr. Ryazan. radiotekhn. in-ta (Works of the Ryazan Radio Engineering Institute), 1972, vyp. 33, pp 203-209 (from RZh-Radiotekhnika, No 8, Aug 72, Abstract No 8G16)

Translation: The necessity for two-dimensional filtering arises, for instance, when objects are to be recognized on two-dimensional radar images of a locality. When image scanning is present, i. e. as a result of conversion of the two-dimensional image to a one-dimensional image, the problem reduces to recognition of a pattern consisting of individual points; it can be solved by reckoning the number of pulses which fall into the next formation, whose position on the subsequent line is determined by the pulse of the previous line. A device which realizes this method is described. The results of calculation of the characteristics of the device are presented. Bibliography of five titles. H. S.

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USSR

UDC 660.67:546.19

KUZ'MIN, N. M., FEDOROV, V. A., and FILIPPOV, E. P.

"Combined Method of Deep Purification of Arsenous Chloride"

Moscow, Doklady Akademii Nauk SSSR, Vol 200, No 4, 1971, pp 909-911

Abstract: The article suggests using a combination of extraction and rectification for the purification of arsenous chloride. The initial material to be purified is commercial arsenous chloride obtained by chlorination of metallic arsenic and the dissolution of arsenic trioxide in hydrochloric acid. The three-stage extraction purification is carried out at

$V_{HCl} = 1:1:0.5$ . Rectification of the benzene solution of arsenous chloride is carried out on an integral packed-type column made of synthetic quartz. The method provides effective removal of microimpurities from arsenous chloride.

USSR

UDC 621.385.6

SUSHKOV, A. D., MEOS, V. A., FEDOROV, V. A.

"Study of Two-Gap Input Device of Microwave Amplifiers With Quasi-Static Control"

Izv. Leningr. elektrotekhn. in-ta (Bulletin of the Leningrad Electrical Engineering Institute), 1970, Issue 96, pp 15-19 (from RZh-Elektronika i yeye primeneniye, No 8, August 1971, Abstract No 8A169)

Translation: The results are presented of an experimental study proposed by one of the authors, of the two-gap input device of a microwave amplifier, with the object of determining the possibility of its use in microwave tetrode amplifiers for modulation of a convective electron stream with respect to density. A model was studied of a tetrode based on a 6S5D (triode) tube. The input microwave signal was fed into a cavity formed by the space cathode-control grid. The amplified signal was led out from a cavity formed by the space-grid-anode. The study was conducted at a frequency of 900 MHz. It is shown that the device has definite advantages over familiar circuits and makes it possible to increase considerably the amplification factor of a tetrode amplifier. R.M.

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UNCLASSIFIED PROCESSING DATE 1980/10/10

TITLE--SLOWING OF FAST CRACKS BY CERTAIN STRUCTURAL DEFECTS -U-

AUTHOR--(05)--FINKEL, V.M., VORONOV, I.N., SAVELEV, A.M., ELISENKO, A.I.,  
 FEDOROV, V.A.

COUNTRY OF INFO--USSR

SOURCE--PROBLEMY PROCHNOSTI, VOL. 2, MAR. 1970, P. 8-16

DATE PUBLISHED---MAR70

SUBJECT AREAS--MATERIALS

TOPIC TAGS--TRANSFORMER STEEL, CRACK PROPAGATION, LITHIUM FLUORIDE, SODIUM  
 CHLORIDE, LATTICE DEFECT

CONTROL MARKING--NO RESTRICTIONS

DOCUMENT CLASS--UNCLASSIFIED

PROXY REEL/FRAME--2000/0122

STEP NO--UR/3663/70/002/000/0008/0016

IRC ACCESSION NU--AP0123894

UNCLASSIFIED

2/2 030

UNCLASSIFIED

PROCESSING DATE--13NOV70

IRC ACCESSION NO--AP0123894

ABSTRACT/EXTRACT--(U) GP-C- ABSTRACT. INVESTIGATION OF THE INTERACTION OF A FAST, BRITTLE CRACK WITH THE MECHANICAL TWINS IN TRANSFORMER STEEL AND WITH THE SLIP BANDS IN LiF AND NaCl CRYSTALS. FAST MICROKINEMATOGRAPHY AND PHOTOPLASTICITY METHODS WERE USED IN THIS STUDY. IT IS SHOWN THAT THE CROSSING OF TWINS OR SLIP BANDS BY A CRACK IS ACCOMPLISHED BY A HIGHLY PRONOUNCED SHEAR AND LOCAL PLASTIC STRAIN. THE AMOUNT OF TWINS AND SLIP BANDS FOR COMPLETE INHIBITION OF CRACK PROPAGATION IS DETERMINED FOR DIFFERENT INITIAL PROPAGATION RATES. FACILITY: TAMBOVSKII INSTITUT KHIMICHESKOGO MASHINOSTROENIIA, TAMBOV, USSR.

UNCLASSIFIED

USSR

UDC: 621.374.4

F  
FEDOROV, V. A., FURMAN, N. P., MASLOV, E. B.

"A Key Frequency Divider With High Division Coefficient"

V sb. Obmen opytom v radioprom-sti (Experience Pooling in the Radio Industry-- collection of works), Vyp. 2, Moscow, 1970, pp 57-58 (from RZh-Radiotekhnika, No 7, Jul 70, Abstract No 7G311)

Translation: A description is given of a key frequency divider based on two transistors connected in an LC-oscillator circuit with a key at the input to which oscillations are sent through an RC phase-shifting network from the output tank. The distinguishing feature of the divider is that it uses an active key in addition to capacitive feedback. The use of capacitive feedback simplifies the divider, while the active key in combination with an rf choke in the emitter circuit increases the division coefficient by an order of magnitude. Bibliography of four titles. Resumé.

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USSR

UDC: None

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

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

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

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

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USSR

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

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

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USSR

BATANOV, V. A.; BURKIN, F. V.; PROKHOROV, A. M.; FEDOROV, V. B. (Lebedev Physics Institute, USSR Academy of Sciences)

"Evaporation of Metallic Targets by Intense Optical Radiation"

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

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

USSR

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

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

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USSR

UDC 621.373:590.145.6

BATANOV, V. A., YERSHOV, B. V., MAKSINOV, L. P., SAVRANSKIY, V. V., FEBOROV, V. S.  
"Laser Unit with Radiation Energy up to 10 Kilojoules for Investigating the Inter-  
action of Powerful Luminous Fluxes with Matter"

Kratk. soobshcheniya po fiz. (Brief Reports on Physics), No 4, 1970, pp 8-14  
(from RZh-Radiotekhnika, No 8, Aug 70, Abstract No 8 D188)

Translation: This article contains a description of a device created on the basis of a neodymium glass laser ( $\lambda = 10,600 \text{ \AA}$ ) generating pulses with an energy to 10 kilojoules and  $\approx 1$  millisecond long. The intensity of the light flux reaches  $10^7$  watts/cm<sup>2</sup> over an area of up to 1 cm<sup>2</sup>. The device consists of three independent generators operating in parallel each of which contains three plane-parallel rods of neodymium glass pumped by pulse tubes. The experience in operating the device for three years has demonstrated that obtaining an energy of ~10 kilojoules is possible 5-10 times, obtaining an energy of five kilojoules is possible 50 times without replacing the tubes, active elements and reflectors.

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1/2 026  
UNCLASSIFIED  
TITLE--PERITONITIS 6N PATIENTS WITH ACUTE APPENDICITIS -U- PROCESSING DATE--18SEP70  
AUTHOR--(03)-MAYAT, V.S., FEDOROV, V.D., NIKITIN, A.M.  
COUNTRY OF INFO--USSR  
SOURCE--KHIRURGIYA, 1970, NR 4, PP 89-97  
DATE PUBLISHED-----70  
SUBJECT AREAS--BIOLOGICAL AND MEDICAL SCIENCES  
TOPIC TAGS--DIGESTIVE SYSTEM DISEASE, SURGERY, PERITONEUM, ANTIBIOTIC DRUG EFFECT  
CONTROL MARKING--NO RESTRICTIONS  
DOCUMENT CLASS--UNCLASSIFIED  
PROXY REEL/FRA--1983/1232  
CIRC ACCESSION NO--AP0054127  
STEP NO--UR/0531/70/000/004/0089/0097  
UNCLASSIFIED

2/2 026

UNCLASSIFIED

PROCESSING DATE--18SEP70

CIRC ACCESSION NO--AP0054127

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

ABSTRACT. FOR A TWENTY YEAR PERIOD THE CLINIC OPERATED UPON MORE THAN 20,000 PATIENTS WITH ACUTE APPENDICITIS, DURING THE LAST TEN YEARS THERE WAS NOTED AN INCREASED INCIDENCE OF EXTREME FORMS OF DESTRUCTION OF THE VERMIFORM APPENDIX AND SUCH COMPLICATIONS AS PERFORATION AND DIFFUSE SUPPURATIVE PERITONITIS. THIS RESULTED IN AN AUGMENTED POSTOPERATIVE LETHALITY. DIFFERENT FORMS OF PERITONITIS WERE OBSERVED IN 790 PATIENTS OUT OF THE LAST 5200 (15PERCENT) APPENDECTOMIES. LETHAL OUTCOMES WERE OBSERVED ONLY IN PATIENTS ADMITTED WITH MANIFESTATIONS OF PERITONITIS. COMPLEX TREATMENT PROVED TO BE LEAST EFFECTIVE IN DIFFUSE AND GENERAL SUPPURATIVE PERITONITIS. BACTERIOLOGICAL INVESTIGATIONS ENABLED TO SUBSTANTIATE THE NECESSITY OF USING ANTIBIOTICS OF THE NEOMYCIN SERIES. BEST RESULTS WERE OBTAINED IN PATIENTS IN WHOM SANATION OF THE ABDOMINAL CAVITY WAS CARRIED OUT BY MEANS OF WIDE LAPAROTOMY AND MASSIVE IRRIGATION WITH AN ISOTONIC SOLUTION WITH SUBSEQUENT PROLONGED FLOW IRRIGATION (5 TO 6 LITERS OF RINGER'S SOLUTION WITH 5 TO 6 GM OF CANAMYCIN PER 24 HOURS). AN ANALYSIS OF CLINICAL OBSERVATIONS ENABLED TO CONCLUDE THAT TO REDUCE THE LETHALITY IN ACUTE APPENDICITIS IT IS NECESSARY TO FURTHER IMPROVE THE TECHNIQUES OF TREATING SUPPURATIVE PERITONITIS, TO WIDEN THE SANITARY EDUCATION WORK AND TO INCREASE THE QUALIFICATION OF PHYSICIANS IN THE DIAGNOSIS OF ACUTE SURGICAL DISEASES OF ABDOMINAL ORGANS.

UNCLASSIFIED

1/2 014

UNCLASSIFIED -U-

PROCESSING DATE--30OCT70

TITLE--CANAMYCIN TREATMENT OF PERITONITIS

AUTHOR--(02)FEDOROV, V.D., MAKSIMOV, V.I.

COUNTRY OF INFO--USSR

SOURCE--KHIRURGIYA, 1970, NR 6, PP 94-100

DATE PUBLISHED--70

SUBJECT AREAS--BIOLOGICAL AND MEDICAL SCIENCES

TOPIC TAGS--PERITONEUM, ANTIBIOTIC, DRUG TREATMENT/ (U) CANAMYCIN ANTIBIOTIC

CONTROL MARKING--NO RESTRICTIONS

DOCUMENT CLASS--UNCLASSIFIED

PROXY REEL/FRAE--3002/1775

STEP NO--UR/0531/70/000/006/0094/0100

CIRC ACCESSION NO--AP0129143

UNCLASSIFIED

2/2 014

CIRC ACCESSION NO--AP0129143  
ABSTRACT/EXTRACT--(U) GP-0-

UNCLASSIFIED

PROCESSING DATE--30OCT70

ABSTRACT. THE EXCRETORY AND ABSORPTIVE CAPACITY OF THE PERITONEUM IN RESPECT WITH CANAMYCIN WAS INVESTIGATED IN OVER 100 PATIENTS WITH DIFFERENT FORMS OF PERITONITIS. THE DATA DERIVED TESTIFY TO THE INADEQUATE EFFECTIVENESS OF THE INTRAMUSCULAR ROUTE OF ANTIBIOTIC ADMINISTRATION, IN VIEW OF THE IMPOSSIBILITY TO CREATE IN THE PERITONEAL EXUDATE BACTERICIDAL CONCENTRATIONS. THE LEVEL OF CANAMYCIN CONTENT IN THE ABDOMINAL CAVITY IN LOCAL PERITONITIS ACHIEVED 2, IN DIFFUSE, 4, IN GENERALIZED, 11 MU G-ML. STUDIES OF THE PERITONEAL ABSORPTIVE CAPACITY ENABLED TO SUBSTANTIATE DIFFERENT METHOD OF INTRAPERITONEAL INTRODUCTION OF CANAMYCIN AND TO CONSIDER THEM PREFERABLE IN COMPARISON WITH INTRAMUSCULAR. INTRAPERITONEAL ADMINISTRATION OF 1-1.5 GM OF CANAMYCIN IS SUFFICIENT FOR THE TREATMENT OF LOCAL PERITONITIS. IN DIFFUSE PERITONITIS CONSTANT DRIP TRANSFUSION OF 2 GM OF CANAMYCIN IN 500 ML OF RINGER'S SOLUTION PROVED TO BE EFFECTIVE. THE BEST RESULTS IN THE TREATMENT OF DIFFUSE AND GENERALIZED SUPPURATIVE PERITONITIS WERE ACHIEVED WITH MASSIVE IRRIGATION OF THE ABDOMINAL CAVITY WITH 5-6 LITERS OF RINGER'S SOLUTION WITH 5-6 GM OF CANAMYCIN WITHIN A PERIOD OF 24 HOURS. IN THIS METHOD THE ANTIBIOTIC WIDELY CONTACTS THE INFLAMED PERITONEUM, THE PREPARATION IS CONSTANTLY PRESENT IN THE BLOOD SERUM AT A HIGH LEVEL (OVER 15-20 MU G ML); IN THE FLUID OF THE ABDOMINAL CAVITY CANAMYCIN WAS PRESENT IN BACTERIAL CONCENTRATIONS (200-500 MU G-ML). FACILITY: GOSPITAL'NAYA KHIRURGICHESKAYA KLINIKA II MMI IMENI N. I. PRIGOVA.

UNCLASSIFIED

FEDOROV, V. D.

Biology / Ecology

FEDOROV, V. D.

Ecology / Ecology  
D

JUNE 1970  
8 JULY 1970

DOC 581.538.31

ORGANIZATIONAL METHODS AND MECHANISMS  
OF "BIRAOV" OF A SPECIES IN A COMMUNITY

Article by V. D. Fedorov, Faculty, Leningrad University,  
Russia, No 2, 1970, published in July 1970, pp 71-83

Logical-constructive formal generalizations and formal conceptual schemes of a general organizational pattern to serve as a framework for the development of the invariable and numerous details of the individual ideas. This kind of achievement is not to be raised in biology as a result of the philosophical achievement of molecular biology and genetics in the present years. Scientific disciplines have a harmonious whole. The basic organization of the part of the whole but many its general plans as well. Theoretical biology is called upon to present this general plan as well. Theoretical biology is and hypotheses relating to the organization of living systems (Gould, 1966).

Generalizations inevitably lead to the formalization of ideas which facilitates the use of mathematics. However, formalization merely as a rule, reflect all the atomic details and it is opposed by the nature, as a device much energy to writing one describing the differences between individual biological phenomena. Handling nature close up, the biologist often finds no special opening for the dry language of formalism which give solutions in a general form. At best these solutions are limited for the foreseeable future in interpreting reality asymptotically through a special approach.

Nevertheless, formal theory has achieved considerable success by relating the basic question regarding biological organization: How are the

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11 1958 - 1 / X

USSR

UDC: 581.1

F  
FEDOROV, V.D., BELAYA, T.I., MAKSIMOV, V.N., State University im. M.V. Lomonosov

"Utilization of Biogenic Elements by Phytoplankton Community Depending on Their Concentration in Water and Illumination Conditions."

Moscow, Izvestiya Akademii Nauk SSSR, Seriya Biologicheskaya, No 3, May/Jun 70, pp 398-414

Abstract: Seasonal changes suggesting a correlation between the production of phytoplankton and the utilization of biogenic elements under varying illumination conditions were studied using the method of planned additions. Analysis of the obtained regression equations showed that utilization of biogenic elements by biomass units of a phytoplankton community increases with increase in the concentration of these elements in the medium. An increase in phosphorus concentration causes a decrease in nitrogen consumption, while the reverse does not occur. Increases in the concentration of phosphorus and iron cause a mutual increase in consumption of both element. Two-fold increase in illumination leads to decreased consumption of all three elements. This effect is intensified with respect to nitrogen and phosphorus consumption when the concentrations of phosphorus and iron are increased respectively.

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Phytology

USSR

F  
FEDOROV, V. D.

UDC 581.526.324.577.472

"Biotic Diversity of the Phytoplankton Community and Its Production Characteristics"

Moscow, Biologicheskiye Nauki, No 2 (74), 1970, pp 7-15

Abstract: The theories of variance of biotic diversity in phytoplankton are reviewed. Mathematical formulas used by other researchers under varying biotic conditions are presented. Some formulas refer to quantum, and others to specific characteristics and fluctuations; but there is no scientific basis for postulating the necessity of phenomena with specificities of structure, since some correlate well while others are faintly negative and nothing can be predicted. It is assumed that structural variances of a monotypical community reveal the inner workings of the organism, which are compensatory to assure the stability of the unchangeable functional characteristic -- entropy. The various indices simply supplement one another, thus demonstrating the inner stability of the organism.

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USSR

F  
FEDOROV, V. D., Moscow State University imeni M. V. Lomonosov

"The Correlation Between the Mean Biomass of Individuals of a Species and the Maximum Population Size in a Phytoplankton Association"

Moscow, Doklady Akademii Nauk SSSR, Vol 188, No 3, 1969, pp 694-696

Abstract: Studies of the population size of 52 species forming components of the phytoplankton on the Karelian coast of the White Sea were carried out during two successive vegetation seasons. It was established that the maximum population size of a species was inversely related to the mean biomass of individuals of the species, as determined according to H. Lohmann. Large living forms exist under less favorable conditions than small forms with respect to the accumulation of organic matter.

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F Hydrobiology

USSR

UDC 581.132.1:581.526.325(268.42)

BELAYA, T. I., and FEDOROV, V. D., Chair of Hydrobiology

"Study of the Relationship of Elements Used by Growing Phytoplankton in the White Sea"

Moscow Vestnik Moskovskogo Universiteta, No 1, Jan/Feb 70, pp 63-75

Abstract: The ratio of elements used by growing phtoplankton was controlled for one full vegetative season at two levels of illumination, using natural medium and a medium enriched with  $\text{NaNO}_3$ ,  $\text{NaH}_2\text{PO}_3$  and  $\text{FeSO}_4$ . The containers were exposed in situ for four days - enough time for even the slowest multiplying forms to complete one cell division. Only samples which showed at least doubled biomass were used in calculation of the consumption of elements. It was determined that the consumption of all elements per unit of biomass formed was higher with increased content in the surrounding medium. The effect of light was not uniform: nitrogen consumption did not change with doubling of the illumination time, but phosphorus and iron consumption did change, phosphorus consumption in cases of low concentration in the medium, and iron consumption with

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USSR

BELAYA, T. I., et al., Moscow, Vestnik Moskovskogo Universiteta,  
No 1, Jan/Feb 70, pp 63-75

increased illumination. Seasonal variations show an inverse relationship to mass changes of phytoplankton, but the relationship between the elements studied hardly changes throughout the season, and is 1000:50:4:9 for atomic ratios of C:N:P:Fe.

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1/2 010 UNCLASSIFIED  
TITLE--PRIMARY PRODUCTION AS RELATED TO THE HYDROCHEMICAL REGIME OF A SEA  
BASIN (EXEMPLIFIED BY THE WHITE SEA) -U- PROCESSING DATE--09OCT70  
AUTHOR--(02)--FEDOROV, V.D., SEMIN, V.A.

COUNTRY OF INFO--USSR  
SOURCE--OKEALOGIYA, 1970, VOL 10, NR 2, PP 318-331  
DATE PUBLISHED--70

SUBJECT AREAS--BIOLOGICAL AND MEDICAL SCIENCES, EARTH SCIENCES AND  
OCEANOGRAPHY  
TOPIC TAGS--PHYTOPLANKTON, PRODUCTION STATISTIC, SEA WATER, OCEAN BASIN,  
CHEMISTRY, CARBON ISOTOPE

CONTROL MARKING--NO RESTRICTIONS  
DOCUMENT CLASS--UNCLASSIFIED  
PROXY REEL/FRAME--1990/1358 STEP NO--UR/0213/70/010/002/0318/0331  
CIRC ACCESSION NO--AP0109441  
UNCLASSIFIED

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CIRC ACCESSION NO--AP0109441  
ABSTRACT/EXTRACT--(U) GP-0-

UNCLASSIFIED

PROCESSING DATE--09OCT70

ABSTRACT. THE RADIOCARBON METHOD WAS USED TO STUDY THE INFLUENCE OF NITRATE AND AMMONIA NITROGEN, PHOSPHORUS, IRON AND SILICON ADDITIONS AT TWO DIFFERENT EXPOSITIONS OF THE PHYTOPLANKTON PRIMARY PRODUCTION OF THE KARELIAN COAST OF THE WHITE SEA. THE METHOD OF PLANNED ADDITIONS USED FOR THE EXPERIMENT DURING THE WHOLE SEASON AND THE ANALYSIS OF THE OBTAINED EQUATIONS OF REGRESSION HAVE MADE POSSIBLE THE ELUCIDATION OF THE EFFECT PRODUCED BY EACH ELEMENT SEPARATELY ON PRIMARY PRODUCTION DEPENDING ON THE CHANGES IN CONCENTRATION RELATIONS BETWEEN OTHER FACTORS. AT THE SAME TIME, THE STUDY OF THE WHOLE COMPLEX OF VARIOUS FACTORS HAS ENABLED THE AUTHORS TO REVEAL A RELATION BETWEEN THE ACTION OF BIOGENOUS ELEMENTS ON THE RADIOCARBON FIXATION AND THE HYDROCHEMICAL REGIME OF THE SEA BASIN OBSERVED AGAINST THE BACKGROUND OF CHANGES IN THE COMPOSITION OF PLANKTON SPECIES DURING A SEASON. THIS RELATION ALLOWS ONE TO PREDICT THE INFLUENCE EXERTED BY CHANGES IN THE CONCENTRATION OF ANY PARTICULAR ELEMENT OVER THE WHOLE EXTENT OF THE REGION OF OTHER INTERACTING FACTORS. THE TRUE INFLUENCE OF ANY FACTOR ON THE NEW FORMATION OF ORGANIC MATTER IN THE SEA BECOMES APPARENT AFTER A CERTAIN TIME INTERVAL NECESSARY FOR ROUSING A RESPONSE IN THE PRODUCING SYSTEM: CHANGES IN PHYTOPLANKTON NUMBERS AND COMPOSITION.  
FACILITY: MOSKOVSKIY GOSUDARSTVENNYY UNIVERSITET.

UNCLASSIFIED

1/2 029 UNCLASSIFIED PROCESSING DATE--30OCT70  
TITLE--UTILIZATION OF BIOGENIC ELEMENTS BY A PHYTOPLANKTON COMMUNITY  
DEPENDING ON THEIR CONCENTRATION IN THE AQUATIC ENVIRONMENT AND  
AUTHOR--(03)-FEDOROV, V.D., BELAYA, T.I., MAKSIMOV, V.N.  
COUNTRY OF INFO--USSR **F**  
SOURCE--IZVESTIYA AKADEMII NAUK SSSR, SERIYA BIOLOGICHESKAYA, 1970, NR 3,  
PP 398-414  
DATE PUBLISHED-----70  
SUBJECT AREAS--BIOLOGICAL AND MEDICAL SCIENCES  
TOPIC TAGS--PHYTOPLANKTON, METABOLISM, BIOECOLOGY, PHOSPHORUS, IRON  
CONTROL MARKING--NO RESTRICTIONS  
DOCUMENT CLASS--UNCLASSIFIED  
PROXY REEL/FRAE--3001/1379 STEP NO--UR/0216/70/000/003/0398/0414  
CIRC ACCESSION NO--AP0126922  
UNCLASSIFIED

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UNCLASSIFIED

PROCESSING DATE--30OCT70

CIRC ACCESSION NO--AP0126922

ABSTRACT/EXTRACT--(U) GP-0-- ABSTRACT. SEASONAL CHANGES OF THE CHARACTER OF CORRELATION BETWEEN THE PRODUCTION OF PHYTOPLANKTON AND UTILIZATION OF BIOGENIC ELEMENTS UNDER VARYING ILLUMINATION CONDITIONS WERE STUDIED WITH THE APPLICATION OF THE METHOD OF PLANNED ADDITION. THE ANALYSIS OF THE OBTAINED REGRESSIONS SHOWED THAT UTILIZATION OF BIOGENIC ELEMENTS BY A BIOMASS UNIT OF A PHYTOPLANKTON COMMUNITY INCREASED DEPENDING ON THE INCREMENT OF THE CONCENTRATION OF THESE ELEMENTS IN THE SURROUNDING MEDIA. AN INCREASE OF PHOSPHORUS CONCENTRATION CAUSES A DECREASE OF NITROGEN CONSUMPTION, WHEREAS NO REVERSE ACTION IS OBSERVED. AN INCREASE OF A CONCENTRATION OF PHOSPHORUS AND IRON CAUSE A RESPECTIVE RECIPROCAL CONSUMPTION OF EACH ELEMENT. A DOUBLE ILLUMINATION INCREASE LEADS TO A DECREASED CONSUMPTION OF ALL THE THREE ELEMENTS. THE LATTER EFFECT REGARDING NITROGEN AND PHOSPHORUS CONSUMPTION BECOMES STRONGER WHEN THE CONCENTRATIONS OF PHOSPHORUS AND IRON ARE INCREASED RESPECTIVELY. FACILITY: M. V. LOMONOSOV STATE UNIVERSITY, MOSCOW.

UNCLASSIFIED

USSR

FEDOROV, V. F.

"Fibrinogen and Fibrinolytic Activity of Blood After Administration of Staphylococcus Anatoxine, Gamma-Globulin and After Irradiation With a Quartz Lamp Pregnant Women"

Pediatrics, Akusherstvo i Ginekol. (Pediatrics, Obstetrics and Gynecology), 1973, No 4, pp 50-51 (from RZh - Biologicheskaya Khimiya, No 22, Nov 73, Abstract No 1696)

Translation: Fibrinogen and fibrinolytic activity in the blood after administration of staphylococcus anatoxine, gamma-globulin, and after quartz lamp irradiation of pregnant women.

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USSR

UDC 621.791.052:620.192.46:669.14

FEDOROV, V. G., Candidate of Technical Sciences, MAKAROV, E. L., Candidate of Technical Sciences, BELOV, YU. M., Candidate of Technical Sciences, ZASETSKIY, YU. A., Engineer, and SHUBIN, V. I. Engineer

"Conditions for Crack Development in Welding EP56 Steel"

Moscow, Svarochnoye Proizvodstvo, No 1(471), Jan 74, pp 31-32

Abstract: The development of cold cracks was investigated in joints of EP56 steel welded with EP56 electrodes after 1-14 hr of holding under different pressures. A definite relation was found between the H-content in the metal of the joint and the resistance of welded joints to the development of cracks; an index was determined which characterizes the disposition of welded EP56 steel joints to crack development at manual electric arc welding. The critical H-content in the metal of the welded joint (less than  $10\text{cm}^3/100\text{g}$ ) was established which excludes the development of cold cracks in welded EP56 steel joints, according to tests by the LTP-2 method. Joint hardness was HV 441 when welded with steam electrodes, and HV 430 when welded with electrodes annealed at maximum temperature, whereby the hardness of the base metal was HV 316. Five figures, three bibliographic references.

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Welding

USSR

UDC 693.814.25:/621.791.5+621.791.945

FEDOROV, V. G.

Gazovaya Svarka i Rezka Metallov (Gas Welding and Cutting of Metals), Izd-vo Literaturny po Stroitel'stvu, Moscow, 1972, 144 pp

Translation of Annotation: Existing methods of gas cutting and welding are briefly discussed, as are the basic properties of metals and alloys. Welding data are also presented. Welding and auxiliary equipment, the technology of welding and cutting, and methods of weld joint inspection are described. The book is a practical manual for increasing the skills of gas-welding and gas-cutting workers.

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USSR

FEDOROV, V. G., Gazovaya Svarka i Rezka Metallov (Gas Welding and Cutting of Metals), Izd-vo Literaturny po Stroitel'stvu, Moscow, 1972, 144 pp

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FEDOROV, V. G., Gazovaya Svarka i Rezka Metallov (Gas Welding and Cutting of Metals), Izd-vo Literaturny po Stroitel'stvu, Moscow, 1972, 144 pp

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USSR

FEDOROV, V. G., Gazovaya Svarka i Rezka Metallov (Gas Welding and Cutting of Metals), Izd-vo Literaturny po Stroitel'stvu, Moscow, 1972, 144 pp

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USSR

FEDOROV, V. G.

UDC: 669.18.7.25

"Use of Titanium Wastes in Steel Melting"

Moscow, Stal', No 6, Aug 72, pp 719-721

Abstract: The author investigates a promising method of using titanium waste (mainly titanium chips) in making steel by premelting a titanium-nickel alloy suitable for adding titanium and nickel to stainless steel. Such an alloy with 28% titanium produced in an open induction furnace has characteristics superior to those of ferrotitanium of the same composition (27-34% titanium) thanks to higher specific weight (about 2 g/cc) and lower melting point. The proposed method of using titanium waste in steel making gives a degree of assimilation in Kh18N9Ti steel of 1.5 times the titanium taken up when ferrotitanium is used. The mechanical strength and corrosion properties of the resultant steel are as good as those when ferrotitanium is used, but the product is much less expensive.

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USSR

FEDOROV, V. G.

UDC 632.954:633.11

"The Optimum Time of Application of Herbicides in the Control of Offset Weeds"

Moscow, Zashchita Rasteniy, Vol 17, No 6, 1972, p 21

Abstract: Laboratory and field tests were conducted by the Chair of General Agriculture, Mordovskiy University, to determine the optimum time and conditions of application of the Bu ester (0.3 kg/ha) and an amine salt (0.8 kg/ha) of 2,4-D in the control of the sowthistle, thistle, and lesser bindweed in fields planted with spring wheat. The amount of herbicide applied per hectar was dissolved in 300 l, water. On application of the amine salt in combination with superphosphate, the rosettes of the main root of the weeds were suppressed to a lesser extent than those of the side roots. The sowthistle and thistle were more sensitive to 2,4-D in the stem growth stage, while the lesser bindweed had a higher sensitivity in the stem growth - flowering stage. On timely application of the 2,4-D herbicides the growth of many of the offset weed plants was inhibited and the plants did not form any seeds. However, treatment with the herbicides at too early a stage (the rosette stage) was relatively ineffective, because the sensitivity of the weeds to the herbicides was low and sprouts were formed which later

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USSR

FEDOROV, V. G., Zashchita Rasteniy, Vol 17, No 6, 1972, p 21

developed into adult plants. The amine salt (0.8 kg/ha) used together with superphosphate (3 kg/ha) killed 17-39, 52-58, and 24-46% of the weeds when applied in the rosette, stem growth, and flowering stage, respectively. On application of the amine salt in the amount of 1.5 kg/ha together with 3 kg/ha superphosphate, the corresponding figures were 24-45, 63-75, and 30-52%. Similar results were obtained with the Bu ester. Increasing of the herbicide dosage resulted in some deformation of the wheat stalks and inhibition of wheat growth. Treatment with the amine salt in combination with superphosphate and with the Bu ester yielded the best results when carried out in the stage of wheat tillering. This stage corresponded to the time at which most of the offset weed plants were in the stage of stem growth. Treatment in the tillering stage freed the field substantially from offset weeds and other weeds and increased the yield of spring wheat by 2.1 centners/ha. Similar results were obtained in field tests in the Chuvash ASSR

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USSR

UDC 621.791.019

PROKHOROV, N. N., Doctor of Technical Sciences, MAKAROV, R. L., Candidate of Technical Sciences, and FEDOROV, V. G., Engineer

"The Machine LTP2-3 for Investigating the Resistance of Steels to Development of Cold Cracks by Welding"

Kiev, Avtomaticheskaya Svarka, No 5, May 71, pp 73-74

Abstract: The LTP2-3 machine, developed at the Moscow Higher Technical School imeni N. E. Bauman for investigating the resistance of steels to cold cracks by welding, is described. The machine represents a five-sectional system of levers for simultaneous loading of five welded tee-specimens by a constant bending moment (maximum 150-200 kg). The machine can also be used for testing butt-welded specimens and, after simple modification, for testing specimens subjected to the action of an imitated thermal welding cycle. Two figures, one bibliographic reference.

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USSR

UDC 621.385.019.3

GAVRILOV, G.A., FEDOROV, V.G.

"Forecasting Of The Individual Longevity Of Microwave Electrovacuum Devices With The Aid Of Regression Equations"

Elektron. tekhnika. Nauchno-tekhn. sb. Elektron. SVCh (Electronic Technology. Scientific-Technical Collection. Microwave Electronics), 1970, No 7, pp 120-131  
(from RZh--Elektronika i yeye primeneniye, No 11, November 1970, Abstract No 11A113)

Translation: A method of forecasting of the individual longevity of microwave electrovacuum devices is described, which is based on locating with the aid of the methods of regression analysis of certain parameters of a conditional function for the probability density of longevity. An evaluation is given of the precision and reliability of forecasting as a function of the size of the sample in preliminary tests and the number considered during forecasting of the parameters. A method is proposed for selection of the most informative parameters. The results are presented of forecasting with the use of a digital computer of the individual longevity of electrons. Summary.

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Acc. Nr. **AP0049910**

Abstracting Service:  
CHEMICAL ABST. 5/70

Ref. Code:  
**21R 0181**

**F**

**104721p** Thermal conductivity of liquid thallium tellurides. Fedorov, V. I.; Machuev, V. I. (Mosk. Energ. Inst., Moscow, USSR). *Fiz. Tverd. Tela* 1970, 12(2), 631-4 (Russ). In a narrow temp. interval elec. and thermal properties were investigated of the title compds. in the liq. phase. Tl tellurides Tl<sub>2</sub>Te, TlTe, and Tl<sub>3</sub>Te were prepd. by direct melting of pure Tl and Te. Temp. dependence is given of the coeffs. of thermal cond. of liq. Tl tellurides. Monotonic character of the variation of thermal cond. parallels that of elec. properties. No discontinuity is obsd. on passing from solid to liq. As the amt. of Te increases the exptl. Lorentz no. approaches the theoretical value, thereby indicating a decreasing effect of addnl. mechanisms of heat transfer as compared to the transfer by current carriers.

A. Libackyj

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REEL/FRAME  
**19801846**

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nc

1/2 027 UNCLASSIFIED PROCESSING DATE--02OCT70  
TITLE--THERMAL PROCESSES STUDIED DURING THE QUENCHING OF STEEL -U-  
AUTHOR--(02)-FEDOROV, V.I., KOBASKO, N.I.  
COUNTRY OF INFO--USSR F  
SOURCE--METALLOVED. TERM. OBRAB. METAL. 1970, (1), 66-9  
DATE PUBLISHED-----70  
  
SUBJECT AREAS--MATERIALS  
TOPIC TAGS--STEEL QUENCHING, THERMAL PROCESS, HEAT TRANSFER COEFFICIENT  
  
CONTROL MARKING--NO RESTRICTIONS  
DOCUMENT CLASS--UNCLASSIFIED  
PROXY REEL/FRAME--1988/1277 STEP NO--UR/0129/79/000/001/0066/0069  
CIRC ACCESSION NO--AP0106058  
UNCLASSIFIED

212 027

UNCLASSIFIED

PROCESSING DATE--02JCT70

CIRC ACCESSION NO--AP0106058

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT, RESULTS OF STUDIES OF DIFFERENT  
AUTHORS ON THERMAL PROCESS OCCURRING DURING THE QUENCHING OF STEEL ARE  
ANALYZED AND DISCUSSED. THE GENERALIZED B10 CRITERION FOR DETN. OF THE  
QUENCHING CONDITIONS DOES NOT DEPEND ON THE SHAPE AND DIMENSIONS OF THE  
QUENCHED SPECIMENS. A SIMPLE EXPRESSION IS SUGGESTED FOR CALCN. OF THE  
EFFECTIVE HEAT TRANSFER COEFF. AS A FUNCTION OF THE SHAPE, DIMENSIONS,  
PHYS. PROPERTIES OF THE MATERIAL, AND CHARACTERISTICS OF THE COOLING  
MEDIUM. AN EMPIRICAL EXPRESSION SUGGESTED BY FRENCH IS VALID FOR THE  
SELF REGULATING THERMAL PROCESSES ONLY, SINCE THESE DO NOT OCCUR IF THE  
CERTAIN MAX. AND MIN. DIMENSIONS OF THE SPECIMENS ARE EXCEEDED.

UNCLASSIFIED

1/2 023 UNCLASSIFIED PROCESSING DATE--16OCT70  
TITLE--THERMAL CONDUCTIVITY OF LIQUID GALLIUM TELLURIDE, INDIUM TELLURIDE,  
AND THALLIUM TELLURIDE -U-  
AUTHOR-(02)-FEDOROV, V.I., MACHUYEV, V.I.  
COUNTRY OF INFO--USSR F  
SOURCE--FIZ. TVERD. TELA 1970, 12(1), 279-81  
DATE PUBLISHED-----70

SUBJECT AREAS--PHYSICS, MATERIALS

TOPIC TAGS--THERMAL CONDUCTIVITY, TELLURIDE, GALLIUM COMPOUND, INDIUM  
COMPOUND, THALLIUM COMPOUND, CRYSTALLIZATION, FORBIDDEN ZONE WIDTH,  
TEMPERATURE DEPENDENCE, PHASE TRANSITION, MELTING

CONTROL MARKING--NO RESTRICTIONS

DOCUMENT CLASS--UNCLASSIFIED

PROXY REEL/FRAME--1988/0063

STEP NO--UR/0181/70/012/001/0279/0281

CIRC ACCESSION NO--AP0105160

UNCLASSIFIED

2/2 023

UNCLASSIFIED

PROCESSING DATE--16OCT70

CIRC ACCESSION NO--AP0105160

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. THE COEFFS. OF THERMAL COND.,  
LAMBDA, OF GA, IN, TL TELLURIDES WERE MEASURED UNDER STEADY STATE  
CONDITIONS FOR DIRECT AND REVERSE TEMP. CHANGES DURING CRYSTN. AND  
MELTING. TEMP. DEPENDENCE OF LAMBDA IS GIVEN FOR GATE. THE TRANSITION  
FROM THE SOLID INTO THE LIQ. PHASE TAKES PLACE WITHOUT A SHARP VARIATION  
IN THE CHARACTER OF THE TEMP. DEPENDENCE. THE LORENTZ NO., CALCD. FROM  
THERMAL AND ELEC. COND., IS CHARACTERISTIC OF A NONDEGENERATE  
SEMICONDUCTOR AND AS TEMP. INCREASES, IT REACHES THE THEORETICAL VALUE  
CHARACTERISTIC OF A METAL. COMPARISON OF DATA FOR GATE AND GA SUB2 TE  
SUB3 SHOWS THAT GATE HAS A BROADER FORBIDDEN BAND DUE TO THE EFFECT OF  
COVALENT BONDING AS COMPARED WITH GA SUB2 TE SUB3. THE PHASE TRANSITION  
IN TLTE IS CHARACTERIZED BY A JUMP IN THERMAL COND. AND A DECREASE IN  
THE LIQ. PHASE. IN GOING FROM GA TO TL TELLURIDE, AN INCREASINGLY  
STRONGER HEAT TRANSPORT IS PRESENT AS A RESULT OF DIFFUSION OF CURRENT  
CARRIERS. THIS MAY BE EXPLAINED AS A BIPOLAR TRANSPORT.  
FACILITY: ROSK. ENERG. INST., MOSCOW, USSR.

UNCLASSIFIED

USSR

UDC 669.141018.44

SMIRNOV, V. M., PEREVYAZKO, A. T., and FEDOROV, V. L.

"The Effect of the Chemical Composition of Kh25N16G7AR Steel on Its Heat Resistance"

Moscow, Metallovedeniye i Termicheskaya Obrabotka Metallov, No 8, 1972, pp 74-75

Abstract: The effect of each chemical element (C, Mn, Si, S, P, Cr, Ni, N) of Kh25N16G7AR steel on its short-duration heat resistance at 850°C was investigated by means of a correlation analysis of melting data. The experimental results make it possible to define more exactly the limits of Kh25N16G7AR steel composition and to determine the region of the optimum compositions with increased heat resistance. Higher contents of chromium and silicon and lower concentrations of manganese, nickel, and phosphorus increase the heat resistance. Nitrogen, carbon, and sulfur, in the limits of the brand composition, have little effect on heat resistance. One figure, one table, seven bibliographic references.

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USSR

UDC 629.78.002.3

SMIRNOV, V. M., PEREVYAZKO, A. T., FEDOROV, V. L.

"Effect of the Chemical Composition of Kh25N16G7AR Steel on Its High-Temperature Strength"

Metallovedeniye i term. obrabotka met. (Physical Metallurgy and Heat Treatment of Metals), 1972, No 8, pp 74-75 (from RZh-Raketostroyeniya, otdel'nyy vypusk, No 12, Dec 72, Abstract No 12.41.224)

Translation: Steel type Kh25N16G7AR (EI835L) is used to manufacture thin-walled welded-cast parts operating at temperatures to 850° C. The chemical composition of the Kh25N16G7AR steel is as follows: <0.12% C; 5-7% Mn; <1.0% Si; 23-26% Cr; 14-18% Ni; 0.25-0.45% N; <0.03% S; <0.035% P. The effect of each of the chemical elements of the Kh25N16G7AR steel on the temporary strength of the steel at 850° C was determined by correlation analysis of the data on dynamic production melts. The results obtained made it possible more precisely to define the limits of the chemical composition of Kh25N16G7AR steel and determine the range of optimal compositions with increased high-temperature strength. There are 2 illustrations, 1 table and a 7-entry bibliography.

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1/2 024 UNCLASSIFIED PROCESSING DATE--16OCT70  
TITLE--DECOMPOSITION OF SUPERSATURATED SOLID SOLUTIONS IN GRANULATED  
ALUMINUM ALLOYS -U-  
AUTHOR-(04)-DOBATKIN, V.I., YELAGIN, V.I., FEDOROV, V.M., SIZOVA, R.M.  
COUNTRY OF INFO--USSR  
SOURCE--AKADEMIIA NAUK SSSR, IZVESTIIA, METALLY MAR.-APR. 1970, P. 199-205  
DATE PUBLISHED-----70  
SUBJECT AREAS--MATERIALS  
TOPIC TAGS--CHEMICAL DECOMPOSITION, SOLID SOLUTION, ALUMINUM ALLOY,  
ZIRCONIUM ALLOY, CHROMIUM ALLOY, VANADIUM ALLOY, TITANIUM ALLOY,  
MANGANESE ALLOY, MOLYBDENUM ALLOY, CHEMICAL STABILITY  
CONTROL MARKING--NO RESTRICTIONS  
DOCUMENT CLASS--UNCLASSIFIED  
PROXY REEL/FRAE--1989/1395 STEP NO--UR/0370/70/000/000/0199/0205  
CIRC ACCESSION NO--AP0107868  
UNCLASSIFIED

2/2 024

UNCLASSIFIED

PROCESSING DATE--16OCT76

CIRC ACCESSION NO--AP0107868

ABSTRACT/EXTRACT--(U) GP-0-- ABSTRACT. STUDY OF THE DECOMPOSITION OF ANOMALOUSLY SUPERSATURATED SOLID SOLUTIONS OF GRANULATED ALUMINUM ALLOYS CONTAINING MN, CR, ZR, TI, V, AND MO. IT IS FOUND THAT MICROHARDNESS AND ELECTRICAL RESISTIVITY IN SUPERSATURATED ALUMINUM ALLOYS ARE SUBJECT TO THE SAME RULES AS DESCRIBED PREVIOUSLY BY BARICH AND KOLESNICHENKO (1960). MAXIMUM STRENGTHENING DUE TO THE AGING OF ALLOYS WITH CR AND ZR IS SHOWN TO INCREASE BY A FACTOR OF MORE THAN TWO AS COMPARED WITH NONGRANULATED ALLOYS. IT IS ALSO SHOWN THAT THE STABILITY OF SOLID SOLUTIONS INCREASES WITH INCREASING MELTING POINT OF THE ALLOYING ELEMENTS.

UNCLASSIFIED

Thermomechanical Treatment

USSR

UDC 669.35\*6\*296:621.78

DOROGYEVA, A. S., KOZLOV, V. V., and FEDOROV, V. N.

"Thermomechanical Treatment of Bronze with Elevated Zirconium Content"

Moscow, Tsvetnyye Metally, No 2, Feb 74, pp 63-65

Abstract: Bronze containing 0.8% Zr and 0.6 Cr is recommended for the sliding contacts of high-voltage apparatus. An optimal plan of thermomechanical treatment of this bronze is developed and recommendations given for the technology of manufacture of semifinished goods from it. The thermomechanical treatment recommended includes: hardening at 940-960<sup>o</sup> C, holding 30 minutes; intermediate deformation of 30-60%; tempering at 450<sup>o</sup> C for 4-6 hours. This treatment provides the following properties  $\sigma_b = 46-50 \text{ kg/mm}^2$ ; HB =

145-160  $\text{kg/mm}^2$ ;  $\delta = 16-18\%$ ;  $\gamma = 42-44 \text{ m/ohm}\cdot\text{mm}^2$ . The conductivity is 72-75% of the conductivity of copper.

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USSR

UDC 577.4

FEDOROV, V. N.

"Checking the Working Capacity of a Multifunction Object"

Tr. Mosk. energ. in-ta (Works of Moscow Power Engineering Institute), 1973, vyp. 158, pp 83-93 (from RZh-Matematika, No 6, Jun 73, Abstract No 6V738)

Translation: There is a multifunction object whose functioning can be described by a model in the form of a directed graph  $G(S, \Pi)$ . Such objects include multifunction control systems with a controlling automaton. For them  $S$  is the set of functions to be performed (the set of function automata) or the state set of the controlling automaton;  $\Pi$  is the set of transitions from the performance of one function to another or the transition set of the controlling automaton.

A criterion for the efficiency of the use of an object is given in the form of the average in-commission rate  $\bar{P}_{1-c}$  ( $T_{w.c.}$ ,  $T_u$ ,  $\tau_u$ ,  $D$ ).

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FEDOROV, V. N., Tr. Mosk. energ. in-ta, 1973, vyp. 158, pp 83-93

It is required that a check on the working capacity of an object be made so as to assure the maximum  $P_{i-c}$  ( $T_{w.c.}$ ,  $T_u$ ,  $\tau_u$ ,  $D$ ), with the object having to be reset after the check. Two methods of solving this problem are given. One is exact, the other is approximate but requires considerably fewer operations.

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USSR

FEDOROV, V. N.

"Testing the Efficiency of a Multifunctional Object"

Tr. Mosk. Energ. In-ta [Works of Moscow Institute of Power Engineering], 1973, No 158, pp 83-93 (Translated from Referativnyy Zhurnal Kibernetika, No 6, 1973, Abstract No 6V738).

Translation: A multifunctional object is given, the functioning of which can be described by a model consisting of the oriented graph  $G(S, \Pi)$ . These objects include multifunctional control systems with control automata. For them,  $S$  is the set of functions performed (set of functional automata) or the set of states of the controlling automaton,  $\Pi$  is the set of transitions from performance of one function to another or the set of transitions of the controlling automaton.

A criterion for effectiveness of application of an object is assigned in the form of the mean readiness factor  $\bar{P}(T_r, T_{pr}, \tau_{pr}, D)$ .

The problem is to construct a test of the efficiency of the object providing the maximum  $\bar{P}_g(T_r, T_{pr}, \tau_{pr}, D)$ , and after the test the object should be returned to its initial state. Two methods of solution of the

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USSR

Fedorov, V. N., Tr. Mosk. Energ. In-ta, 1973, No 158, pp 83-93.

problem are presented. One is a precise method, the other is an approximate method, which requires significantly fewer operations.

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USSR

UDC 669.35'295'6'26:621.315.5(088.8)

FEDOROV, V. N., ROZENBERG, V. M., MUKHIN, N. I., GAS'KOVA, V. L., KOZHEVNIKOV, V. I., MATVEYEV, Yu. A., and POKROVSKAYA, G. N., State Scientific Research and Planning Institute of Alloys and Treatment of Nonferrous Metals

"Copper Base Alloy"

USSR Authors' Certificate No 263157, Cl. 40 b, 9/00, (C22c), filed 19 Nov 68, published 29 May 70 (from RZh-Metallurgiya, No 12, Dec 70, Abstract No 12 I849 P by A. ZIL'BERMAN)

Translation: An alloy is suggested which differs from known alloys in its lowered Ti and Sn content and which is characterized by the following composition (in %): Ti 0.03-0.15, Sn 0.1-0.25, Cr 0.05-0.6 and the remainder Cu. After hardening, cold deformation due to drawing, and tempering, the alloy has  $\sigma_B$  60 kg/sq mm,  $\delta$  4%, and conductivity 70% that of Cu. The alloy can be successfully employed as a current-carrying conductor.

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1/2 014  
TITLE--COPPER BASE ALLOY -U-

UNCLASSIFIED

PROCESSING DATE--27NOV70

AUTHOR--(05)-FEDOROV, V.N., ROZENBERG, V.M., MUKHIN, N.I., GASKOVA, V.L.,  
KOSHEVNIKOV, V.I.  
COUNTRY OF INFO--USSR

F

SOURCE--U.S.S.R. 263,157  
REFERENCE--OTKRYTIYA, IZOBRET., PROM. OBRAZTSY, TOVARNYE ZNAKI 1970,  
DATE PUBLISHED--04FEB70

SUBJECT AREAS--MATERIALS

TOPIC TAGS--COPPER BASE ALLOY, METALLURGIC PATENT, TITANIUM CONTAINING  
ALLOY, TIN CONTAINING ALLOY, CHROMIUM CONTAINING ALLOY

CONTROL MARKING--NO RESTRICTIONS

DOCUMENT CLASS--UNCLASSIFIED

PROXY REEL/FRAME--3003/1057

STEP NO--UR/0482/70/000/000/0000/0000

CIRC ACCESSION NO--AA0130092

UNCLASSIFIED

2/2 014

UNCLASSIFIED

PROCESSING DATE--27NOV70

CIRC ACCESSION NO--AA0130092

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. TO RAISE THE COND. OF A CU BASED ALLOY WITHOUT LOWERING ITS STRENGTH, IT HAS THE FOLLOWING COMPN.: TI 0.03-0.15, SN 0.1-0.25, CR 0.05-0.6PERCENT, AND CU THE REMAINDER.

FACILITY: STATE SCIENTIFIC RESEARCH AND DESIGN INSTITUTE OF ALLOYS AND PROCESSING OF NONFERROUS METALS.

UNCLASSIFIED

USSR

UDC 536.27.001.5

SASIN, V. YA., ~~FEDOROV, V. N.~~, and SOROKIN, A. YA.

"Experimental Study of Thermal Tubing in Low Boiling Point Heat Exchangers"

Dokl. nauchno-tekhn. konferentsii po itogam nauchno-issled. rabot za 1968-1969 gg. Sekts. Promteploenergetiki. Podsekts. Sushil'n i teplobmen. ustroistv (Reports of the Scientific-Technical Conference on Summaries of Scientific Research Work for 1968-1969, Industrial Thermal Engineering Section, Subsection on Desiccating and Heat Transfer Devices), Moscow Power Engineering Institute, 1970, pp 79-84 (from RZh-Teploenergetika, No 5, May 70, Abstract No 5G103, by A. A. Salamov).

Translation: To determine maximum thermal flux during boiling, with respect to liquid type, geometry of the porous structure, and area of the heat conductors and their surroundings, studies were made on liquid evaporation from porous grid elements. Tests were run in a vacuum chamber using planar heater elements with various grid combinations

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SASIN, V. YA., et al., Dokl. nauchno-tekhn. konferentsii po itogam nauchno-issled. rabot za 1968-1969 gg. Sekts. Promteploenergetiki. Poisekts. Sushil'n i teploobmen ustroistv, 1970, pp 79-84 (from RZh-Teploenergetika, No 5, May 70, Abstract No 5G103).

applied. Under stable boiling conditions, without drying or superheating, of the conductor surface, a substantial heat flux can be obtained by separating the grid from the surface a distance on the order of the grid mesh. Studies were also made on heat exchange possibilities of thermal tubes in various working media, and using a wide range of temperatures, geometries, tube and grid characteristics. Four figures.

A. A. Salamov

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USSR

UDC: 531.383

MUZLOV, D. P. and FEDOROV, V. P.

"Behavioral Peculiarities of a Combination Hydrostatic Gyrocompass Suspension Under Vibration Conditions"

Leningrad, Priborostroyeniye, No 5, 1972, pp 68-72

Abstract: Errors in the "Amur" type of gyrocompass on a mobile base are functions of the suspension system's dynamic properties. An element in the system is the mercury cushion maintaining the gyrosphere inside the follow-up sphere. This paper offers the results of an investigation of the motion of the cushion under single-direction horizontal vibrations, where experimentation showed marked nonlinearities in the cushion's motion in the fundamental resonance region. An analysis is given of the cushion's behavior by a method based on the introduction of nonlinearities into the conditions of the motion of a fluid mechanical analog rather than the conditions of the hydrodynamic problem; the mechanical analog of a solid spherical segment is chosen. The equations of motion of the segment are stated and solutions for them are found. It is shown that in the region of fundamental resonance, oscillations of the cushion may develop in the plane perpendicular to that of the  
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"USSR"

MUZLOV, D. P. and FEDOROV, V. P., Priborostroyeniye, No 5, 1972, pp 68-72

disturbance, and that such oscillations may result in azimuth errors of the "Amur." The authors are associated with the Ryazan Polytechnical Institute.

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FEDOROV V.S.

Petrochemistry

THE ROLE OF SCIENCE IN THE DEVELOPMENT OF THE PETROCHEMICAL INDUSTRY

[Report of V. S. Fedorov, Minister of Petroleum Refining and Petrochemical Industry USSR, Moscow, Vostok's Akademi, Novy SSSR, Russlan, Vol 41, No 8, August 1977, pp 19-27]

The main basis for increase of the rates of growth of the petroleum-refining and petrochemical industry is acceleration of the development of scientific and technical progress, assured by the combined efforts of scientists and production workers. Our branch institutes and planning and design organizations make wide use of the fundamental theoretical works of the institutes and laboratories of the AS USSR.

A very fruitful collaboration has developed between most of the scientific research organizations of our industry and the Institute of Catalysis of the Siberian Department of the Academy of Sciences. That Institute, headed by G. K. Borozov and M. G. Sitrko, has in essence become a scientific and methodical center which has grouped around itself numerous collectives of investigators working in the areas of heterogeneous catalysis and the mathematical modeling of reactors for a whole series of catalytic processes of petroleum refining and petrochemistry.

High results are given by the creative collaboration of institutes and enterprises of our industry with the Institute of Chemical Physics of the AS USSR in the area of inhibition of the destruction of polymers and industrial methods of producing different important oxygen-containing derivatives of hydrocarbons and also of the creation of a Soviet technology and organization of the production of polypropylene. Joint work is being successfully done on the creation of an industrial method of producing ethylene-propylene rubber. Here industry uses the activity of the Institute of Chemical Physics of the AS USSR as a basis.

USSR

USPENSKIY, A. V., FEDOROV, V. V.

"The Statement and Problems of Planning Experiments for Certain Inverse Problems of Mathematical Physics"

Priblizh. metody resheniya zadach optimal'n. upr. i nekot. nekorrekt. obratn. zadach [Approximate Methods of Solution of Problems of Optimal Control and Certain Incorrect Inverse Problems -- Collection of Works] Moscow, Moscow University Press, 1972, pp 82-97 (Translated from Referativny Zhurnal - Kibernetika, No 8, 1973, Abstract No 8 V290 by the authors)

Translation: Mathematical methods of experimental planning are presently rather widely used in the solution of classical problems of regression. This article presents a statement of a problem of experimental planning arising in the study of certain inverse problems of mathematical physics. The formulation of the inverse problem, containing unknown parameters, considers the random experimental noise. The concept of the experimental plan is introduced, methods of construction of optimal plans are discussed.  
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USSR,

FRADKIN, G. M., BREZINEVA, N. YE., YERSHOVA, Z. V., BOGDANOV, N. I. (Deceased), KUDYUKOV, V. M., VORONIN, A. N., KOZLOV, A. G., MALYKH, YU. A., NIKIPELOV, B. V., RAGOZINSKIY, A. I., FEDOROV, V. V. and CHUSHKIN, YU. V., State Committee for the Use of Atomic Energy USSR

"Advancement of Research in the Field of Nuclear Power Engineering in the USSR (Report Presented at the Fourth United Nations International Conference on the Peaceful Uses of Atomic Energy held 6 to 16 September 1971 in Geneva)"

Moscow, Atomnaya energiya, Vol 31, no 4, Oct 71, pp 358-365

Abstract: This report cites data on the Soviet development of the thermo-electric generators designed for feeding oceanographic and navigation devices, hydrographic, automatic, radiometeorological, magnetic variation stations, high-mountain cosmic ray stations, and other scientific research land stations. The report covers the scientific and technical fundamentals of such energy sources and cites the characteristics of some generators. Discussed in some detail are various aspects of radio isotopic fuels, selection, properties, distinctive characteristics, evaluation, requirements, cost factors, availability, handling safety factors, and forms of applica-  
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FRADKIN, G. M., et al, Atomnaya energiya, Vol 31, no 4, Oct 71, pp 358-365

tion. The potential use of extraction separation of alkali-earth elements for obtaining pure strontium is noted. A table lists the comparative characteristics of various isotopes having potential use in thermoelectric generators. Much consideration is given to topics dealing with energy release in an isotopic unit, biological protection, radioactive decay energy conversion, thermal flow chart selection, and generator designs. Described and illustrated are some thermoelectric generators of various designations (using  $Ce^{144}$ ,  $Cs^{137}$ ,  $Sr^{90}$ ,  $Pu^{238}$ ,  $Cm^{242}$  ( $Po^{210}$ )) including Beta-1, Beta-2, Beta-C, Efir, Penguin, MIG-67 (portable-type), and generators with cascade converters. (8 illustrations).

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## Nuclear Science and Technology

USSR

FRADKIN, G. M., BREZHNEVA, N. YE., YERSHOVA, Z. V., BOGDANOV, H. I. (Deceased), KODYUKOV, V. M., VORONIN, A. N., KOZLOV, A. G., MALYKH, YU. A., NIKIPELOV, B. V., RAGOZHINSKIY, A. I., FEDOROV, V. V., and CHUSHKIN, YU. V., State Committee on the Use of Atomic Energy USSR, Fourth International Conference of the United Nations on the Peaceful Use of Atomic Energy, Geneva, 6-16 Sep 71

"Development of Isotopic Power Technology in the USSR"

Moscow, Atomnaya Energiya, Vol 31, No 4, Oct 71, pp 358-365

Abstract: The construction in the USSR of isotopic thermoelectric generators for powering oceanographic and navigation devices, hydrographic, automatic radiometeorological, magnetic variation stations, high-elevation cosmic ray stations, and other scientific research stations and ground installations is reported on. The most suitable for fuel applications are isotopes with a half-life period within the limits 100 days to 100 years (approximately 50 isotopes), of which 12-15 can be obtained in large amounts. Most quantities of fission radioactive isotopes and also the most widely used radioactive  $Sr^{90}$  are obtained by processing radioactive waste solutions. To simplify isolation of radiochemically pure elements, including  $Sr^{90}$ , the group concentration method is used, based on calcium oxalate precipitation. The most promising technique is extraction separation of alkaline-earth elements with the isolation of pure strontium. Here the following extractants are used: a

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SR

FRADKIN, G.M., et al, Moscow, Atomnaya Energiya, Vol 31, No 4, Oct 71, pp 358-365

solution of di-2-ethylhexylorthophosphoric acid in kerosene from a nitric acid medium, and a solution of salicylaldehyde in tributyl phosphate from an alkaline (sodium hydroxide or ammonia) solution. Currently construction has been completed for blocks with activities in the tens and hundreds of kilocuries based on  $Ce^{144}$  (20,000 curies),  $Sr^{90}$  (9000-100,000 curies), and  $Cs^{137}$  (50,000-150,000 curies), and also blocks based on  $Pu^{238}$ ,  $Po^{210}$ ,  $Cm^{242}$ , and  $Co^{60}$ . The thermal capacity of these blocks lies within the range 1-1000 watts. An empirical formula was derived and tested for the power yield in an isotopic (thermal) block. Also discussed is biological protection during development and construction of isotope power sources containing kilocurie amounts of radioactive heat. In dealing with the conversion of radioactive decay energy, the thermoelectric method was found to be most fully mastered at present: low-temperature semiconductor materials (up to 300°C) have been obtained with quite high efficiencies (5-5%), as well as medium-temperature (300-700°C) and high-temperature (higher than 700°C) semiconductor materials. Combining different materials in the form of cascade elements already permits attainment of 12-15% conversion efficiency in prototypes. Demands of minimum weight and size and also low background of attendant neutron and gamma-radiation led to construction of portable generators of the MIG-67 type based on  $Pu^{238}$ . The unique properties of  $Cm^{242}$  and  $Po^{210}$  (high specific power yield and fairly low-gamma-radiation intensity) made feasible construction of isotopic thermoelectric generators using cascaded converters with efficiencies of 8-10% in the 300-650°K range.

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USSR

UDC: 519.2

FEDOROV, V. V.

"Theory of the Optimum Experiment. (Planning of Regression Experiments)"

Teoriya optimal'nogo eksperimenta. (Planirovaniye regressionnykh eksperimentov (cf. English above), Moscow, "Nauka", 1971, 312 pp, ill. 1 r. 6 k. (from RZh-Kibernetika, No 6, Jun 72, Abstract No 6V166 K)

[No abstract]

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USSR

UDC 612.74

ZHUKOV, YE. K., BARBASHOVA, Z. I., and FEDOROV, V. V., Laboratory of the Evolution of Motor Functions and Laboratory for the Study of the Resistance of the Organism, Institute of Evolutionary Physiology and Biochemistry imeni I. M. Sechenov, Academy of Sciences USSR

"The Effect of Hypokinesia on the Functional State of Skeletal Muscles"

Leningrad, Fiziologicheskii Zhurnal SSSR imeni I. M. Sechnov, Vol 57, No 9, 1971, pp 1,240-1,245

Abstract: Strict, 1-month immobilization of young rats, with only some freedom of motion allowed for the head and front paws to facilitate eating, causes a significant deterioration of the skeletal muscles. The weight of some muscles decreases 40% below the control level. The tension developed during single muscle twitches and during tetanic contractions is about 30% of the normal tension. The speed with which tension develops in a single twitch and the speed of relaxation are significantly reduced. The time required to develop maximum tension in a tetanic contraction is markedly prolonged. The threshold of excitability is considerably elevated. These changes are more pronounced in fast muscles (gastrocnemius, plantaris) than in slow muscles  
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USSR

ZHUKOV, YE. K., et al., Fiziologicheskii Zhurnal SSR imeni I. M. Sechenov,  
Vol 57, No 9, 1971, pp 1,240-1,245

(soleus). It is concluded that prolonged hypokinesia causes dystrophic degeneration of skeletal muscles which may be due to simple lack of activity (tenotomy), or to an absence of afferent impulses which normally stimulate the reticular formation (physiological denervation), or to inhibition of the calcium pump in the sarcoplasmic reticulum.

2/2

FEDOROV, V. V.

COMPUTERS  
(COLLECT)

Sov. FOREIGN PRESS DIGEST  
31 APR 71

71. USSR

UDC 682.513.5:681.3

BALAPANOV, Ye., KACHURINA, O. K., KIRDYASHKIN, A. F., KUPENOV, R., LYAN, E. N.,  
USTINOV, V. A., TAZHIBAYEV, B. B., TRET'YAKOV, V. V., and FEDOROV, V. V.

"The MS-1 Information Retrieval System"

Tr. In-ta Mat. i Mekh. AN KazSSR (Works of the Institute of Mathematics and  
Mechanics of the Academy of Sciences, Kazakh SSR), No 1, 1970, pp 893-902 (from  
R-Zh -- Informatika, No 4, Apr 71, Abstract No 71.4.169 (71R-1290))

Translation: An approach to the creation of a system for collection, storage, and  
processing of technological information from a controlled process is described. One  
variant of an information retrieval system is presented. It includes technical  
resources, the organization of information arrays in computer storage, and a complex  
of programs for processing information.



USSR

UDC 612.74+612.58

ZHUKOV, Ye. K. and FEDOROV, V. V., Laboratory of Evolution of Motor Activity, Institute of Evolutionary Physiology and Biochemistry imeni I. M. Sechenov, Academy of Sciences USSR, Leningrad

"The Effect of Cooling on Contractions of Skeletal Muscles in Mammals."

Leningrad, Fiziologicheskii Zhurnal SSSR, Vol 56, No 4, 1970, pp 575-581

Abstract: The effect of cooling the skeletal muscles of white rats on the strength and velocity of single isometric contractions, isometric tetanus and potassium contractions (80 and 160 mM KCl), was studied. Lowering the temperature from 37° to 20°C does not affect the tension developing during single contractions, but somewhat decreases the tension of maximal tetanus. Under the same conditions, the period of maximum shortening of muscles increases 3.3-3.5 times, the period of decrease by half of single contractions -- 3.5-4.5 times, and the period of development of maximum tetanus by 1.7-2.3 times. The duration of the active state increases 2.4-2.9 times. After lowering the temperature from 37° to 20°C, the amplitude of potassium contractions remains almost unaffected, whereas the time of adaptation relaxation increases 5-9 times. Possible causes of the observed changes are discussed.

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1/2 031 UNCLASSIFIED PROCESSING DATE--13NOV70  
TITLE--THE EFFECT OF COOLING ON THE CONTRACTION OF THE SKELETAL MUSCLES IN  
THE MAMMALS -U-  
AUTHOR--(02)-ZHUKOV, YE.K., FEDOROV, V.V.  
COUNTRY OF INFO--USSR  
SOURCE--FIZIOLOGICHESKIY ZHURNAL SSSR IMENI I. M. SECHENOVA, 1970, VOL 56,  
NR 4, PP 575-581  
DATE PUBLISHED-----70

SUBJECT AREAS--BIOLOGICAL AND MEDICAL SCIENCES

TOPIC TAGS--MUSCULOSKELETAL SYSTEM, WHITE RAT, POTASSIUM, MUSCLE  
PHYSIOLOGY, COOLING

CONTROL MARKING--NO RESTRICTIONS

DOCUMENT CLASS--UNCLASSIFIED  
PROXY REEL/FRAE--3005/0373

STEP NO--UR/0239/70/056/004/0575/0581

CIRC ACCESSION NO--AP0132602

UNCLASSIFIED

2/2 031

UNCLASSIFIED

PROCESSING DATE--13NOV70

CIRC ACCESSION NO--AP0132602

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. THE EFFECT OF COOLING THE SKELETAL MUSCLES OF ALBINO RATS UPON STRENGTH AND VELOCITY OF SINGLE ISOMETRIC CONTRACTIONS, ISOMETRIC TETANUS AND POTASSIUM CONTRACTURES (80 AND 160 MM KCL), WAS STUDIED. DECREASE OF TEMPERATURE FROM 37 TO 20DEGREES C DOES NOT AFFECT THE TENSION DEVELOPING DURING SINGLE CONTRACTIONS, WHEREAS IT SOMEWHAT DECREASES THE TENSION OF MAXIMAL TETANUS. UNDER THE SAME CONDITIONS, THE PERIOD OF MAXIMUM SHORTENING OF MUSCLES INCREASES BY 3.3-3.5 TIMES, THE PERIOD OF HALF DECAY OF SINGLE CONTRACTIONS BY 3.5-4.5 TIMES, AND THAT OF THE DEVELOPMENT OF MAXIMUM TETANUS BY 1.7-2.3 TIMES. THE DURATION OF THE ACTIVE STATE INCREASES BY 2.4-2.9 TIMES. ON LOWERING THE TEMPERATURE FROM 37 TO 20DEGREES C, THE AMPLITUDE OF POTASSIUM CONTRACTIONS REMAINS ALMOST UNAFFECTED, WHEREAS THE TIME OF ADAPTIONAL RELAXATION INCREASES BY 5-9 TIMES. POSSIBLE CAUSES OF THE OBSERVED CHANGES ARE DISCUSSED. FACILITY: I. M. SECHENOV'S INSTITUTE OF EVOLUTIONARY PHYSIOLOGY AND BIOCHEMISTRY ACAD. SCI. USSR, LENINGRAD.

UNCLASSIFIED

1/2 022 UNCLASSIFIED PROCESSING DATE--13NOV70  
TITLE--THE RELATIONSHIP BETWEEN THE VELOCITY AND TONIC PROPERTIES IN  
VARIOUS SKELETAL MUSCLES OF THE RAT -U-  
AUTHOR--FEDOROV, V.V. F  
COUNTRY OF INFO--USSR  
SOURCE--FIZIOLOGICHESKIY ZHURNAL SSSR IMENI I. M. SECHENOVA, 1970, VOL 56,  
NR 3, PP 345-353  
DATE PUBLISHED-----70

SUBJECT AREAS--BIOLOGICAL AND MEDICAL SCIENCES

TOPIC TAGS--RAT, MUSCULOSKELETAL SYSTEM, BIOELECTRIC PHENOMENON

CONTROL MARKING--NO RESTRICTIONS

DOCUMENT CLASS--UNCLASSIFIED

PROXY REEL/FRAME--3005/0360

STEP NO--UR/0239/70/056/003/0345/0353

CIRC ACCESSION NO--AP0132589

UNCLASSIFIED

2/2 022

UNCLASSIFIED

PROCESSING DATE--13NOV70

CIRC ACCESSION NO--AP0132589

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. QUANTITATIVE STUDIES ON PHASIC (SINGLE AND TETANIC) AND TONIC (A RESPONSE TO PROLONGED DEPOLARIZATION OF THE MEMBRANE) CONTRACTIONS OF FAST AND SLOW MUSCLES OF THE RAT INDICATED A CERTAIN CORRELATION BETWEEN THE VELOCITY AND TONIC PROPERTIES. SLOW INSENSITIVE MUSCLES WHICH RESPONDED BY QUICK AND UNSTABLE CONTRACTIONS TO KCL AND CAFFEINE, PRODUCED FAST PHASIC CONTRACTIONS. ON THE CONTRARY, MUSCLES CAPABLE OF MAINTAINING DEPOLARIZATION CONTRACTURES PRODUCED SLOWLY DEVELOPING AND STABLE PHASIC CONTRACTIONS WHICH REMAINED STABLE THROUGHOUT THE PERIOD OF STIMULATION.

THIS CORRELATION WAS SUGGESTED TO RESULT FROM VARIATIONS IN FUNCTIONAL LABILITY OF ELECTRO MECHANICAL CONNECTION IN FIBERS OF THE SLOW AND FAST MUSCLES.

FACILITY: I. M. SECHENOV'S INSTITUTE OF EVOLUTIONARY PHYSIOLOGY AND CHEMISTRY ACAD. SCI. USSR, Leningrad.

UNCLASSIFIED

1/2 021 UNCLASSIFIED PROCESSING DATE--30OCT70  
TITLE--USE OF INJECTORS FOR IMMUNIZATION AGAINST SMALLPOX. COMMUNICATION  
II: IMMUNOLOGIC RESPONSE TO INTRADERMAL INOCULATION OF SMALLPOX VACCINE  
AUTHOR--(05)--AKATOVASHELUKHINA, E.M., FEDOROV, V.V., CHIMISHKYAN, K.L.,  
GURVICH, E.B., NEKRASOV, I.L.  
COUNTRY OF INFO--USSR  
SOURCE--VOPROSY VIRUSOLOGII, 1970, NR 3, PP 313-316  
DATE PUBLISHED-----70  
SUBJECT AREAS--BIOLOGICAL AND MEDICAL SCIENCES  
TOPIC TAGS--SMALLPOX, IMMUNIZATION, ANTIBODY, VACCINE  
CONTROL MARKING--NO RESTRICTIONS  
DOCUMENT CLASS--UNCLASSIFIED  
PROXY REEL/FRAE--2000/1845 STEP NO--UR/0402/70/000/001/0313/0316  
CIRC ACCESSION NO--AP0125456  
UNCLASSIFIED

2/2 021

UNCLASSIFIED

PROCESSING DATE--30OCT70

CIRC ACCESSION NO--AP0125456

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. THE PAPER PRESENTS THE RESULTS OF USE OF JET INJECTORS FOR IMMUNIZATION AGAINST SMALLPOX EXPERIMENTALLY IN ANIMALS AND IN A SMALL GROUP OF VOLUNTEERS. IMMUNOLOGIC RESPONSE WAS STUDIED BY DETERMINATION OF HUMORAL ANTIBODY IN THE BLOODS OF VACCINATED PEOPLE AND ANIMALS. AUTOMATIC MULTIDOSE INJECTORS OF NATIONAL AND AMERICAN MAKE WERE USED FOR IMMUNIZATION. THE METHOD OF INOCULATION WAS FOUND TO BE SAFE AND TO PRODUCE ANTIBODY RESPONSE IN SERA OF IMMUNIZED ANIMALS. IMMUNIZATION WITH JET INJECTOR PROTECTED RABBITS FROM DEATH AFTER INTRACEREBRAL INJECTION OF 1000 LD SUB50 OF NEUROVACCINE. A SIGNIFICANT RISE OF TITERS OF ANTIHEMAGGLUTININS AND VIRUS NEUTRALIZING ANTIBODY WAS DEMONSTRATED IN SERA OF VACCINATED HUMAN VOLUNTEERS. FACILITY: MUSKOVSKIY NAUCHNO-ISSLEDOVATEL'SKIY INSTITUT VIRUSNYKH PREPARATOV.

UNCLASSIFIED

USSR

UDC: 539.4.011

FEDOROV, V. V., Institute of Railway Transportation Engineers, Tashkent

"Thermodynamic Method of Evaluating Long-Term Strength"

Kiev, Problemy Prochnosti, No 9, Sep 72, pp 45-47

Abstract: The thermodynamic method is applied to determination of the long-term strength and durability of a solid. The problem is formulated in terms of the creep fracture of a rod of given length and cross section subjected to a constant tensile force under isothermal conditions. It is assumed that there is no flux of latent energy to the ambient medium. The final expression for the time to fracture contains nine constants which must be determined from creep, relaxation and permanent strength tests of various materials.

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USSR

UDC 669.28.051

YEREMENKO, V. N., LISTOVNICHYI, V. YE., OPALOVSKIY, A. A., and FEDOROV, V. YE.

"Physicochemical Investigation of the System Molybdenum-Sulfur"

V sb. Khal'kogenidy (Chalcogenides--collection of works), Vyp 2, Kiev, "Naukova Dumka", 1970, pp 92-97 (from RZH-Metallurgiya, No 11, Nov 70, Abstract No 11G181)

Translation: A physicochemical investigation is conducted of the system Mo-S by the methods of thermography, radiography, metallography, dilatometry, and resistometry. It is established that in the region of concentration up to 26 wt. % S, a two-phase field of crystallization of Mo + Mo<sub>2</sub>S<sub>3</sub> with a 1540° temperature of the "solidus" line is realized. 2 ill., 2 tables.

S. Krivonosova

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USSR

UDC 669.27'849.051

OPALOVSKIY, A. A., FEDOROV, V. YE., and LOBKOV, YE. U.

"Investigation of the Process of Interaction of Tungsten and Rhenium With Chalcogene"

V sb. Khal'kogenidy (Chalcogenides--collection of works), Vyp 2, Kiev, "Naukova Dumka", 1970, pp 86-92 (from RZH-Metallurgiya, No 11, Nov 70, Abstract No 11G171)

Translation: For the selection of regimes for the synthesis of  $WSe_2$ ,  $WTe_2$ ,  $ReSe_2$ , and  $ReTe_2$ , the nature of metal interaction with chalcogene is studied by the thermographic method. The mixtures W-Se, W-Te, Re-Se, and Re-Te of different composition (ratio of metal: chalcogene 1 : 1; 1 : 1.5, and 1 : 1) are studied. A study is made of the vacuum-thermal decomposition of the selenides and tellurides W and Re, and a study is conducted of the mechanism and kinetics of interaction of these metals with chalcogenes. 1 ill., 2 tables, 18 bibl. entries. S. Krivosova

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USSR

UDC 669.28.051

OPALOVSKIY, A. A., and FEDOROV, V. YE.

"New Data in the Area of Investigation of Molybdenum Chalcogenides"

V sb. Khal'kogenidy (Chalcogenides--collection of works), Vyp 2, Kiev, "Naukova Dumka", 1970, pp 77-85 (from RZH-Metallurgiya, No 11, Nov 70, Abstract No 11G180)

Translation: This is a review of investigations of Mo chalcogenides; thermal decomposition of  $MoS_2$ ; results of the study of equilibrium in the system Mo-S-H; working out of a method of synthesis of  $MoS_2$ , used as a lubricant; investigation of  $MoS_2$  lubricating properties; investigation of lower Mo chalcogenides and methods for their production; study of the systems Mo-Se, Mo-Te, and Mo-S; crystal structure and chemical properties of Mo chalcogenides. 17 bibl. entries.

S. Krivonozova

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