

UNCLASSIFIED
 PROCESSING DATE--04DEC70
 1/2 028
 TITLE--STEELMAKING PRACTICE IN THE OXYGEN CONVERTER SHOP OF THE ENAKIEVKA
 METALLURGICAL WORKS -U-
 AUTHOR--MARININ, A.V.
 COUNTRY OF INFO--USSR
 SOURCE--STAL' 1970, 30(3), 221-5
 DATE PUBLISHED-----70
 SUBJECT AREAS--MECH., IND., CIVIL AND MARINE ENGR, MATERIALS
 TOPIC TAGS--STEEL PRODUCTION, REFINING FURNACE, GAS JET, OXYGEN, STEEL
 SCRAP, PRODUCTION EFFICIENCY
 CONTROL MARKING--NO RESTRICTIONS
 DOCUMENT CLASS--UNCLASSIFIED
 PROXY REEL/FRAE--3007/1271
 CIRC ACCESSION NO--AP0136677
 STEP NO--UR/0133/70/030/003/0221/0225
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PROCESSING DATE--04DEC79

2/2 028

CIRC ACCESSION NO--AP0136677

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

ABSTRACT. MAJOR EQUIPMENT OF THE PLANT STARTED IN 1968 BY USING 100-30 TON VESSELS, IN WHICH WASTE HEAT BOILERS WERE REPLACED WITH GAS COOLING EQUIPMENT, IS DESCRIBED. THE PLANT RUNS ON BASIC IRON BY USING CONVENTIONAL PRACTICE. UNDER ITS CONDITIONS, STATISTICALLY DETD. YIELD W CAN BE GIVEN AS WPERCENT EQUALS 90.43 PLUS 3.35 SI PLUS 6.10 C MINUS 0.67 MN PLUS 0.14 Q MINUS 0.215 TAU MINUS 0.0063 (T-1000) WHERE Q IS THE PERCENTAGE OF SCRAP USED, TAU, TIME OF HEAT, AND T TEMP. THE MAX. YIELD IS OBTAINED WITH SI 0.60-0.70, MN 0.9-1.0 AND 20PERCENT SCRAP. TAROOLOMITE LINING AYS, 360 BLOWS.

UNCLASSIFIED

USSR

UDC 62-233.2

MARTININ, V. B., Engineer, and BOLOTOV, B. YE., Candidate of Technical Sciences

"A Stand for Monitoring the Vibration Characteristics of 'Ultrasilent' Radial Ball Bearings"

Moscow, Izvestiya Vysshikh Uchebnykh Zavedeniy, Mashinostroyeniye, pp 40-42

Abstract: The SKVP-3 measuring stand was designed for shop and laboratory monitoring of the vibration characteristics of "ultrasilent" radial ball bearings with an inner diameter of 10 to 60 mm. The inner race of the bearing travels at 1500 rpm, the maximum value of the radial load is 50 kg. The kinematic system of the SKVP-3 stand differs from the presently known types by virtue of a minimal number of vibration-interference generators, so that it does not have an intermediate stock, a belt drive, or a clutch. The experiments showed that 1) the level of the spectral components of the vibration interference of stand SKVP-3 is 8 to 10 decibels lower than that of a stand of the Fourth State Bearing Plant, therefore when the vibration characteristics were monitored on stand SKVP-3 bearing 309 satisfied the requirements specified in technical specifications 4477-E for low-noise ball bearings with the "Sh6" index, whereas the bearing received an index of "Sh2" on the stand of the Fourth State Bearing Plant; 2) the SKVP-3 stand has a "minimal" level of vibration interference,

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MARININ, V. B., and BOLOTOV, B. YE, Izvestiya Uchebnykh Zavedeniy, Mashino-
stroyeniye, pp 40-42

since the vibration acceleration of the rotating mandrel (without the bearing) does not exceed 26 decibels at a frequency of 50 Hz, with a succeeding rise by 4 decibels for each octave. It follows that stand SKVF-3 provides for high monitoring accuracy of the vibration characteristics of antifriction bearings, and therefore its introduction at bearing plants can considerably increase the percentage yield of serviceable radial ball bearings with an index of "Sh6" and higher. Two figures, 7 references.

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USSR

UDC 533.92:621.039.61

KONOVALOV, V. G., MARTININ, V. G., OSIPOV, V. A.

"Study of the Characteristics of a Beam-Plasma Discharge With an Anticathode"

Fiz. plazmy i probl. upravl. termoyader. sinteza. Resp. mezhved. sb.
(Plasma Physics and Problems of the Controlled Thermonuclear Fusion. Republic Interdepartmental Collection), 1972, No. 3, pp 23-30 (from RZh-Fizika, No 11, Nov 72, Abstract No 11G282)

Translation: A beam-plasma discharge with an anticathode in a magnetic trap with mirrors is investigated. The discharge occurs in a mode with a developed high-frequency beam-centrifugal instability. It is shown that the frequency characteristics of the oscillations that were measured experimentally coincide with the theoretical characteristics. A nonlinear interaction between the longitudinal electron waves and waves of the high-frequency beam-centrifugal instability is observed. The plasma-beam system occurring in this mode is characterized by heating of the ion component of the plasma. Heating of the ion component was recorded with three different analyzers. It was shown that the most probable value of ion energy was 1-1.8 keV in the range of discharge currents and magnetic fields studied.

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1/2 026 UNCLASSIFIED PROCESSING DATE--27NOV70
TITLE--INFLUENCE OF THE SURFACE OF THE POLYMERIC PHASE ON THE RATE OF BULK
POLYMERIZATION OF VINYL CHLORIDE -U-
AUTHOR-(04)-MARININ, V.G., BORT, D.N., KALININ, A.I., KARGIN, V.A.
COUNTRY OF INFO--USSR
SOURCE--VYSOKOMOL. SOEDIN., SER. 8. 1970, 12(5), 391-5
DATE PUBLISHED-----70
SUBJECT AREAS--CHEMISTRY
TOPIC TAGS--CHEMICAL REACTION RATE, VINYL CHLORIDE, POLYMERIZATION,
SURFACE PROPERTY
CONTROL MARKING--NO RESTRICTIONS
DOCUMENT CLASS--UNCLASSIFIED
PROXY REEL/FRAME--3006/1229 STEP NO--UR/0460/70/D12/005/0391/0395
CIRC ACCESSION NO--AP0134903
UNCLASSIFIED

UNCLASSIFIED

PROCESSING DATE--27NOV70

2/2 026

CIRC ACCESSION NO--AP0134903

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. THE CONC. OF MONOMER SWOLLEN
POLY(VINYL CHLORIDE) PARTICLES IS CONST. DURING BULK POLYMN. THE
POLYMN. RATE (W) INCREASES WITH INCREASING SURFACE AREA (A). A VS. W
RELATIONS ARE LINEAR ONLY AT HIGH W VALUES.

UNCLASSIFIED

USSR

UDC 576.858.25.095.5

ZASUKHINA, G. D., and MARININA, V. P., Institute of Poliomyelitis and Virus Encephalitides, Academy of Medical Sciences USSR, Moscow

"Conditions for the Formation of Small-Plaque Phenotypes of Chikungunya Virus"

Moscow, Voprosy Virusologii, No 1, Jan/Feb 71, pp 56-61

Abstract: Variations in plaque size of large-plaque and small-plaque mutants of Chikungunya virus in cell cultures from chick embryos were studied under the effect of a number of factors. An attempt was made to determine why small plaques forming in 10-13% of S⁺ mutant cultures cannot be transformed into larger plaques. It was found that there is a considerable difference in the reproduction cycle of small and large plaques. Differences in the formation of small plaques of hereditary and nonhereditary nature are primarily due to an unincreased virus yield and secondarily to lengthening of the reproductive cycle. Moreover, the formation of small plaques in old cells was connected with sensitivity of the virus to interferon. Also, high cell concentrations led to the formation of small-plaque phenotype Chikungunya virus. This is different from Sindbis virus, another Group A arbovirus.

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USSR

ZASUKHINA, G. D., and MARININA, V. P., Voprosy Virusologii, No 1, Jan/Feb 71,
pp 56-61

Virus clones isolated from small plaques of nonhereditary nature had a longer reproductive cycle than those isolated from large plaques. It was established that the plaque size of the S^+ and S^- mutants varied with the composition of the growth medium, host cells, cell concentration and incubation temperature.

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USSR

UDC 619:616.9-022.7+636.2+636.3+636.4+636.52/.58

SELIVANOV, A. V.; MARINKOVA, V. V.; RYZHKOVA, L. P.

"Comparative Study of the Immunity and Vaccinal Reaction of Cattle Immunized With Vaccines from Brucella Strain No 19 by Aerosol and Subcutaneous Methods"

V sb. Sb. nauchn. rabot. Sib. n.-i. vet. in-t (Siberian Scientific Research Veterinary Institute -- Collection of Scientific Works), No 17, 1970, pp 22-28 (from RZh-58. Zhivotnoydstvo i Veterinariya, No 4, Apr 71, Abstract No 4.58.630)

Translation: The level of immunity in animals vaccinated via aerosol 6-16 months after inoculation (upon infection in the conjunctiva with two and twenty times the infective dose of virulent Brucella) was not lower than in animals immunized subcutaneously with strain No 19 in a dose of 60 billion cells. Tests were conducted in an infection during the normal duration and development of brucellosis. Aerosol immunization of cattle with strain 19 vaccine is harmless and produces shifts in organs and tissues rich in lymphoid elements indicating an active immunological process.

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USSR

UDC 621.313:621.3.019.3.001.4

MARINCHKIN, V. P., Candidate of Technical Science, OSIFOVICH, V. T., Engineer,
and REZTSOVA, M. V., Engineer

"Standardization of Accelerated Methods of Testing Electric Machines for Reliability"

Moscow, Elektrotehnika, No 6, June 1971, p 60

Abstract: The All-Union Scientific-Research, Planning-Design and Technological Institute of Crane and Traction Electrical Equipment developed a state standard which defines unified, accelerated methods for testing the reliability of crane, asynchronous electric motors for general industrial and metallurgical use. Statistical data gathered by the institute show that 90% of motor failures are caused by winding damage. The accelerated testing-methods developed took ten years of testing using more than 150 MT(K) type electric motors. The resulting test cycle consists of a 14 day period. The test data serves as the basis of GOST-16709-71 "Crane, Asynchronous Electric Motors (General Industrial and Metallurgical)." The tests conducted according to the new standard make it possible to determine, for example, failure-free operation of electric motors within 2-4 months after the beginning of testing. Earlier it took 1.5-2 years of continuous testing to obtain the required results. GOST-16709-75 went into effect as of 1 July 1971. The quantitative indices of reliability of GOST-135-70 for crane and metallurgical

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USSR

MARINCHKIN, V. P. et al., Elektrotehnika, No 6, June 1971, p 60

alternating current motors will be brought into compliance with GOST-16709-71. No new test equipment will be necessary at the manufacturing plants since existing test equipment can do the job. Work on setting up unified standardized methods for testing the reliability of electric machines is continuing.

USSR

MARINOV, B. S., L'VOV, K. M., SUKHOMUKOV, B. I., KAYUSHIN, L. P.,
POSTNIKOVA, G. B., Institute of Biophysics, Academy of Sciences USSR,
Pushchino (Moscow Oblast)

"On the Possibility of Using Iminoxyl Radicals to Detect Unpaired Electrons
in Biological Systems"

Moscow, Biofizika, Vol 16, No 1, 1971, pp 337-340

Abstract: The interaction of iminoxyl radicals with amino acids and proteins in the excited state and with mitochondria (in which active transport of electrons occurs.) is studied. It is noted that stable iminoxyl radicals are widely used as spin labels to analyze conformation changes in macromolecules, and that it is also considered possible to use them to study electron transfer in biological systems. The breakdown of the radicals was observed in solutions of tryptophan, tyrosine, and cysteine. A typical kinetic curve for the photochemical reaction of the radicals with protein shows that the rate of breakdown of the radicals in water is considerably lower than the rate of breakdown in the presence of protein; the reaction does not proceed in the dark. It is hypothesized that the radicals interact with a photoinduced paramagnetic state of protein and that the breakdown of the radicals occurs

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USSR

MARINOV, B. S., et al., Biofizika, Vol 16, No 1, 1971, pp 337-340

as a result of electron transfer to the radical from photoexcited paramagnetic centers of protein. It is shown that it is possible to use the radicals to detect and analyze paramagnetic states of protein having a short lifetime, as a result of which the concentration of unpaired proteins in a sample is slight (less than $1 \cdot 10^{-10}$ spin). Electron transfer was shown with the aid of the radical in an aqueous solution in a dye-protein system and the feasibility of using the radicals to study oxidation-reduction processes in mitochondria was demonstrated.

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USSR

NAPLATANOV, N. D., MARINOV, Yul. P., VENKOV, P. G.

"Method for Machine Recognition of Biological Information"

Avtomatiz. nauch. issled. na osnove primeneniya ETSVM [Automation of Scientific Research by the Use of Digital Computers -- Collection of Works], Novosibirsk, 1971, pp 380-384 (Translated from Referativnyy Zhurnal - Kibernetika, No 8, 1973, Abstract No 8 V697) by the authors)

Translation: A method is suggested for recognition of repeating biological signals, based on the principle of agreement between the input signal and a set of standard signal patterns, and a criterion is suggested for estimation of the accuracy of recognition.

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UNCLASSIFIED

PROCESSING DATE--20NOV70

1/2 025
TITLE--FREQUENCY MODULATED TRANSISTORIZED RC OSCILLATOR -U-

AUTHOR--(03)-MARINOV, YU.P., ANGLLOV, A.I., PRODANOV, I.P.

COUNTRY OF INFO--USSR

SOURCE--RUSLOW, RADIOTEKHNIKA, VOL 25, NO 2, 1970, PP 69-76

DATE PUBLISHED-----70

SUBJECT AREAS--ELECTRONICS AND ELECTRICAL ENGR.

TOPIC TAGS--ELECTRONIC OSCILLATOR, TRANSISTORIZED CIRCUIT, VOLT AMPERE CHARACTERISTIC, ELECTRIC INVERTER

CONTROL MARKING--NO RESTRICTIONS

DOCUMENT CLASS--UNCLASSIFIED
PROXY REEL/FRAME--3006/0188

STEP NO--OR/0108/70/025/002/0069/0074

CITE ACCESSION NO--AP0134002

UNCLASSIFIED

PROCESSING DATE--ZONOV70

2/2 025

CIRC ACCESSION NO--AP0134002
ABSTRACT/EXTRACT--(U) GP-0-

ABSTRACT. AN EXPERIMENTAL CHECKING OF THE THEORETICAL EXPRESSIONS FOR THE AMPLITUDE AND PHASE FREQUENCY CHARACTERISTICS OF A LOADED PHASE INVERTING BRIDGE WAS CARRIED OUT. THE INVESTIGATED TRANSISTORIZED RC OSCILLATOR INCORPORATES TWO BRIDGE TYPE RC PHASE INVERTERS. THE FUNCTIONS OF THE FOUR TRANSISTORS ARE AS FOLLOWS: THE FIRST TRANSISTOR WITH COMMON EMITTER AND CONTROLLED NEGATIVE FEEDBACK FUNCTIONS AS AN AMPLIFIER, THE SECOND AND THE THIRD TRANSISTORS FUNCTION AS BRIDGE TYPE PHASE INVERTERS, AND THE FOURTH TRANSISTOR FUNCTIONS AS AN EMITTER FOLLOWER. THE LATTER HELPS TO REDUCE INTERACTION BETWEEN STAGES OF TRANSISTORS ONE AND THREE. THIS OSCILLATOR WAS BUILT WITHOUT A NONLINEAR INERTIA ELEMENT, SO AS TO PROVE THE POSSIBILITY OF AMPLITUDE COMPENSATION IN AN OSCILLATOR WITH LOADED BRIDGES. THE OSCILLATOR FREQUENCY CAN BE CONTROLLED WITH EITHER A RESISTIVE TYPE OR CAPATIVE TYPE TRANSDUCER. THE FUNDAMENTAL ADVANTAGES OF THIS FM RC OSCILLATOR ARE: 1. FREQUENCY DEVIATION IS MORE THAN 100PERCENT. 2. FREQUENCY CONTROL IS ACHIEVED BY A SINGLE ELEMENT. 3. FREQUENCY DRIFT DEPENDS ON IMPERFECTION OF RESISTORS AND CAPACITORS OF THE PHASE INVERTERS AND IS RATHER SMALL. 4. THE PARASITIC AM DOES NOT EXCEED 1.5PERCENT FOR FREQUENCY DEVIATION OF 100PERCENT. 5. THE POSSIBILITY OF USING THERMAL NONLINEAR ELEMENTS WITH SHORT TIME CONSTANT TO STABILIZE THE OUTPUT VOLTAGE.

USSR

UDC: 621.373.421.15

M
MARINOV, YU. P., ANGELOV, A. I., PRODANOV, I. F.

"Frequency-Modulated Transistorized RC-Oscillator"

Moscow, Radiotekhnika, Vol 25, No 2, 1970, pp 69-74

Abstract: An experimental checking of the theoretical expressions for the amplitude and phase-frequency characteristics of a loaded phase-inverting bridge was carried out. The investigated transistorized RC-oscillator incorporates two bridge-type RC-phase inverters. The functions of the four transistors are as follows: the first transistor with common emitter and controlled negative feedback functions as an amplifier, the second and the third transistors function as bridge-type phase inverters, and the fourth transistor functions as an emitter follower; the latter helps to reduce interaction between stages of transistors one and three. This oscillator was built without a nonlinear inertia element, so as to prove the possibility of amplitude compensation in an oscillator
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MARINOV, YU. P., et al, Radiotekhnika, Vol 25, No 2, 1970, pp 69-74

with loaded bridges. The oscillator frequency can be controlled with either a resistance-type or capacitive-type transducer.

The fundamental advantages of this FM RC-oscillator are:

1. Frequency deviation is more than 100 percent.
2. Frequency control is achieved by a single element.
3. Frequency drift depends on imperfection of resistors and capacitors of the phase inverters and is rather small.
4. The parasitic AM does not exceed 1.5 percent for frequency deviation of 100 percent.
5. The possibility of using thermal-nonlinear elements with short time constant to stabilize the output voltage.

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UNCLASSIFIED
 1/2 029
 TITLE--MIGRATION AND VAPORIZATION OF YTTERBIUM AND NEODYMIUM ON TUNGSTEN
 -U-
 AUTHOR--(02)-MARINOVA, TS.S., ZUBENKO, YU.V.
 COUNTRY OF INFO--USSR
 SOURCE--FIZ. TVERD. TELA 1970, 12(2) 520-4
 DATE PUBLISHED-----70
 SUBJECT AREAS--CHEMISTRY
 TOPIC TAGS--YTTERBIUM, VAPORIZATION, TUNGSTEN, DESORPTION, THERMAL EFFECT,
 FIELD EMISSION MICROSCOPE, METAL COATING
 CONTROL MARKING--NO RESTRICTIONS
 DOCUMENT CLASS--UNCLASSIFIED
 PROXY REEL/FRAME--1984/0142
 CIRC ACCESSION NO--AP0054938
 UNCLASSIFIED
 PROCESSING DATE--18SEP70
 STEP NO--UR/0181/70/012/002/0520/0524

UNCLASSIFIED

PROCESSING DATE--18SEP70

2/2 029

CIRC ACCESSION NO--APO054938
ABSTRACT/EXTRACT--(U) GP-0-

ABSTRACT.

IN A FIELD EMISSION MICROSCOPE, SURFACE MIGRATION WAS STUDIED OF YB AND ND ATOMS ON W AND THERMAL DESORPTION. THE ACTIVATION ENERGY OF MIGRATION OF YB IN THE DIRECTION FROM THE (011) FACE TO (100), QM EQUALS 0.45 PLUS OR MINUS 0.05 EV, AND OVER THE FACE (121), QM EQUALS 0.70 PLUS OR MINUS 0.05 EV. FOR ND, THE ACTIVATION ENERGY FOR MIGRATION IN THE DIRECTION FROM (101) TO (100), QM EQUALS 0.75 PLUS OR MINUS 0.05 EV, AND OVER THE FACE (111), QM EQUALS 0.65 PLUS OR MINUS 0.05 EV. THE HEAT OF DESORPTION OF EV, FROM W QD EQUALS 2.2 EV, AND THE PREEXPONENTIAL FACTOR, C EQUALS 5 TIMES 10 PRIME13 SEC NEGATIVE PRIME1. FOR ND AT THE INITIAL STAGE OF DESORPTION OF A MONAT. LAYER, QD EQUALS 3.3 EV AND C EQUALS 2 TIMES 10 PRIME12 SEC NEGATIVE PRIME1, AND FOR DESORPTION OF A RAREFIED LAYER, QD EQUALS 4.5EV AND C EQUALS 7 TIMES 10 PRIME13 SEC NEGATIVE PRIME1.

UNCLASSIFIED

USSR

M
MARINOVA, Ts. S., ZUBENKO, Yu. V.

"Adsorption and Work Function of Ytterbium and Neodymium Layers on Tungsten"

Leningrad, Fizika Tverdogo Tela, Vol 12, No 2, 1970, pp 516-519

Abstract: This paper describes experiments for determining the adsorption and electron emission from tungsten monocrystals with sputtering ytterbium and neodymium atoms on their surfaces, the experimentation being done by an electron gun. It is asserted that up until now only metal film structures with alkali metals have been investigated in this respect and the electron-adsorption characteristics of the metals in the third group of the periodic table have been studied. The experimental procedure is described. The neodymium and ytterbium were vaporized by a special device, a tungsten basket degassed in advance. In front of each vaporizer was placed a diaphragm and a movable gate to cover the molecular clusters of the two elements. The vaporizers were then heated to incandescence. The pressure in the experimental equipment during the vaporization of the metal and its adsorption on the tungsten was no more than $1 \cdot 10^{-9}$ mm Hg. The tungsten was formed into a sharp point, and the condensate was 1/2

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USSR

MARINOVA, Ts. S., ZUBENKO, Yu. V., Fizika Tverdogo Tela, Vol 12, No 2, 1970,
pp 516-519

uniformly distributed on its surface as a result of migration at a temperature in which the vaporization can be neglected. A curve is given showing the work function as a function of the sputtering time of the neodymium and ytterbium on the tungsten surface. Emission photographs of the adsorption of the two metals on the tungsten are also given.

USSR

UDC: 533.9.08:621.373.530.145.6

MARIPOV, A., BULKIN, P. S., SOLNTSEV, G. S., GINZBURG, V. M.

"Singularities of Diagnosing a Superhigh-Frequency Plasma by the H₀₁ Mode in a Circular Waveguide"

V sb. Vopr. fiz. nizkotemperaturn. plazmy (Problems of Low-Temperature Plasma Physics--collection of works), Minsk, "Nauka i tekhn.", 1970, pp 75-78 (from RZh-Radiotekhnika, No 1, Jan 71, Abstract No 1D131)

[No abstract]

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M

Magnetohydrodynamics

USSR

MARIS, N.

"Soviet Nuclear Physics Installation Described"

Bucharest, Racheta Cutezatorilor, Vol II, No 2, Feb 70, pp 10, 11

Abstract: The Soviet Tokamak installation uses a toroidal "trap" as a system for isolating the plasma. The secret of this trap lies in superimposing the field obtained in the toroidal coil on the field formed from the electric current which circulates in the plasma channel. The inside of the installation in which the plasma is created is a chamber with two walls, one on the outside made of thick copper plate, the other on the inside made of very fine stainless steel. The two strata are separated from one another by ceramic elements, and the toroidal coil is mounted on the outer wall. For the Tokamak-3 installation, the power for this coil is provided by a 75,000-kilowatt generator.

The studies which were made during the experiments with the Tokamak installation are especially complex and vast. Let me mention just a few of them. The toroidal magnetic field was measured with the aid of magnetic sounders. Radio-interferometers studied the plasma profile variation and the plasma density, while

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MARIS, N., Racheta Cutezatorilor, Vol II, No 2, Feb 70, pp 10, 11

very rapid photographic equipment took pictures of its upper strata. One of the fundamental purposes of the tests was measuring the temperature of the ions and electrons in the plasma, a temperature on which the volume of the energy reserve in the plasma depends.

The measurements indicate the upper parameters; these upper parameters foreshadow the conditions for the much anticipated achievement of controlled fusion. Thus, the duration of existence of the plasma is 12-15 milliseconds, while the density of the particles is $3-5 \cdot 10^{13}$ per cubic centimeter. The temperature of the electrons in a magnetic field of 35,000 gauss is $1-2 \cdot 10^7$ degrees Kelvin and the temperature of the ions is $4-5 \cdot 10^6$ degrees Kelvin.

T-10 Confirms Hopes

The opinions of scientists in regard to future possibilities for achieving controlled nuclear fusion are especially contradictory. Some people forecast this achievement in the next five years and others in the next 30 years.

Soviet scientists recently announced the construction of a new model of the Tokamak installation, the T-10, greatly improved over its predecessors. The

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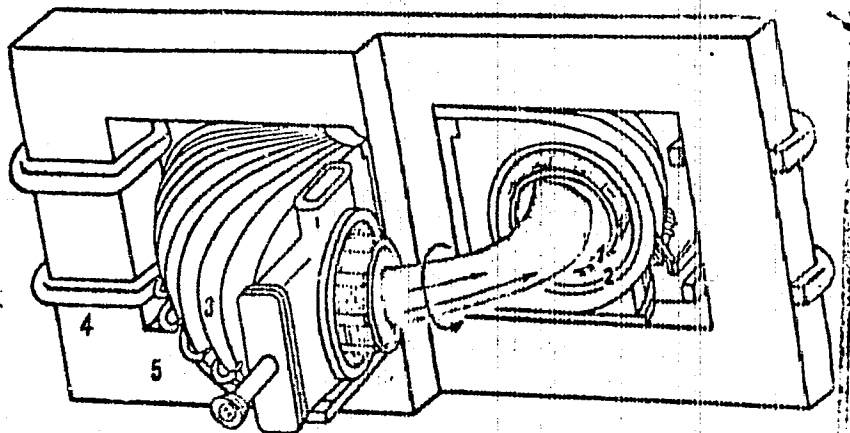
MARIS, N., Racheta Cutezatorilor, Vol II, No 2, Feb 70, pp 10, 11

magnetic field of this installation can reach 50,000 gauss. The power supply for this installation will require 200 million watts of electric power.

In the world competition for bringing the sun to the earth, Tokamak is competing for first place.

USSR

MARIS, N., Racheta Cutezatorilor, Vol II, No 2, Feb 70, pp 10, 11



Tokamak diagram: 1) Internal chamber; 2) External chamber; 3) Coil which creates the longitudinal magnetic field; 4) Primary transformer coil; 5) Iron core. Colored ring represents path of jet plasma.

MARISHCHUK, V. L.

Translation of Russian-language book by V. L. Marishchuk, K. K. Pliakozny, and S. A. Agnitskiy; Nabr'yazhennost' V Poletc, 1969, signed to press 2 August 1969, Military Publishing House, Moscow, 6,000 copies, 116 pages.

STRESS IN FLIGHT

JPRS 55306
29 February 1972

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[X - USSR - C]

USSR

UDD 621. 314.61

PATSHEVICH, I.R., MARISHKIN, A.K., POSTAVCHIKIN, V.F., RYKOV, O.A.

"Thyristor Converter For Investigation By The Method Of Pulse Fusion Of Melting And Evaporation Of Electrode Material"

Sb. nauchn. tr. Perm. politekh. in-ta (Collection Of Scientific Works Of The Perm-skiy Polytechnical Institute), 1970, No 76, pp 75-79 (From RZh--Elektronika i yeye primeneniye, No 6, June, 1970, Abstract No 6B555)

Translation: A unit is proposed for investigation of the instantaneous melting rate and for determination of the coefficients of melting and evaporation of electrode material during arc welding. The unit consists of a controlled rectifier, a control system, an electronic timing relay, and a device for immobilization of the specimens and for striking of the arc. The rectifier is built up of a 3-phase bridge circuit based on VEDU-2-150 thyristors. The control system consists of an electron switch based on a transistor and a 3-phase rectifier with six peak transformers.
3 ill. 2 ref. A.T.

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USSR

UDC 576.85(478)

MARITS, A. A., CHASHCHINA, I. N., CHERVINSKAYA, S. I., ELKIS, I. U., KORNES, R. V., BELYAYEVA, N. S., CHEBAN, Ye. D., KOTSEFAN, A. S., DOBRUSKINA, S. V., GURCHIOGLUYANTS, L. V., and MIKHAYLOVA, A. A., Moldavian Scientific Research Institute of Hygiene and Epidemiology and Kishinev Sanitary Epidemiological Station

"Fermentation Reaction Types and Colicinogenic Properties of Shigella Sonnei Circulating in the City of Kishinev, and Determining Their Sensitivity to Antibiotics"

Kishinev, Zdravookhraneniye, No 5, Sep/Oct 71, pp 7-9

Abstract: The Shigella sonnei strain accounted for 97.9-99 percent of the cases of dysentery in Kishinev in 1968-70. The object of this study was to identify the types of fermentation reactions of Shigella sonnei isolated in 1968-70 (4,507 cultures), and to study their colicinogenic properties and sensitivity to antibiotics. Shigella bacilli isolated from victims in 1968 were found to be primarily fermentation type II (71.4 percent); in 1969-70, type I bacilli predominated (66.4-94.1 percent); Shigella type III was most frequently isolated from the healthy. The results of studies on colicin production showed that, of 922 cultures, 842 were inactive with respect to E. coli K-12 and E. coli B and ϕ ; 76 cultures were colicin type K-12; 4, colicin type ρ .

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USSR

MARITS, A. A., et al., Zdravookhraneniye, No 5, Sep/Oct 71, pp 7-9

Among the K-12 type cultures, 54 percent were fermentation type I; 44.8 percent were type II; and 1.2 percent were type III. The cultures isolated in 1969 exhibited a gradual decrease of strains sensitive to levomycetin, and a growing number of strains sensitive to neomycin and monomycin.

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USSR

UDC 616.935:576.3

MARTIS, A. A., CHASHCHINA, I. N., CHERVINSKAYA, S. I., BE'KIS, R. U., KELYAKOVA, N. S., CHEBAN Ye. D., KOTSEFAN, A. S., KORNES, R. B., DOBNUSEKINA, S. V., GURCHIOGLUYANTIS, L. V., and MIKHAYLOVA, A. A., Moldavian Scientific Research Institute of Hygiene and Epidemiology, and Kishinev Sanitary Epidemiological Station

"Enzymatic Types of Sonnei Dysentery Pathogens Circulating in Kishinev"

Kishinev, Zdravookhraneniye, No 3, May/June 1970, pp 48-49

Abstract: The number of Sh. Sonnei strains isolated in Kishinev in 1968 was more than four times greater than in 1959. Many healthy individuals are carriers of these bacteria. A total of 1,714 cultures of Shigella Sonnei were investigated to determine their morphological, peptolytic, antigenic, and other properties, including their ability to ferment sugars to acids. Pathogens were classified into three enzymatic types. Type I -- cultures ferment rhamnose within the first 24 hours of incubation at 37°C, but do not ferment xylose for a week; type II -- cultures ferment rhamnose with a delay (after three to four days), or do not ferment either rhamnose or xylose; type III -- cultures ferment both sugars within the first 24 hours. Of the 1,714 cultures investigated, 71.4% belonged to type II, 21.5% to type I, and 7.1% to type III. The tests are fairly easy and can be performed in routine clinical laboratories.

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1/2 027 UNCLASSIFIED PROCESSING DATE--30OCT70
TITLE--CHROMATOGRAPHIC DETERMINATION OF THE SPECIFIC SURFACE OF COKE
ACCORDING TO THE THERMAL DESORPTION OF ARGON -U-
AUTHOR--(03)-SKLYAR, M.G., BASKINA, YE.B., MARIYCH, L.I.
COUNTRY OF INFO--USSR
SOURCE--KOKS KHIM. 1970, (3), 21-3
DATE PUBLISHED-----70
SUBJECT AREAS--CHEMISTRY
TOPIC TAGS--COKE, CHROMATOGRAPHY, ARGON, KRYPTON, NITROGEN, LOW
TEMPERATURE EFFECT, POROSITY
CONTROL MARKING--NO RESTRICTIONS
DOCUMENT CLASS--UNCLASSIFIED
PROXY REEL/FRAME--1997/0522 STEP NO--UR/0068/70/000/003/0021/0023
CIRC ACCESSION NO--AP0119441
UNCLASSIFIED

2/2 027

UNCLASSIFIED

PROCESSING DATE--30OCT70

CIRC ACCESSION NO--AP0119441

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. MEASUREMENTS OF COKE SURFACES BY BENZENE ADSORPTION ARE LOWER THAN BY KR BECAUSE SOME OF THE COKE PORES ARE INACCESSIBLE TO THE LARGE BENZENE MOLS. THE AR ATOM IS SMALLER, WITH A SOLID MONOLAYER SURFACE OF 15.4 ANGSTROM PRIME²; IT PROVIDES A MORE EXACT SURFACE MEASUREMENT THAN N AS DETD. CHROMATOGRAPHICALLY AND STATISTICALLY. A DETECTOR WAS USED FOR DETG. THERMAL COND. AND AN AUTOMATIC RECORDING POTENTIOMETER FOR CHROMATOGRAPH (TSVET). AT MINUS 195DEGREES, THE AR WAS ADSORBED BY THE COKE. THE COKE SAMPLE WAS THEN HEATED TO ROOM TEMP., THE AR DESORBED AND THE POTENTIOMETER RECORDED A CHANGE IN THE MIXT. COMPN. AS A DESORPTION PEAK. THE PEAK DURATION WAS SIMILAR TO 1 MIN AT A RATE OF GAS FLOW OF 60ML-MIN. THE ADSORPTION DESORPTION CYCLE CONTINUED FOR SIMILAR TO 10 MIN. EXPRESSIONS ARE SUBMITTED FOR THE INTERNAL SP. SURFACE, IN TERMS OF MATERIAL QUANTITY ADSORBED BY THE MONOMOL. LAYER, AND FOR CALCN. OF THIS QUANTITY. METHODS ARE ALSO GIVEN FOR DETG. THE VOL. OF THE ADSORBED AR AND THE PEAK SURFACES. THESE DETNS. WERE SIMPLER, SHORTER AND MORE SENSITIVE THAN BY FORMER METHODS. THE SURFACE VALUES DEPENDED MORE ON THE COKING PROCESS, E. G., HEATING RATE AND FINAL TEMP., THAN ON POROSITY. THE SURFACES VARIED FROM 0.62 M PRIME²-G FOR 1268DEGREES, WITH A 51.3PERCENT POROSITY TO 1.00 FOR 1372DEGREES, WITH A 52.6PERCENT POROSITY, RESP.

UNCLASSIFIED

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AA0040704

WR 0482

1-78

Soviet Inventions Illustrated, Section I Chemical, Derwent,

240946 IRON SMELTING IN A GAS-FIRED CUPOLA blows it with previously thermally cracked hydrocarbons during melting so as to promote assimilation by the iron of the carbon involved. This gas is thermally cracked by passing it round in conduits let into the cupola lining and thus emerges as a heated mix of carbon black and gaseous hydrogen. This is suitable for continuous carburising of the iron in the cupola. 1.2.66 as 1052704/22-2. GRACHEV, V. A. et al. (19.8.69) Bul 13/1.4.69. Class 31a. Int.Cl.B 22b. LD

AUTHORS: Grachev, V. A.; Chernyy, A. A.; Mariyenbakh, L. M.; and Kurbatskiy, I. L. 18

19750335

Acc. Nr.

AP0036760

Abstracting Service:
CHEMICAL ABST. 4-70

Ref. Code

UR 0068

M

69077j Determination of coal-tar naphthalene impurities by using gas-liquid chromatography. ~~Mar'ich, I. I. Apur'eva, O. A.; Zelenskaya, I. A. (USSR) Dokl. Akad. Nauk SSSR, 1970, 17, 29-33 (Russ).~~ The stationary phase was Inzelsk brick INZ-000 (0.25-0.50 mm grains) contg. 11-25% poly(ethylene adipate) used in 4-6 mm x 2-4 m columns at 120-190°, depending on carrier gas and make of chromatograph. Acetophenone was the internal standard. A chromatogram with 17 peaks is presented, and an anal. with 33 compds. Indole was detd. sep. with the same column at a higher temp. (195-224°) with acenaphthene as standard. By extrapolation of the m.p.s. of impure naphthalenes, the m.p. of the pure compd. was found to be 80.4°.

Olaf Thomsen

REF FRAME

7 du

USSR

UDC 632.4.01/.09

RUBIN, B. A., MARKAROVA, Ye. N., and VESELOVSKIY, V. A., Moscow State University

"Effect of Different Strains of the Fungus *Fusarium oxysporum vasinfectum* on the Ultraweak Luminescence of Cotton Roots"

Moscow, Sel'skokhozyaystvennaya Biologiya, No 5, 1971, pp 719-723

Abstract: The avirulent strain (No 61) of a monosporous culture of *Fusarium oxysporum vasinfectum* possesses more noticeable ultraweak luminescence than do virulent strains (Nos 15 and 54) of the same fungus. The intensity of luminescence of an aqueous extract from the mycelium of No 61 is five times greater than that of mycelium from either of the pathogenic strains. However, the normal ultraweak luminescence of cotton roots is stimulated only by treating them with aqueous extracts from the pathogenic strains. The degree of stimulation of luminescence generally varies with the concentration of the extract. This effect of the virulent strains is regarded as a manifestation of the influence of the pathogens on the host plant's metabolism.

1/1

USSR

UDC: 621.384.633.6

YESIN, S. K., KOVALENKO, V. I., and MARKAR'YAN, A. A.

"Modernization of the Local Orbit Perturbation System for Uniform Extraction of Particles"

Moscow, Pribory i Tekhnika Eksperimenta, No 4, 1973, pp 20-22

Abstract: The subject of this paper is the method of local orbital perturbation, now being used in the Yerevan synchrotron for obtaining gamma beams. A beam of slowed gamma quanta is obtained by moving the beam of accelerated electrons to an interior target in the rectilinear synchrotron gap. The local orbit perturbation is accomplished by applying a pulse of semi-sinusoidal shape, formed by thyristor resonant circuits, through a set of auxiliary coil windings of the ring electromagnet. A diagram of the pulse-forming circuit and the method used for its power supply from the resonant circuit of the accelerator is given. An explanation is given of uniform as well as slow extraction of particles for the purpose of improving efficiency in the use of the synchrotron. Photographs of the semi-sinusoidal pulse and of the gamma beam pulse are produced. The authors thank M. M. Vilkov and N. A. Zapol'skiy for their help
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USSR

UDC: 621.384.633.6

YESIN, S. K., et al, Pribory i Tekhnika Eksperimenta, No 4, 1973,
pp 20-22

in assembling and installing the orbital perturbation system, and
to G. V. Badalyan, K. A. Sadoyan, and V. L. Serov for their com-
ments and discussions.

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USSR

UDJ 621.52:539.23

MARKARYAN, A.B., KUROV, G.A.

"Concerning Thermal Effects Originating In The Process Of Growing Films In A Vacuum"

Sb.nauch.tr. po probl. mikroelektron. Mosk in-t elektron. tekhn. (Collection Of Scientific Works On Problems Of Microelectronics. Moscow Institute Of Electronics Technology), 1971, Issue 7, pp 19-25 (from RZh:Elektronika i yeye primeneniye, No 6, June 1972, Abstract No 6A60)

Translation: An evaluation is made of the change of temperature of a film on exposure to heat flux from an evaporator, as applied to the growth of epitaxial films of germanium at a rate on the order of 20-30 Å/sec with a 800° C temperature of the substrate. Simultaneously, epitaxial films 1000-1500 Å thick were prepared by vacuum evaporation with the indicated conditions of growth. The results of a computation were compared with experimental data. As tests showed, in the process of growth of the film at a high initial temperature and low rates of deposition, the change of the temperature of the growing film is slight. Apparently, the steadiness of the regime of condensation is of vital importance, a change of which can add to a worsening of the structure and to a change of the properties of epitaxial films with respect to thickness. 16 ref. Ye.G.
1/1

USSR

UDC 577.1:615.7/9

PINIGIN, M. A., MARKARYAN, A. S., SHURUPOVA, V. S.

"Adaptation to Different Types of Exposure to Chemical Substances (Constant, Intermittent)"

V sb. Farmakol. Khimoterapevt. Sredstva. Toksikol. Probl. toksikol. (Pharmacology. Chemotherapeutic Agents. Toxicology. Problems of Toxicology--Collection of Works), Vol 5 (Advances in Sciences and Technology. All-Union Institute of Scientific and Technical Information, USSR Academy of Sciences, Moscow, 1973, pp 120-128 (from RZh-Biologicheskaya Khimiya, No 17, Sep 73, Abstract No 17 F1898 by the author)

Translation: A graphic method is proposed for evaluating the process of adaptation to continuous and intermittent inhalation of aniline (Mt-Hb-forming substance).

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Power

USSR

UDC 621.36

GRODKO, V. A. and MARKAR'YAN, B. N.

"Thermodynamics of Systems for Direct Thermal to Electrical Energy Conversion, Part 2"

Moscow, Izvestiya Akademii Nauk SSSR--Energetika i transport, No. 3, 1971, pp 107-116

Abstract: In the first installment of this series, published in this same journal (No. 4, 1970) the assumption was made that a system for direct conversion of thermal into electrical energy is a combination of two electrodes, one "hot," the other "cold." The bounds of these electrodes are points of maximum and minimum electrical potential. This second of the series of articles is devoted to an examination of the generalized thermodynamic cycle and the derivation of the volt-ampere equations of the system. The authors find that these equations, expressed in terms of the temperature and potential, are valid whether or not the absence of the simultaneous variation in temperature and potential in the branches of the system is assumed. An examination of the relationship between the the different thermal-emf conversion coefficients found by various researchers leads to the opinion that the coefficient is limited by cases in which both branches of the direct conversion system

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GRODKO, V. A., et al, Izvestiya Akademii Nauk SSSR---Energetika i transport, No. 3, 1971, pp 107-116

are formed by an electron gas with the distribution functions of a single type of electron. Two diagrams of the ideal cycle of the system are given.

2/2

- 111 -

L/2 025 UNCLASSIFIED PROCESSING DATE--04DEC70
TITLE--THE MUTAGENIC EFFECT OF VIRUSES. REPORT II. CYTOGENETIC STUDY OF
MONKEY HEMORRHAGIC FEVER -U-
AUTHOR--(05)-MARKARYAN, D.S., SHEVTSOVA, Z.V., KUKSOVA, M.I., MACHAVARIANI,
M.G., ABDZHIAN, M.V.
COUNTRY OF INFO--USSR
SOURCE--GENETIKA, 1970, NR 1, PP 144-150
DATE PUBLISHED-----70

SUBJECT AREAS--BIOLOGICAL AND MEDICAL SCIENCES

TOPIC TAGS--HEMORRHAGIC FEVER, VIRUS, MUTAGEN, MONKEY, BONE MARROW,
MITOSIS, CHROMOSOME

CONTROL MARKING--NO RESTRICTIONS

DOCUMENT CLASS--UNCLASSIFIED
PROXY REEL/FRAE--3007/1371

STEP NO--UR/0473/70/000/001/0144/0150

CIRC ACCESSION NO--AP0136729

UNCLASSIFIED

2/2 025

UNCLASSIFIED

PROCESSING DATE--04DEC70

CIRC ACCESSION NO--AP0136729

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. CYTOGENETIC STUDY OF MONKEY HEMORRHAGIC FEVER SHOWED A DECREASE IN MITOTIC ACTIVITY AND AN INCREASE IN THE NUMBER OF DYING CELLS AND CELLS WITH PATHOLOGICAL CHANGES IN INFECTED MONKEY BONE MARROW. EXPERIMENTAL MONKEY HEMORRHAGIC FEVER WAS ACCOMPANIED BY AN INCREASE IN THE LEVEL OF CHROMOSOME ABERRATIONS IN BONE MARROW CELLS AND IN CULTURES OF PERIPHERAL BLOOD LEUKOCYTES. INJECTION OF CONCENTRATED VIRUS CONTAINING MATERIAL PRODUCED A HIGHER YIELD OF CHROMOSOME ABERRATIONS THAN INJECTION OF NATIVE MATERIAL. HEMORRHAGIC FEVER VIRUS INDUCED CHROMOSOME REARRANGEMENTS OF THE CHROMATIC TYPE, ANALOGOUS TO THOSE OBSERVED IN CONTROL CELLS DURING SPONTANEOUS MUTATION. THE OBSERVED INCREASE IN THE LEVEL OF CHROMOSOME ABERRATIONS IN MONKEY BONE MARROW CELLS DUE TO THE VIRUS INDICATES THE REAL VALUE OF THIS VIRUS IN INTENSIFYING THE MUTATION PROCESS IN SOMATIC TISSUES OF SENSITIVE TYPES. TWENTY MACACA RHESUS MONKEYS WERE INFECTED WITH HEMORRHAGIC FEVER VIRUS PASSAGED 21-24 TIMES IN MONKEYS. MONKEYS WERE INFECTED WITH BRAIN MATERIAL FROM SICK MONKEYS IN 1 ML AMOUNTS IN A TITER OF 10 PRIME3 ML (10 LETHAL DOSES) OR WITH MATERIAL CONSISTING OF 100 LETHAL DOSES. THE INCUBATION PERIOD OF THE DISEASE VARIED FROM 2-6 DAYS. FACILITY: INSTITUT EKSPERIMENTAL'NOY PATOLOGII I TERAPII, AMN SSSR, SUKHUMI.

UNCLASSIFIED

USSR

~~A~~ M UDC 575.576.858

MARKARYAN, D. S., SHEVTSOVA, Z. V., KUKSOVA, M. I., MACHAVARIANE, M.
AVDZHIAN, M. V., Institute of Experimental Pathology and Therapy,
Academy of Medical Sciences USSR, Sukhumi

"The Mutagenic Effect of Viruses. II. Cytogenetic Study of Monkey
Hemorrhagic Fever"

Moscow, Genetika, Vol 6, No 1, 1970, pp 144-150

Abstract: The cytogenetic effects of monkey hemorrhagic fever virus were studied on experimentally infected *Macaca rhesus* monkeys. A decrease in mitotic activity and an increase in the number of dead and pathologically altered cells in the bone marrow of infected animals was observed. The number of chromosome aberrations in bone marrow cells and in peripheral blood leukocytes in culture increased. The aberration yield produced by concentrated virus-containing material was higher than that produced by the initial material. The virus of monkey hemorrhagic fever induced primarily aberrations of the chroma-tid type, which were similar to those that occurred in control animals as a result of spontaneous mutation.

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Napieralski and then reducing, tetrahydroisoquinoline derivatives were synthesized. By reacting phenylisopropylamine with indanones and reducing the ketimines that formed, aminoindans IV were obtained. Hydrochlorides of the compounds II, III, and IV were effective as coronary dilatants (table). The formulas and properties of compound I and of the hydrochlorides of II and III are listed in tables.

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Pharmacology and Toxicology

USSR

UDC 541.69+547.554

MNDZHOYAN, A. L., (DECEASED), MARKARYAN, E. A., ALEKSANYAN, R. A., KHORENYAN, G. A., BALAYAN, R. S., and ARUSTAMYAN, ZH. S., Institute of Fine Organic Chemistry imeni A. L. Mndzhoyan, Academy of Sciences Armenian SSR, Yerevan

"Derivatives of Arylalkylamines. II. Constitution and Physiological Activity of Some Substituted Arylalkylamines and Their Derivatives"

Yerevan, Arzyanskiy Khimicheskiy Zhurnal, Vol 24, No 8, 1971, pp 703-713

Abstract: By condensing the chlorides of substituted phenylacetic, diphenyl- and diphenylacetic acids with phenyl- and phenoxyisopropylamine,

Abstract: Condensation of 5,7-dimethoxy-1,2,3,4-tetrahydroisoquinoline with diphenylacetic- and diphenylpropionic acyl chlorides gave respective amides -- N-(2-diphenylacetamido)- and N-(2-diphenylpropionylamido)-6,7-dimethoxy-1,2,3,4-tetrahydroisoquinoline, m.p. 133-134° and 145-146° respectively. These products were reduced with LiAlH_4 to tertiary amines and converted to hydrochlorides: N-(β -diphenylethyl)- and N-(γ -diphenylpropyl)-6,7-dimethoxy-1,2,3,4-tetrahydroisoquinoline, melting at 173-174° and 179-180° respectively. When 1-phenyl- or 1-p-methoxyphenylaminomethylcyclohexane was used in above condensation, the products were 1-(acetamidomethyl)-1-phenylcyclohexane and 3,4-dimethoxyphenylethylamide of diphenylpropionic acid. Cyclization of these amides followed by LiAlH_4 reduction yields respective tetrahydroisoquinolines.

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USSR

UDC 547.835:542.953

MNDZHOYAN, AL. (DECEASED), MARKARYAN, E. A., MARTIROSYAN, T. N., SOLOMINA, L. P., and MARASHYAN, E. S., Institute of Fine Organic Chemistry, Academy of Sciences ArmSSR, Yerevan

"Isoquinoline Derivatives. VI. Synthesis and Pharmacological Properties of 4,6,7-Substituted 1(2)-Azabicyclo[2.2.2]hept-5-ene-2,3-dihydroisoquinolines and Their

Nitrogen Compounds

USSR

UDC 541.69+542.91+547.233

MNDZHOYAN, A. L., (DECEASED), MAEKARYAN, E. A., BALAYAN, R. S., AVAKYAN, O. M.,
and TSATINYAN, A. S., Institute of Fine Organic Chemistry imeni A. L.
Mndzoyan, Academy of Sciences Armenian SSR, (yerevan)

"Arylalkylamine Derivatives. III. Synthesis and Pharmacological Properties
of N-(3,3-Diarylpropyl)-N-Aryl(diphenyl)alkylamines"

Yerevan, Armyanskiy Khimicheskiy Zhurnal, Vc, 24, No 9, 1971, pp 791-797

Abstract: Condensation of veratrole with methyl ester of cinnamic acid
in nitrobenzene and in presence of aluminum chloride gave the methyl ester
of 3-(3',4'-dimethoxyphenyl)-3-phenylpropionic acid, which could easily
be saponified to the free acid, and finally converted to acyl chloride by
treatment with thionyl chloride. Condensation of this acyl chloride with
homoveratrylamine, phenylisopropylamine and diphenylaminobutane gave respective
amides, for example homoveratrylamide of 3-(3',4'-dimethoxyphenyl)-3-
phenylpropionic acid, which could be reduced to the respective secondary
amines using LiAlH_4 in ether. Tested in an assay on rat's spermiduct these
amines showed sympatolytic and some of them even adrenalytic activity.

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USSR

UDC 541.69+547.754

MARKARYAN, E. A., SOLOMINA, L. P., and MARASHYAN, E. S., Institute of Fine Organic Chemistry Imeni A. L. Madzhoyan, Acad. Sc. Armenian SSR (Yerevan)

"Synthesis and Investigation of Pharmaceutical Properties of 1-Diphenylalkyl Substituted 1,2,3,4-Tetrahydro- β -carbolines and Their Derivatives"

Yerevan, Armyanskiy Khimicheskiy Zhurnal, Vol 25, No 8, 1972, pp 683-688

Abstract: Tryptamines condensed with diphenylacetic acid and diphenylpropionic acid chlorides yield amides which can be converted to corresponding secondary amines by lithium aluminum hydride reduction. Bischler-Napieralski cyclization of these amines with phosphorus oxychloride yields 1-acylalkyl substituted tetrahydro- β -carbolines which when condensed with formaline yield benz(g)indolo(2,3-a)-7-R-14-phenyl-5,7,8,13,13b,14-hexahydroquinolizines and 5H-benz(5,6)azepino(1,2-a)-7-R-15-phenyl-7,8,13,13b,14,15-hexahydro- β -carbolines. Most of these compounds exhibited short-lasting hypnotative activity.

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USSR

ALIKhANYAN, A. I., BELYAKOV, E. S., LORIKYAN, N. P., MARKARYAN, K. Zh., and SHIKhLYAROV, K. K.

"A Study of Transition Radiation in Plastic Foam"

Moscow, Pis'ma v Zhurnal Eksperimental'noy i Teoreticheskoy Fiziki, Vol 17, No 9, 5 May 73, pp 453 - 456

Abstract: Recent studies have indicated the great utility of transition radiation in those high-energy regions where traditional methods of particle identification encounter great difficulties. However, there is still a lack of systematic studies of radiation spectra in porous materials. The authors used the Yerevan electron accelerator to study radiation in the frequency band 13 - 130 kev. Electrons with energies of 1 - 3.75 Gev were used to produce photons detected by a scintillation counter with a NaI crystal 2 centimeters thick and 7 centimeters in diameter, behind a beryllium salt window 100 microns thick. Differential radiation spectra and curves relating the total number of photons per electron to the characteristics of the plastic were obtained.

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- 65 -

USSR

UDC: None

ALIKHAN'YAN, A. I., BELYAKOV, E. S., GARIBYAN, G. M., LORIKYAN, M. P.,
MARKAPYAN, K. Zh., and SHIKHLYAROV, K. K.

"Separation of Ultra-High-Energy Particles by the Radiation Transition Method"

Moscow, Pis'ma v Zhurnal Eksperimental'noy i Teoreticheskoy Fiziki, vol 16,
No 6, 20 September 1972, pp 315-318

Abstract: Detectors of transition radiation in the x-ray frequency range are widely used for identifying high-energy particles in cosmic rays and in large accelerators. This letter gives the results of experiments conducted on transitional radiation occurring in foam plastic of 0.04 g/cm³ density with electron energies of 1-4.5 Gev, where it was shown that the use of the streamer chamber method with a foam plastic radiator permitted the separation of particles in the energy range of $\gamma = E/mc^2 > 10^3$ with high reliability. The equipment used for the measurements was the same as that described in an earlier article (A. I. Alikhan'yan, et al, Izv. AN Arm. SSR, Fizika, 5, 1970, p 267), modified to permit observation of the primary electron track, thus easing the procedure. The question of the possibility of separating protons and pi-mesons using this method is also investigated. The authors thank A. Ts. Amatuni for his useful comments.

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1/2 020 UNCLASSIFIED PROCESSING DATE--23OCT70
TITLE--CHEMICAL COMPOSITION AND STRUCTURE OF HYDROCARBON COMPONENTS OF
PROTECTIVE WAXES -U-
AUTHOR--(02)-MARKARYAN, R.A., KAZAKOVA, L.P. *M*
COUNTRY OF INFO--USSR
SOURCE--NEFTEPERERAB. NEFTEKHIM. (MOSCOW) 1970, (3), 14-17
DATE PUBLISHED-----70
SUBJECT AREAS--CHEMISTRY, MATERIALS
TOPIC TAGS--PROTECTIVE COATING, WAX, PHYSICAL CHEMISTRY PROPERTY,
HYDROCARBON, CHEMICAL COMPOSITION/(U)ZVI WAX, (U)M WAX, (U)PARAFFIN B
WAX
CONTROL MARKING--NO RESTRICTIONS
DOCUMENT CLASS--UNCLASSIFIED
PROXY REEL/FRAE--1996/1516 STEP NO--UR/0318/70/000/003/0014/0017
CIRC ACCESSION NO--AP0118503
UNCLASSIFIED

2/2 020

UNCLASSIFIED

PROCESSING DATE--230CF70

CIRC ACCESSION NO--AP0118503

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. ANTILOX, WAXES ZV 1 AND M, AND PARAFFIN B, APPARENTLY EQUIV. IN ANTI-OZONANT ACTIVITY, WERE SEPD. BY FRACTIONAL CRYSTN. INTO 10 FRACTIONS WHICH WERE FURTHER SEPD. ON THE BASIS OF UREA COMPLEXING AND WERE CHARACTERIZED AS TO M.P., N PRIME TO SUBD, AND SYMMETRY FACTOR. IMPORTED WAXES, ANTILOX YIELDING 40.7 AND 34.1 PERCENT OF FRACTIONS M. IS LESS THAN OR EQUAL TO 45 AND 55-55 DEGREES AND WAX M YIELDING 24.0 AND 38.0 PERCENT OF FRACTIONS M. 45-50 AND 50-55 DEGREES CONSISTED MAINLY OF N AND ISOPARAFFINIC HYDROCARBONS, WHEREAS DOMESTIC WAXES ZV 1 HAVING A NEARLY EVEN M.P. DISTRIBUTION AND PARAFFIN B, YIELDING 22.5 AND 33.5 PERCENT FRACTIONS M. 45-50 AND 50-55 DEGREES CONSISTED MAINLY OF NAPHTHENIC HYDROCARBONS HAVING BRANCHED SIDE CHAINS AND PARAFFINIC HYDROCARBONS (SIMILAR TO 85 PERCENT N PARAFFINS), RESP. FACILITY: MINKHGP IM, GUBKINA, MOSCOW, USSR.

UNCLASSIFIED

1/2 021 UNCLASSIFIED PROCESSING DATE--02OCT70
TITLE--THERMOGRAPHIC STUDY OF SOLID HYDROCARBONS OF PROTECTIVE WAXES -J-
AUTHOR--(02)--MARKARYAN, R.A., KAZANOVA, L.P.
COUNTRY OF INFO--USSR M
SOURCE--KHIM. TEKHNOL. TOPL. NASEL 1970, 15(1) 28-30
DATE PUBLISHED-----70

SUBJECT AREAS--MATERIALS
TOPIC TAGS--PROTECTIVE COATING, WAX, OZONE, RUBBER, MOTOR VEHICLE TIRE

CONTROL MARKING--NO RESTRICTIONS
DOCUMENT CLASS--UNCLASSIFIED
PROXY PELL/FAME--1992/1516 STEP NO--UR/0065/70/015/001/0028/0030
CIRC ACCESSION NO--AP0112510
UNCLASSIFIED

2/2 021

UNCLASSIFIED

PROCESSING DATE--02OCT70

GIRC ACCESSION NO--AP0112510

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. THE WAXES, USED FOR PROTECTING TIRES AND RUBBER TECH. ARTICLES AGAINST OZONE CRACKING, WERE COMPLEX MIXTS. OF VARIOUS MOL. WT. HYDROCARBONS, M. 49.5-750DEGREES, OIL 0.9-1.5, PARAFFIN NAPHTHENIC FRACTION 94.5-99.0, AROMATICS 1.0-5.0, RESINS 0.5-1.5, HYDROCARBONS REACTING WITH CARBAMIDE 30-87PERCENT. CHARACTERISTICS OF THE WAXES ARE TABULATED.

UNCLASSIFIED

USSR

UDC 613.693

MARKARYAN, S. S. and SINEL'NIKOV, I. A.

"The Etiology and Prophylaxis of Vestibular Disorders in Flight Personnel"

Moscow, Voenno-Meditsinskiy Zhurnal, No 12, Dec 73, pp 56-59

Abstract: Three methods for training flight personnel using a complex afferent system to increase the stability of the vestibular analysors to acceleration ara described. The first, or active, method involves gymnastic exercises which include tilting the head while rotating the body with open eyes. The second, mixed active-passive, method uses a rotating chair with the subject tilting his head during rotation with closed eyes. The third, passive, method employs apparatus which both rotates and tilts, such as swings and cylinders. Success of the training is determined by the disappearance or weakening of vestibular-vegetative reactions such as rocking sensation, flush, perspiration and nausea.

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USSR

UDC 616.281:612.273

SIDEL'NIKOV, I. A., MARKARYAN, S. S., and PAVLOV, G. I.

"Usefulness of Certain Hemodynamic Parameters in Detecting Vestibular and Autonomic Disorders Under Ordinary Conditions and During Hypoxia"

Moscow, Izvestiya Akademii Nauk SSSR, Seriya Biologicheskaya, No 3, 1973, pp 364-373

Abstract: The effect of motion sickness induced by continuous cumulation of Coriolis acceleration on various hemodynamic parameters was studied in 60 human subjects of varying vestibular stability under ordinary and hypoxic (O₂ 10.5%) conditions. The vestibular and autonomic disorders resulting from motion sickness increased blood pressure and peripheral vascular resistance, but decreased the systolic and minute volumes. However, these changes were observed in all the subjects, regardless of the degree of vestibular stability, suggesting that the cardiovascular system can readily adapt to vestibular stimulation. Thus, the use of hemodynamic parameters is only of limited value in detecting latent vestibular insufficiency.

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USSR

UDC 611.85:615-073.7:611.84

MARKARYAN, S. S., Candidate of Medical Sciences, and SIDELNIKOV, I. A.,
MOSCOW

"Method for Determining the Rate of the Slow and Rapid Phases of Nystagnus
on Electronystagmograms"

Kiev, Zhurnal Ushnykh Nosovykh i Gorlovykh Bolezney, No 2, Mar/Apr 71,
pp 90-106

Abstract: The proposed method for determining the phase velocity of nystagnus reduces to one tenth of its original value the time and work required to evaluate the extremely important nystagnic reaction of the vestibular apparatus test subjects. A simple formulas was used for calculating the angular phase velocity in degrees second of the nystagnic impulse from the velocity of movement of the paper used to record nystagnus (in mm/second), the angle of inclination with respect to the horizontal axis of the slow (or fast) phase of nystagnus in degrees, the tangent of the measured angle of inclination with respect to the horizontal axis of the phases of the nystagnic impulse, and the calibration value of the angle of deviation of the eyes in degrees. Extensive tables of calculated values for various values of the last quantity are given and the possible angles of inclination of the nystagnus phases
1/2

" 82 "

USSR

MARKARYAN, S. S., Zhurnal Ushnykh Nosovykh i Gorlovykh Boletney, No 2,
Mar/Apr 71, pp 90-106

(from 1° to 89°) are presented for various velocities of paper advancement during the recording of nystagmograms. A simple ruler was designed by the authors for measurement of the angles of inclination. The authors propose their simplified method for determining nystagnus phases in clinical as well as in scientific research work in the field of electronystagnography.

2/2

USSR

UDC 616.281-008-07:617.761-009.24

MARKARYAN, S. S., and SIDEL'NIKOV, I. A., Moscow

"Determination of the Reactivity of the Vestibular Analysor from Nystagmus Data"

Kiev, Zhurnal Ushnykh, Nosovykh, i Gorlovykh Bolezney, No 4, Jul/Aug 70, pp 24-29

Abstract: Experiments with 50 human subjects showed that the reactivity of the vestibular analysor can be determined not only from the duration of nystagmus, but also from the rate of the slow phase, the amplitude, and the frequency. The rate of the slow phase of nystagmus provoked by stop stimuli the most significant indicator. It increased with intensification of the stop stimuli at a rotation speed of 15, 30, 60, 90, and 180°/sec. Changes in the rate of the slow phase correlated with values of the stop stimulus up to 180°/sec. Two types of curves showing the reactivity of the vestibular analysor with respect to the duration of nystagmus were determined, reflecting differences in the subjects' vestibular stability (high and low). Nystagmus lasting 18 to 28 sec provoked by stop stimuli of 15 to 60°/sec is an indication of vestibular-autonomic stability, while more prolonged nystagmus is an indication of low stability.

1/1

- 68 -

USSR

UDC 611.85:523

MARKARYAN, S. S., SIDEL'NIKOV, I. A., PAVLOV, G. I., DROZDOBA, N. T., and STEPANOV, V. K.

"Effect of Vestibular Stimulation During Hypoxia on Some Physiological Reactions"

Moscow, Izvestiya Akademii Nauk SSSR, Seriya Biologicheskaya, No 1, 1973, pp 33-36

Abstract: The main purpose of the study was to determine whether moderate hypoxia can be used to detect latent vestibulo-autonomic instability in airplane pilots and astronauts. On the assumption that tolerance for cumulative Coriolis accelerations lasting at least 2 minutes is a good criterion of vestibular function, 242 healthy subjects were exposed to hypoxia either by remaining in a pressure chamber at an "altitude" of 5000 m or breathing a gaseous mixture with a low oxygen content and then rotated in a special chair. The results of the test revealed vestibular instability (4th degree) in 24% of the nonfliers, 12% of the flight school candidates, and 6% of the fliers. Other effects of the combined action of hypoxia and Coriolis accelerations included a marked decrease in the cardiac output, increase in the minute volume of respiration, and diminished visual acuity in the sensitive individuals.

1/1

USSR

UDC 621.396.6--181.5

KRIKOROV, V.S., KRASOV, V.G., MERKURYANTS, A. YE.

"Preparation And Study Of The Quality Of Thin-Film Capacitors Based On Oxides Of Rare-Earth Elements"

Elektron. tekhnika. Nauch.-tekhn. sb. Upr. kachestvom i standartiz. (Electronics Technology. Scientific-Technical Collection. Administration Of Quality And Standardization), 1971, Issue 1(7), pp 79-83 (from RZh--Radiotekhnika, No 9, Sept 1971, Abstract No 9V316)

Translation: The preparation is considered of thin dielectric films and capacitors based on oxides of rare-earth elements by the method of thermal evaporation with electron bombardment and by an electron beam in a vacuum. The results are presented of a study of the quality of the thin-film capacitors prepared. Summary.

1/1

USSR

UDC 615.21:547.665

MARKAVA, E. YA., AREN, A. K., and GERMANE, S. K., Institute of Organic Synthesis, Academy of Sciences LatvianSSSR, Riga

"Synthesis and Physiological Activity of 2,2'-Diamino-2,2'-(phenylene)-bis-indanediones-1,3"

Moscow, Khimiko-Farmatsevticheskiy Zhurnal, Vol 7, No 5, May 73, pp 30-33

Abstract: It has been shown that 2,2'-dibromo-2,2'-(p-phenylene)-bis-indanediones-1,3 react via nucleophilic halogen exchange with primary and secondary amines in anhydrous dioxane or ether to yield 2,2'-diamino-2,2'-(p-phenylene)-bis-indanediones-1,3. A series of derivatives was prepared, all compounds showing some tranquilizing action; amino-m-phenylene-bis-indanediones exhibited higher activity than the p-phenylene homologs. Compounds with the dimethylamino group in their structure were more active than comparables diethylamino derivatives. A transition from p-phenylene to m-phenylene derivatives resulted in disappearance of the analgesic activity.

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USSR

UDC 669.12:539.214

KAYBYSHEV, O. A., and MARKELOV, A. A., Ufa Aviation Institute

"Superplasticity in Technical Nickel"

Moscow, Izvestiya Vysshikh Uchebnykh Zavedeniy, Chernaya Metallur-
giya, No 7, 1973, pp 119-121

Abstract: A study was made of the plasticity dependence of NP-2 brand nickel in a wide range of temperatures and deformation rates, on the initial structure. A diversity in the initial structure was attained at the expense of producing nickel with essentially different grain sizes. The notable difference in the character of the change of actual stresses in the deformation process depending on the initial condition is demonstrated. The creation of a superfine grained structure in nickel ($d=4\mu\text{m}$) considerably changes its strength and plasticity indices. If the plasticity of large grained nickel depends little on the deformation rate, then on fine grained nickel, at 800°C and $\dot{\epsilon}=5\cdot 10^{-3}\text{ s}^{-1}$ deformation rates, a clearly expressed plasticity maximum of 180% is observed. Probably, this can be explained by the fact that the structure of technical nickel undergoes considerable changes in the deformation process due to the high growing rate of the grain which impedes the obtaining of a higher plasticity. Three figures, five bibliographic references.

1/1

Instrumentation and Equipment

USSR

UDC 620.172.251.05

KAYBYSHEV, O. A., MARKELOV, A. A., and GORDIYENKO, YE. G., Ufa Aviation Institute

"Device for Determining Metal Ductility Over a Wide Range of Deformation Rates and Temperatures"

Moscow, Zavodskaya Laboratoriya, Vol 39, No 7, Jul 73, pp 880-881

Abstract: A new device is described which makes it possible to determine the dynamic ductility of metals by tensile testing in a wide range of deformation rates and temperatures. Design of this device provides heating rates from 15 to 500° C/sec with or without subsequent isothermal soaking. VT9 titanium alloy was tested on this new device and on an MR-05-1 tensile testing machine at deformation rates of $1 \cdot 10^3$ and $1 \cdot 10^{-1} \text{sec}^{-1}$, respectively, and at temperatures of 850, 900, 950 and 1000° C. In upset testing of VT9 alloy in the selected range of deformation rates, the effect of rate on ductility was not revealed. Macrocracks were not detected even at the highest deformation rates. Results achieved with this new device showed that the ductility of an alloy is highly dependent on deformation rate and temperature. One figure, two bibliographic references.

1/1

USSR

UDC 620.172.251.2.05

KAYBYSHEV, O. A., and MARKELOV, A. A., Ufa Aviation Institute

"Unit for Testing Ultraductile Materials"

Moscow, Zavodskaya Laboratoriya, Vol 39, No 6, Jun 73, pp 753-755

Abstract: The authors developed a machine, the MP-05-1, for testing the ultra-ductility of materials over a wide interval of deformation rates and temperatures. With this machine the deformation rate can be varied from 0.25 to 200 mm/min, and by adding the reducing gear from an EMASH-5S-65 the deformation rate can be reduced to 0.005 mm/min. Temperature can be maintained with an accuracy of $\pm 4^{\circ}\text{C}$ up to 500°C and $\pm 3^{\circ}\text{C}$ from 500 to 1000°C . A diagram illustrates the functioning of the MP-05-1 unit. 2 figures, 5 bibliographic references.

1/1

1/2 022 UNCLASSIFIED PROCESSING DATE--04DEC70
TITLE--QUALITY OF STAINLESS, LOW CARBON STEEL -U-

AUTHOR--(05)-KASYANOV, A.G., GUREVICH, YU.G., MARKELOV, A.I., SIDOROV,
N.V., GERASIMOV, YU.V.
COUNTRY OF INFO--USSR

SOURCE--MOSCOW, METALLURG., NO 5, MAY 70, PP 17-19

DATE PUBLISHED----MAY70

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

TOPIC TAGS--LOW CARBON STEEL, STAINLESS STEEL, METALLURGIC PLANT,
MECHANICAL PROPERTY, ARGON SCAVENGING, VACUUM MELTING, HIGH QUALITY
STEEL, ARC FURNACE, FERROUS LIQUID METAL, INDUCTION FURNACE, STEEL
IMPURITY

CONTROL MARKING--NO RESTRICTIONS

DOCUMENT CLASS--UNCLASSIFIED
PROXY REEL/FRAE--3007/0409

STEP NO--UR/0130/70/000/005/0017/0019

CIRC ACCESSION NO--AP0135881

UNCLASSIFIED

"APPROVED FOR RELEASE: 09/01/2001 CIA-RDP86-00513R002201920018-6

THE MECHANICAL CHARACTERISTICS OF THE STEEL SATISFIED ALL TECHNICAL REQUIREMENTS. A COMPARISON OF THE MECHANICAL CHARACTERISTICS OF THIS STEEL MADE BY THE THREE PROCESSES DISCUSSED, METALLIC ELECTRODES, ARGON SCAVENGING, AND VACUUM INDUCTION, IS ALSO PRESENTED. FACILITY: CHELYABINSK POLYTECHNICAL INSTITUTE. FACILITY: ZLATOUS METALLURGICAL PLANT.

UNCLASSIFIED

APPROVED FOR RELEASE: 09/01/2001 CIA-RDP86-00513R002201920018-6"

USSR

M

UDC 669.14.018.3:658.562

MAS'YANOV, A. G., GUREVICH, M. G., MARSHALOV, A. T., SIDOROV, N. V., GERASIMOV, YU. V., KRASIN, G. A., CHEBENKOV, S. L., POLYAKOV, YU. V., LEBEDEVA, V. K., Chelyabinsk Polytechnical Institute and Zlatoust Metallurgical Plant

"Quality of Stainless, Low-Carbon Steel"

Moscow, Metallurg., No 5, May 70, pp 17-19

Abstract: A stainless, low-carbon steel developed at the Zlatoust Metallurgical Plant is described. The carbon content of this steel is less than 0.030%, and the steel is made in open arc furnaces using metal electrodes or by scavenging the liquid steel with argon. Comparisons were made between this steel and a similar metal made in vacuum induction furnaces. A table gives the impurities in the various types of steel produced by the two methods -- the use of metal electrodes and argon scavenging. An analysis of the results of a quantitative estimate of impurities showed that owing to the high degree of deformation, the contamination along the transverse axis of the steel sheet is less than that along the longitudinal axis. The mechanical
1/2

2/2 APPROVED FOR RELEASE: 09/01/2001 CIA-RDP86-00513R002201920018-6
CIRC ACCESSION NO--AP0135881
ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. A STAINLESS, LOW CARBON STEEL

USSR

KAS'YANOV, A. G., et al., Metallurg., No 5, May 70, pp 17-19

characteristics of the steel satisfied all technical requirements.
A comparison of the mechanical characteristics of this steel
made by the three processes discussed -- metallic electrodes,
argon scavenging, and vacuum induction -- is also presented.

2/2

USSR

UDC 669.018.45-15:539.214

KAYBYSHEV, O. A., MATVEYEV, L. V., GUSEVA, S. P., and MARKELOV, A. A.,
Ufa Aviation Institute

"Relation Between the Structure and Properties of EI929 Alloy"

Moscow, IVUZ. Chernaya Metallurgiya, No 5, 1972, pp 125-128

Abstract: An investigation is made of the effect which structure obtained by various kinds of heat treatment has on the properties of EI929 heat resistant alloy. Open and vacuum-arc melts were studied. The chemical composition of both melts corresponded to technical specifications. The hardening γ' -phase was analyzed: the amount of γ' -phase, mean grain size and lattice parameter were determined. The structure and properties of the alloys are compared. The high-temperature strength of the alloy can be attributed to grain size, while the ductility is a function of the distribution and degree of dispersion of the hardening γ' -phase.

1/1

MARKELOV, B. A.

SO: Jnes 54539
23 NOV 71

UDC: 612.017.1.014.482
SPECIFIC IMMUNITY TO SMALL DOSES OF GAMMA RAYS IN DOGS AFTER 2-4-YEAR EXPOSURE
(IMMUNOLOGICAL AND HISTOCHEMICAL ANALYSIS)

Article by I.V. Konstantinova, A.S. Skryabin, V.M. Zernkov, Yu.K. Veyselev, I.S. Galilov, A. Galitskiy, V.K. Voinov, vestnik Akademii Meditsinskikh Nauk SSSR, Moscow, No. 20, 1971, pp 2223

Galactic cosmic irradiation the cumulative dosage of which, according to estimates, could constitute 50-100 rem (roentgen equivalent man) over a one-year flight and acute recurrent exposure to solar corpuscular irradiation in a dosage of 8-50 rem per burst (V.G. Bobkov et al.; Schaefer) are factors that are consequently prevent during prolonged space flights. The prognosis of the condition under these conditions and substantiation of levels of permissible exposure of cosmonauts during prolonged space flights constitutes a rather complex problem.

The mechanisms of onset of radiation sickness after exposure to relatively large doses of ionizing radiation have been studied in numerous investigations. There are many works dealing with immunological reactivity under such conditions, and they have been summarized in monographs and reviews (B.V. Gurev; H.K. Kiselevskaya et al.; V.I. Troitskiy et al., and others). Yet the changes in immunological processes in the organism referable to exposure to small doses of ionizing radiation have not been investigated sufficiently.

It has been demonstrated that 4-5 months after fractional or continuous exposure to 2.5-3.5 rem daily there is a significant decrease in immunity to infections (B.B. Kiselev and E.A. Buzlafi; B.R. Kaulov; E.K. Ozhikidze).

In the present investigations, some manifestations of specific immunity were analyzed during a unique complex chronic experiment.

A large group of dogs has been continuously exposed to gamma rays (cobalt 60) for several years. For the first three years of the experiment the animals were exposed to radiation such as could be present for the crew of a spacecraft during a flight from the earth to Mars and back to earth, provided the radiation conditions are relatively stable ("calm") (Yu.G. Grigor'yev et al.)

MARKELOV, B

JPRS 560300
18 May 72

A

UTC 612.111.2.014.492

ERYTHROCYTE RESERVE IN HEALTHY AND CHRONICALLY IRRADIATED DOGS
Article by A. V. Lyukhin, Ye. I. Semakho, A. G. Zoragina, and B. A. Markelov,
Moscow, *Russkaya Medicinskaia i Medicinskaia, Russian, Vol 6, No 2, February*
April 1972, pp 21-23, submitted for publication 10 June 1971

Abstract: This paper gives experimental data which help to
quantify the level at which the erythrocyte level of healthy
and irradiated dogs is mobilized after a physical load. After
running for 15 minutes on a treadmill at a speed of 3.2 km/
hour the healthy dogs released into the bloodstream 2.540.9%
of the red blood cells of the total number of cells circulat-
ing in the blood. The most distinct index showing the state
of the erythrocyte reserve is the reticulocytosis which
occurs in response to a given physical load. On the basis
of data in the literature and their own findings the authors
suggest that the erythrocyte reserve originates in the bone
marrow. No significant differences in the quantitative re-
lease of erythrocytes in healthy and irradiated dogs was
found. The animals were irradiated in total doses of 370,
595, 675, and 170 rad for 24, 36, 42 and 51 months respec-
tively.

Calculations of the bone marrow production of erythrocytes and the
intensity of their breakdown in the human body in different laboratory ani-
mals revealed a correct choice of these parameters (Cronkite, et al.). Some
authors assume that the erythroid elements, in contrast to granulocytes, do
not come at all or form an insignificant cell reserve (Eson, et al.). At
the same time, O. N. Kuznetsov-Danilov and I. Ya. Yevgen'yeva point out
that during light and brief work there is an increase in the hemoglobin con-
tent and the number of erythrocytes due to emergence of the hemoglobin con-
stituent and there are changes in the erythropoiesis in the direction of an in-
crease in the content of erythrocytes. Heavier work is characterized by an
increase in the number of reticulocytes in the peripheral blood. However,
we found no direct investigations in the literature indicating the magnitude

MARKELOV, B. A.

JPRS 55687
12 Apr 1972

RADIATION BIOLOGICAL EFFECTS AFTER 3-YEAR GAMMA IRRADIATION OF DOGS

UDC 612.016.482.4

Article by Yu. G. Grigor'yev, B. A. Markelov, V. I. Popov, A. A. Akhmedov, A. V. Ilyukhin, I. B. Kravchenko, N. V. Sidorov, and V. A. Korotkov; Moscow, *Kosmicheskaya Biologiya i Meditsina*, Russian, Vol 6, No 1, pp 3-7, 1972, submitted for publication 25 March 1971

Abstract: This paper summarizes the results of a three-year radiobiological experiment on dogs. In several experimental series chronic irradiation with varied dose rates (11 to 150 rad per year) and chronic irradiation combined with acute exposures (total doses of 100 rad per year) were applied. Clinical, histological, physiological and cytological examinations demonstrated that the animals maintained a satisfactory clinical condition and exhibited no serious organic radiation damage. However, a decrease in their compensatory potentialities and a change in their reactivity were noted.

A lack of adequate information in the literature on the biological effects induced by constant exposure to ionizing radiation in the doses possible during prolonged space flights served as a basis for conducting a special experiment on a large number of dogs. The scientific program for the experiment, the irradiation conditions and the results obtained one and two years after beginning this experiment have been published earlier (Yu. G. Grigor'yev, et al., 1968, 1970).

This paper gives materials obtained after three years of irradiation of the experimental animals. Data on the number of animals, doses and irradiation conditions are given in Table 1.

After three years of the experiment the condition of the animals, evaluated from the results of systematic examinations (inspections, temperature measurement, measurements of body weight, pulse and respiration rates), remains satisfactory. The incidence of disease in the irradiated groups (conjunctivitis, dyspnea, etc.) was low and did not exceed the corresponding incidence in the group of control animals.

MARKELOV, B. A.

SO: JPRS 53448
24 JUNE 71

UDC 617-001.28-092.9-085.649.1.015.25-07:
616.155-007.1-076.5

EFFECT OF ANTIETHAVITE AND ATP ON HEMOPHESIS IN DOGS DURING REPEATED EXPOSURES
AGAINST A BACKGROUND OF CHRONIC GAMMA IRRADIATION

(Article by V. B. Kazankin, E. I. Gerasimova, M. F. Galitskaya, B. A. Markelov, E. N. Zubkova and T. Ye. Burkovskaya; Moscow, Kosmicheskaya Biologiya i Meditsina, Moscow, Vol 5, No 2, 1971, pp 42-46, submitted for publication 15 January 1970)

Abstract: This paper summarizes the results of two-year experiments with three groups of dogs. Two groups received a dose of 180.5 rad/year, whereas the third served as a control. The 30 irradiated dogs were administered radioprotective drugs: amytetravite and ATP. Hemopoietic parameters exhibited higher stability in response to the drugs.

We studied the effectiveness of therapeutic-prophylactic measures under irradiation conditions simulating the radiation associated with a prolonged space flight. This study constitutes part of a complex experiment carried out with 240 dogs which were exposed to chronic low-level radiation (Yu. G. ~~1970~~, et al.; T. Ye. Burkovskaya, et al.).

This article gives the results of two years of observations of three groups of animals. The dogs in the first and second groups (30 dogs shielded and 24 controls) were exposed to constant (22 hours daily) gamma-irradiation in a dose of 180.5 rad/year with additional acute prolonged exposures simulating solar flares with a 40-rad dose three times a year. The total radiation dose during the two years was 377 rad. The third group was a biological control.

An antiirradiation drug we used amytetravite and adenosine triphosphate (ATP). These are drugs capable of increasing the natural body radioresistance and intensifying processes of postirradiation recovery (O. I. Belousova and M. T. Trushin; V. B. Gerasimov, et al.; V. B. Gerasimov and Ye. I. Markelov; V. I. Kuznetsov). Amytetravite, consisting of vitamins C, E, B1 and B6 and the amino acids triptophan and histidine, was administered to all 30 shielded dogs in two-week series each 1.5-3.5 months. ATP was injected intramuscularly

Radiation Medicine

Radiation Medicine

MARKELOV, B. A.

SO: JPRS 53448

34 June 73

DDP 612.111.3.011.100.1

STATUS OF ERYTHROPOIETIN IN DOGS EXPOSED TO GAMMA IRRADIATION IN DOSES EXCEEDING
LATENT CONDITIONS ACCOMPANIED PROLONGED SPACED LIGHT
Article by L. L. Semakova, A. V. Il'yukhin and B. A. Markelov, Moscow, U.S.S.R.
Mikroskopicheskaya Biologiya i Meditsina, Moscow, Vol. 5, No. 2, 1971, pp. 52-54, abstracted for publication 10 June 1970

Abstract: This paper gives the results of studies of different aspects of erythropoiesis (lifespan of red blood cells, bone marrow production) of dogs exposed to gamma irradiation for 2.5 years. Two-year chronic irradiation with a dose of 52.5 rad/year, followed by exposures of 42 rad three times a year, shortened the half-life of erythrocytes. However, the damage processes were repaired, as could be judged from the absence of anemia, increase in bone marrow erythroid elements, and acceleration of bone marrow red blood cell production. Repair can be attributed to activated erythroid hemopoiesis. The changes produced by chronic irradiation alone were of a similar nature, but less distinct.

This paper gives the results of a study of the lifetimes of erythrocytes, the bone marrow production of erythrocytes, and some other characteristics of erythropoiesis in dogs subjected for 2.5 years to gamma irradiation from a Cobalt source. This work was part of complex investigations of the biological effects of prolonged irradiation, in dose intensity and duration simulating the radiation conditions in a ship cabin during prolonged space flight (Yu. G. Grigor'yev, et al.).

Material and Research Methods

In the experiments we used 30 common male dogs aged two or three years. The animals were broken down into three groups: the 12 dogs in the first group, against a background of persistent (22 hours a day) chronic irradiation with a dose intensity of 52.5 rad/year, were subjected each four months to repeated radiation in a dose of 42 rad. The total mean absorbed tissue

172 046 UNCLASSIFIED PROCESSING DATE--13NOV70
TITLE--DYNAMICS OF GRANULOCYTIC RESERVE CHANGE IN THE BONE MARROW OF
ANIMALS EXPOSED TO CHRONIC GAMMA IRRADIATION -U-
AUTHOR-(02)-ZUBENKOVA, E.S., MARKELOV, B.A.

COUNTRY OF INFO--USSR

SOURCE--MOSCOW, KOSMICHESKAYA BIOLOGIYA I MEDITSINA, RUSSIAN, VOL 4, NO 1,
JANUARY FEBRUARY 1970, SUBMITTED FOR PUBLICATION 6 JANUARY 1969, PP 3-6
DATE PUBLISHED-----70

SUBJECT AREAS--BIOLOGICAL AND MEDICAL SCIENCES

TOPIC TAGS--BONE MARROW, GAMMA IRRADIATION, RADIATION CELLULAR EFFECT,
SPACE RADIATION HAZARD, CANCER, PYROGEN, SOLAR FLARE, SOLAR CORPUSCULAR
RADIATION, TEST

CONTROL MARKING--NO RESTRICTIONS

DOCUMENT CLASS--UNCLASSIFIED

PRGX REEL/FRAME--1986/1863

STEP NO--UR/0453/69/004/001/0003/0006

CIRC ACCESSION NO--AP0103606

UNCLASSIFIED

UNCLASSIFIED

PROCESSING DATE--13NOV70

2/2 046

CIRC ACCESSION NO--AP0103606

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

ABSTRACT. DURING PROLONGED SPACE FLIGHTS IONIZING RADIATION IS ONE OF THE FACTORS TO WHICH MAN IS EXPOSED. ACCORDING TO BOBKOV, ET AL., THE GALACTIC RADIATION TO WHICH COSMONAUTS ARE SUBJECTED CONTINUOUSLY DURING THE ENTIRE FLIGHT IS APPROXIMATELY 70-100 REM PER YEAR OF FLIGHT AND SOLAR CORPUSCULAR RADIATION IN THE SPACESHIP SHIELDED COMPARTMENTS IS 5-50 REM PER FLARE. EVALUATION OF THE DEGREE OF DAMAGE TO BLOOD FORMING TISSUE (DURING IRRADIATION OR MALIGNANT DISEASES) FROM THE MAGNITUDE OF THE GRANULOCYTTIC RESERVE IS USED EXTENSIVELY BOTH IN OUR COUNTRY AND ABROAD. DURING RECENT YEARS A TEST WITH PYROGENAL IS BEING USED EXTENSIVELY FOR CHARACTERIZING THE FUNCTIONAL STATE OF LEUKOPOESIS IN CLINICAL AND EXPERIMENTAL WORK (RAUDSEPP; KELLER AND HEILMEYER; HELIMAN AND FINK). WE USED A PYROGENAL TEST FOR MAKING A MORE DETAILED STUDY OF THE STATE OF LEUKOPOESIS DURING CHRONIC GAMMA IRRADIATION.

UNCLASSIFIED

I/2 032 UNCLASSIFIED PROCESSING DATE--30OCT70
TITLE--DYNAMICS OF CHANGES IN THE MARROW GRANULOCYTE RESERVE OF ANIMALS
EXPOSED TO CHRONIC GAMMA RADIATION -U-
AUTHOR--(02)-ZUBENKOVA, E.S., MARKELOV, B.A. *m*
COUNTRY OF INFO--USSR
SOURCE--KOSMICHESKAIA BIOLOGIIA I MEDITSINA, VOL. 4, JAN.--FEB. 1970, P.
3-6
DATE PUBLISHED-----70
SUBJECT AREAS--BIOLOGICAL AND MEDICAL SCIENCES
TOPIC TAGS--GAMMA IRRADIATION, RADIATION BIOLOGIC EFFECT, RADIATION
DOSAGE, LEUKOPOIESIS, PYROGEN
CONTROL MARKING--NO RESTRICTIONS
DOCUMENT CLASS--UNCLASSIFIED
PROXY REEL/FRAME--1997/0052 STEP NO--UR/0453/70/004/000/0003/0006
CIRC ACCESSION NO--AP0119048
UNCLASSIFIED

2/2 032

UNCLASSIFIED

PROCESSING DATE--30OCT70

CIRC ACCESSION NO--AP0119048

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

ABSTRACT. STUDY OF VARIATIONS IN THE MARROW GRANULOCYTE RESERVE OF 55 DOGS EXPOSED TO 25 TO 225 REM PER YEAR DOSES OF GAMMA RADIATION OVER A PERIOD OF 1.5 YEAR, WITH OR WITHOUT INTRAMUSCULAR INJECTIONS OF A PYROGENIC AGENT. A CERTAIN DEPRESSION OF LEUKOPOIESIS ESTABLISHED BETWEEN THE 6 AND 14TH MONTHS OF THE EXPERIMENT IN DOGS EXPOSED TO 225 REM PER YEAR RADIATION DOSES WAS FOLLOWED BY A GRADUAL RESORATION OF THE MARROW GRANULOCYTE RESERVE. AS A RESULT, THE LEUKOCYTE REACTION OF THE DOGS TO THE PYROGENIC AGENT WAS NORMALIZED BY THE 16 TO 18TH MONTHS OF THE EXPERIMENT.

UNCLASSIFIED

USSR

UDC: 539.37

MARKELOV, G. I., IL'GAMOV, M. A., and IVANOV, V. A.

"Deflections of Elastic Parallelepiped Under Action of Its Own Weight"

Kiev, Prikladnaya Mekhanika, Vol 7, No 12, 1971, pp 32-40

Abstract: The object of the paper is to compare alternata methods of setting up boundary equations.

The very long parallelepiped has one vertical face fixed and is subject to its own weight. The Z-axis of coordinates coincides with this face, the X-axis is normal to it and lays in the bottom face. The ZX cross-section is covered by a grid. Finite difference equations in matrix form are written for the nodal points of this grid.

Alternates 1 and 2. The derivatives of the stresses with respect to distance along the face are used as boundary conditions.

Alternate 3. Unilateral difference equations are used normal to the faces, central differences along the faces.

The general solutions of the difference equations are given. They are expanded in series.

The numerical solutions of the deflections and stresses for the three alternata methods are shown on graphs. Alternate 3 (dotted lines) is the closest to the analytical solution (full lines).

1/1

1/2 020 UNCLASSIFIED PROCESSING DATE--20NOV70
TITLE--EFFECT OF ESERINE ON LACTATE DEHYDROGENASE ISOENZYMES IN CAT BRAIN
-U-
AUTHOR--(03)-STROYKOV, YU.N., PARKELIN, I.M., KONSTORUM, M.G.
COUNTRY OF INFO--USSR
SOURCE--DOKL. AKAD. NAUK SSSR 1970, 191(3), 726-8
DATE PUBLISHED-----70

SUBJECT AREAS--BIOLOGICAL AND MEDICAL SCIENCES
TOPIC TAGS--ALKALGIC, MYOCARDIUM, KIDNEY, LACTATE DEHYDROGENASE, BRAIN

CENTREL MARKING--NO RESTRICTIONS

DOCUMENT CLASS--UNCLASSIFIED
PROXY REEL/FRAME--3003/1487 STEP NO--UR/0020/70/191/003/0726/0728

CIRC ACCESSION NO--AT0130410
UNCLASSIFIED

2/2 020 UNCLASSIFIED PROCESSING DATE--20NOV70
CIRC ACCESSION NU--AT0130416
ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. ESERINE ADMINISTERED I.M. TO CATS
AT 1.35 MG PER KG DECREASED THE TOTAL ACTIVITY OF LACTATE DEHYDROGENASE
(LDF) (EC 1.1.1.27), BUT DID NOT SIGNIFICANTLY CHANGE THE LDH SPECTRUM
IN THE MYOCARDIUM AND KIDNEYS. ESERINE SELECTIVELY INCREASED THE
ACTIVITY OF LACTATE DEHYDROGENASE ISOENZYME IN THE BRAIN TISSUE,
PROBABLY BY REPRESSING GENE A AND INCREASING BIOSYNTHESIS OF THE M
POLYPEPTIDES. FACILITY: VDEANO-MED. AKAD. IM. KIROVA,
LENINGRAD, LSSR.

UNCLASSIFIED

172 018 UNCLASSIFIED PROCESSING DATE--02 OCT 70
 TITLE--CHANGES IN THE ACTIVITY OF LACTATE DEHYDROGENASE OF THE BLOOD SERUM
 AND URINE IN ACUTE RENAL INSUFFICIENCY -U-
 AUTHOR--(03)-TSERINGER, T.B., MARKELOV, I.H., OREL, S.G.

COUNTRY OF INFO--USSR

SOURCE--TERAPEVTICHESKIY ARKHIV, 1970, VOL 42, NR 3, PP 77-80

DATE PUBLISHED-----70

SUBJECT AREAS--BIOLOGICAL AND MEDICAL SCIENCES

TOPIC TAGS--LACTATE DEHYDROGENASE, BLOOD SERUM, URINE, RENAL FAILURE

CONTROL MARKING--NO RESTRICTIONS

DOCUMENT CLASS--UNCLASSIFIED
 PROXY REEL/FRAE--1986/0819

STEP NO--UR/0504/70/042/003/0077/0080

CIRC ACCESSION NO--AP0102780

UNCLASSIFIED

2/2 018

UNCLASSIFIED

PROCESSING DATE--02DCT70

CIRC ACCESSION NO--AP0102780

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. A TOTAL OF 54 PATIENTS WITH ACUTE RENAL INSUFFICIENCY OF VARIOUS ETIOLOGY WERE EXAMINED. TOTAL ACTIVITY OF LACTATEDEHYDROGENASE AND ACTIVITY OF ISOENZYMES OF LACTATEDEHYDROGENASE IN THE BLOOD PLASMA DURING OLIGOANURIA WAS DETERMINED IN 39 PATIENTS. ISOENZYMES OF LACTATEDEHYDROGENASE OF THE BLOOD PLASMA AND URINE DURING RESTORATION OF THE RENAL FUNCTION WERE STUDIED IN 15 PATIENTS. AN INCREASE OF THE LACTATEDEHYDRATE ACTIVITY IN THE BLOOD AND URINE MAINLY AT THE EXPENSE OF RAPID MOVING ISOENZYMES WAS NOTED. THE TOTAL ACTIVITY OF LDG OF THE BLOOD WAS NOT CHARACTERIZED BY THE EXTENT OF THE RENAL TISSUE INJURY. ALL FIVE ISOENZYMES OF LDG WERE REVEALED IN THE URINE. WITH RESTORATION OF THE RENAL FUNCTION THE ACTIVITY OF ISOENZYMES IN THE BLOOD AND URINE BECAME NORMALIZED. THE DYNAMIC OBSERVATION OVER THE CHANGE IN THE ACTIVITY OF LDG MADE IT POSSIBLE TO JUDGE UPON THE RESTORATION OF THE RENAL FUNCTION.

UNCLASSIFIED

USSR

UDC 536.24.01

MARKELOVA, L. P., NEMCHINOV, I. V., and SHUBADEYEVA, L. P.

"Cooling the Heated Region Formed in the Breakdown of Air Under Laser Radiation"

Moscow, Zhurnal Prikladnoy Mekhaniki i Tekhnicheskoy Fiziki, No 2, 1973, pp 54-63

Abstract: As a result of the high concentration of energy at the point of air breakdown under laser radiation, the air at that point may reach a temperature and pressure of the same order as those in the fireball of a nuclear explosion at the moment the heat wave forms the shock wave, according to the authors' calculations. In this paper, they describe a unidimensional method for computing the cooling of the breakdown point and, using numerical methods, solve the problem of whether a change in the optical thickness of the fireball leads to a sharp change in the optical phenomena and a change in the proportion of the radiated energy. At the same time, they determine the intensity and flux of the radiated energy from the fireball -- i.e., they determine the characteristics of the laser explosion as the source of optical and ultraviolet emission. For the sake of simplifying the problem, 1/2

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MARKELOVA, L. P., et al, Zhurnal Prikladnoy Mekhaniki i Tekhnicheskoy Fiziki, No 2, 1973, pp 54-63

they assume that the radiation has only a slight effect on the pressure.

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1/3 033 UNCLASSIFIED PROCESSING DATE--20NOV70
TITLE--SELECTING THE TYPE OF NOISE IMMUNE DEVICE FOR ACOUSTIC ECHO RANGING
DEVICES -U-
AUTHOR--MARKELOV, V.A. M
COUNTRY OF INFO--USSR
SOURCE--MOSCOW, IZMERITEL'NAYA TEKHNIKA, NO 2, 1970, PP 58-60
DATE PUBLISHED-----70
SUBJECT AREAS--PHYSICS, METHODS AND EQUIPMENT
TOPIC TAGS--ECHO RANGING, INDUSTRIAL DIMENSION CONTROL, ACOUSTIC WAVE
PROPAGATION, ACOUSTIC NOISE, PULSE SIGNAL, ERROR MINIMIZATION
CONTROL MARKING--NO RESTRICTIONS
DOCUMENT CLASS--UNCLASSIFIED
PROXY REEL/FRAE--1993/1548 STEP NO--UR/0115/70/000/002/0058/0060
CIRC ACCESSION NO--AP0114141
UNCLASSIFIED

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UNCLASSIFIED

PROCESSING DATE--20NDV70

CIRC ACCESSION NO--AP0114141

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. INDUSTRIAL ACOUSTIC PULSE TYPE ECHO RANGING DEVICES ARE AFFECTED BY THREE TYPES OF NOISE: THE FIRST TYPE CONSTITUTES A CHAOTIC SEQUENCE OF SHORT PULSES, THE AMPLITUDE OF WHICH IS COMPENSURABLE WITH THE AMPLITUDE OF THE USEFUL SIGNAL. THE SECOND TYPE IS REVERBERATION NOISE. THESE TWO TYPES OF NOISE ARE ADDITIVE. IN ADDITION, UNDER INDUSTRIAL CONDITIONS ACOUSTIC PULSE TYPE ECHO RANGING DEVICES ARE AFFECTED BY MULTIPLICATIVE NOISE, WHEREIN THE USEFUL SIGNAL IS AMPLITUDE MODULATED BY A RANDOM PROCESS WITH A NORMAL LAW OF DISTRIBUTION. THE INTENSITY OF THESE NOISES DEPENDS UPON THE DEGREE OF INHOMOGENEITY OF THE REFLECTING SURFACE AND ON THE MEDIUM THROUGH WHICH THE USEFUL SIGNAL PROPAGATES. THE PROBLEM OF INCREASING THE NOISE IMMUNITY OF SUCH AN INSTRUMENT IS REDUCED TO DETECTION AND MEASUREMENT OF THE LAG TIME OF THE USEFUL SIGNAL AGAINST THE BACKGROUND OF ADDITIVE PULSE NOISE AND MULTIPLICATIVE NOISE. NOTE SHOULD ALSO BE TAKEN OF THE FACT THAT DUE TO INHOMOGENEITY OF THE MEDIUM ALONG THE PROPAGATION PATH OF THE SOUND AND DUE TO UNEVENNESSES OF THE REFLECTING SURFACE, THE COORDINATE OF THE USEFUL SIGNAL IN THE PERIOD IS A RANDOM VALUE WITH A NORMAL DISTRIBUTION LAW. ON THE BASIS OF THE MATERIAL PRESENTED IN THIS ARTICLE, THERE HAS BEEN DEVELOPED A SINGLE CHANNEL NOISE IMMUNIZATION DEVICE FOR USE WITH AN INDUSTRIAL LEVEL METER FOR FRIABLE MATERIALS. ACOUSTIC LEVEL METERS WITH THE NOISE IMMUNIZATION DEVICE HAS BEEN TESTED FOR THREE YEARS ON VARIOUS UNITS OF EQUIPMENT IN VARIOUS BRANCHES OF INDUSTRY.

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PROCESSING DATE--20NOV70

CIRC ACCESSION NO--AP0114141

ABSTRACT/EXTRACT--THE NOISE IMMUNIZATION DEVICE IS A HIGHLY EFFECTIVE MEANS OF INCREASING THE RELIABILITY AND GENERAL APPLICABILITY OF ACOUSTIC ECHO RANGING DEVICES UNDER INDUSTRIAL CONDITIONS. THUS, FOR EXAMPLE, ONLY DUE TO USE OF THE NOISE IMMUNIZATION DEVICE HAS IT BECOME POSSIBLE TO SOLVE THE PROBLEM OF AUTOMATIC MEASUREMENT OF THE CHARGE LEVEL IN CALCINING SHAFT FURNACES, AND IN HOPPERS WITH VARIOUS MATERIALS, BY RATHER SIMPLE TECHNICAL MEANS.

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MARKELAV, U.A.

UR 0482

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Soviet Inventions Illustrated, Section II Electrical, Derwent,

241041 ULTRASONIC LEVEL GAUGE comprising a sounding pulse generator synchroniser and output matching amplifier, combined in one valve (1). The generator uses an electronic coupling with load circuit. Part of the pentode (screen and control grids and cathode) is used as the main oscillator. Oscillations generated in this valve part modulate the valve electron stream, and thus the anode current. Thus the anode, grid and cathode constitute the output amplifier. The oscillations are collected from the load choke (2) and applied through the capacitor (3) to the sounding transducer.

The pulse modulation is produced by an RC circuit (4,5) whose time constant determines the pulse repetition frequency, and the capacitance (4) the sounding pulse width. The pulse repetition frequency is synchronised with that of the mains by the capacitor (6). The reflected pulses is received by a receiving transducer and is amplified in a two-stage h.f. amplifier.

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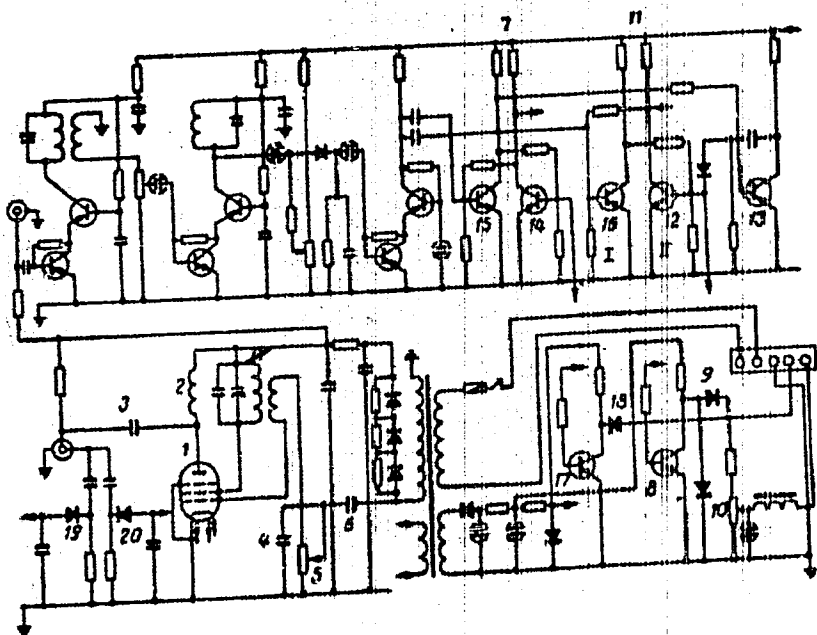
Further items are: trigger-demodulator (7);
matching amplifier (8); limiters (9,10); trigger
(11) which eliminates the effects of fluctuations
on the instrument readings; transistors (12-16);
amplifier (17); nonlinear component (18); diode
detectors (19,20), decoupling the synchronisation
circuits of the demodulator and trigger. They
detect the h.f. pulses delivered by the generator.
22.12.62 as 809586/26-10. MARKELOV, V.A. BASIC CHEMIS-
TRY RES. INST. (18.8.69) Bul 13/1.4.69. Class 42n.
Int.C.I.G Olf.

nauchno- Issledovatel'skiy Institut Osnovnoy Khimii

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Radar

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UDC 534.88:534.83

MARKELOV, V. A.

"Selecting the Type of Interference-Killing Device for Sonic Echo Ranging Instruments"

Moscow, Izmeritel'naya Tekhnika, No 2, February 1970, pp 58-60

Translation: This article is devoted to mathematical analysis of the problem of improving the interference-killing features of sonic echo ranging instruments -- detection and measurement of the delay time of the useful signal against a background of additive pulse and multiplicative noise. It is noted that as a result of inhomogeneities of the reflecting surface the coordinate of the useful signal during a period is a random variable with a normal distribution law. With simultaneous presence of the mentioned interference in the received signal in a ratio to any pulse contained 1/3

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MARKELOV, V. A., Izmeritel'naya Tekhnika, No 2, February 1970, pp 58-60

in the elementary time interval $\Delta\tau$, two mutually exclusive hypotheses can be assumed: H_1 is a useful signal pulse and H_2 is an interference pulse. Bayes formulas are used to express the a posteriori probabilities of the hypotheses H_1 and H_2 for the n-th selected value in the sampling $\Delta\tau$; ($\Delta\tau$ is the observation interval made up of n adjacent periods). The optimal interference-killing device is calculated from these formulas.

On the basis of the formulas and data presented in this paper, a single-channel interference killing device has been developed for an industrial content (or level) gage for bulk free-flowing material. Sonic level gages with the interference killing device have been tested for three years on various equipment in different branches of industry. It is noted that the interference-killing device is a highly effective means of improving reliability and universality of sonic echo ranging

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MARKELOV, V. A., Izmeritel'naya Tekhnika, No 2, February 1970, pp 58-60

instruments under industrial conditions. Only by using such a device was it possible to solve the problem of automatic measuring of the charge level in shaft lime kilns and in bins with various materials by quite simple technical means.

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