

USSR

PODDUBNYI, I. Ya., et al, Kauchuk i Rezina, No 2, 1971, pp 6-9

viscosity of homogeneous fractions with known molecular weight in a θ -solvent, as well as combined intrinsic viscosity and sedimentation constant measurements. Experimental studies of the branching of macromolecules of synthetic rubbers obtained in the presence of different catalytic systems established the following:

1. Macromolecules of SKI-3 rubber synthesized under ordinary conditions are linear; disturbing the polymerization regime in the production of this polymer may lead to the formation of highly cross-linked structures.
2. Macromolecules of cis-polybutadiene, obtained with the use of a catalytic system containing cobalt salts (SKD-2), remain linear for all practical purposes regardless of the polymerization temperature on moderate conversion.
3. The degree of branching of butadiene-nitrile (emulsion) rubbers increases with increased acrylonitrile content.

Methods were developed for studying molecular chain flexibility, the homogeneity
2/3

Phytology

USSR

UDC 581.132

NASYROV, Yu. S., Corresponding Member, Academy of Sciences Tadzhik SSR, ABDURAKHMANOVA, Z. N., ERGASHEV, A., and ALIYEV, K., Institute of Plant Physiology and Biophysics, Academy of Sciences, Tadzhik SSR

"Mechanism of Action of High-Altitude Ultraviolet Radiation on the Development and Functional Activity of the Photosynthetic Apparatus"

Dushanbe, Doklady Akademii Nauk Tadzhikskoy SSR, No 9, 1971, pp 53-60

Abstract: Ten-day-old etiolated pea seedlings were exposed to sunlight for 4 to 5 days, during which time measurements were made of the photosynthetic assimilation of $C^{14}O_2$ and content of chlorophyll, nucleic acids, and proteins in the subcellular structures. Appreciable amounts of chlorophyll did not form until 7 to 10 hours after exposure. There was a correlation between the formation of chlorophyll and assimilation of $C^{14}O_2$, which persisted for 20 hours, after which the pigment content stabilized while the assimilation of carbon continued to increase rapidly. Total RNA decreased sharply the first 10 to 20 hours and then increased. Light-dependent RNA synthesis in the chloroplasts was much more sensitive to ultraviolet radiation than RNA synthesis in the nuclei. The protein-synthesizing system of the chloroplasts was more sensitive than the other subcellular structures. The

1/2

USSR

NASYROV, Yu. S., et al., Doklady Akademii Nauk Tadzhikskoy SSR, No 9, 1971, pp 53-60

incorporation of C¹⁴-labeled leucine into the chloroplast proteins was sharply inhibited by ultraviolet during the first 10 to 30 hours of exposure of the etiolated seedlings. It was concluded that the molecular mechanism of action of high-altitude radiation on photosynthesis is controlled by the inhibition of light-inducible transcription of RNA into DNA of the plastids and suppression of protein synthesis.

2/2

USSR

UDC:553.982.2(575.15)

AKRAMKHODZHAYEV, A. M., ERGASHEV, K. A., AKHMEDOV, Kh. A., OGAY, V. F.,
BAZARBAYEV, E. G.

"Evaluation of Prospects for Oil and Gas Content of Eastern Portion of
Fergana Depression in the Light of New Data"

Tashkent, Uzbekskiy Geologicheskii Zhurnal, No. 6, 1970, pp. 15-19

Abstract: In spite of the significant number of prospecting operations
which have been conducted over the past decade in the Fergana depression,
the prospects for oil and gas finds in the eastern portion of this depres-
sion have not yet been properly evaluated. This article presents a des-
cription of the Suzakskaya structure, which has been a judged promising.
Based on the description presented, it is concluded that the formation of
the overwhelming majority of oil and gas deposits in this region has
occurred primarily due to migration of hydrocarbons from oil and gas con-
ducting suites into collectors within formations, as well as due to lateral --

1/2

USSR

UDC:553.982.2(575.15)

AKRAMKHODZHAYEV, A. M., ERGASHEV, K. A., AKHMEDOV, Kh. A., OGAY, V. F.,
BAZARBAYEV, E. G., Tashkent, *Uzbekskiy Geologicheskii Zhurnal*, No. 6,
1970, pp. 15-19

regional -- migration from the deeper portion of the oil and gas forming
area throughout the entire history of geological development of the
structural plan, i. e. both before and after the morphological formation
of the structural forms.

2/2

- 100 -

USSR

UDC 681.332.65

EKMANIS, Ya. Ya., ERGLIS, U. Yu.

"Controlled Decade Frequency Divider with Variable Division Factor"

USSR Author's Certificate No. 270354, Filed 13/02/69, Published 21/08/70 (Translated from Referativnyy Zhurnal Avtomatika, Telemekhanika i Vychislitel'naya Tekhnika, No. 5, 1971, Abstract No. 5B245P).

Translation: The purpose of the invention is to increase the maximum permissible repetition frequency of input pulses. In the controlled multistage frequency divider suggested, this purpose is achieved by peculiarities in the construction of each decade and the special structure of the connections between decades.
1 fig.

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USSR

UDC 543.544

ERISTAVI, D. I. (Deceased), BROUCHEK, F. I., ERISTAVI, V. D., BERISHVILI, L.A., KAKABADZE, A. G., and KUTSIAVA, N. A., Georgian Polytechnical Institute Imeni V. I. Lenin, Tbilisi

"Investigation of the Uranyl ion Sorption on the Anion Exchange Resins Saturated With Anionic Ligands"

Moscow, Zhurnal Fizicheskoy Khimii, Vol 46, No 5, May 72, pp 1165-1167

Abstract: Using the roentgenographic method, the sorption of uranyl ions from aqueous solutions with pH = 2.5-3.0 on fluoride, carbonate, and ethylenediaminetetraacetate forms of anion exchange resins has been shown to take place. On the basis of the results of IR spectroscopic studies the following stages were proposed for the formation of anionic complexes of uranyl in anion exchange phase: 1) formation of a neutral complex of uranyl with the anionic ligand; 2) association of this complex with anionic ligand in the ion exchange phase, and 3) formation of an ionic pair "anion complex-cation group R⁺ from the anion exchange resin". Starting sorption curves were plotted for different hydrodynamic conditions and from them the values of dynamic sorption capacities for uranium of the anion exchange resin AN-2Fg, AV-16, and AV-17 have been determined, establishing effectiveness series of the sorbents studied.

1/1

Radiation Chemistry

USSR

UDC 543.45

ERISTAVI, the late O. I., Corresponding Member of the Academy of Sciences
Georgian SSR, ERISTAVI, V. D., and KHETIAVA, R. A.

"Study of Uranium Sorption on Carbonate Forms of Anion Exchangers"

Tbilisi, *Sobshcheniya Akademii Nauk Gruzinskoy SSR*, Vol 65, No 1, Jan '71,
pp 57-60

Translation of Russian summary: A study was made of uranium sorption on carbonate forms of AV-17, AV-18, EDE-10, and AN-2F anion exchangers under dynamic conditions. IR and X-ray analysis was used to explain the sorption mechanism. Optimal sorption conditions were determined, as well as prospects of using these anion exchangers for the extraction of uranium from the analyzed solutions.

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USSR

UDC 543.544

ERISTAVI, D. I. (Deceased), BROUCHEK, F. I., ERISTAVI, V. D., BERISHVILI, L.A., KAKABADZE, A. G., and KUTSIAVA, N. A., Georgian Polytechnical Institute Imeni V. I. Lenin, Tbilisi

"Investigation of the Uranyl ion Sorption on the Anion Exchange Resins Saturated With Anionic Ligands"

Moscow, Zhurnal Fizicheskoy Khimii, Vol 46, No 5, May 72, pp 1165-1167

Abstract: Using the roentgenographic method, the sorption of uranyl ions from aqueous solutions with $\text{pH} = 2.5-3.0$ on fluoride, carbonate, and ethylenediaminetetraacetate forms of anion exchange resins has been shown to take place. On the basis of the results of IR spectroscopic studies the following stages were proposed for the formation of anionic complexes of uranyl in anion exchange phase: 1) formation of a neutral complex of uranyl with the anionic ligand; 2) association of this complex with anionic ligand in the ion exchange phase, and 3) formation of an ionic pair "anion complex-cation group R^+ from the anion exchange resin". Starting sorption curves were plotted for different hydrodynamic conditions and from them the values of dynamic sorption capacities for uranium of the anion exchange resin AN-2Fg, AV-16, and AV-17 have been determined, establishing effectiveness series of the sorbents studied.

1/1

Radiation Chemistry

USSR

UIC 543/041

ERISZAVI, the late D. I., Corresponding Member of the Academy of Sciences Georgian SSR, ERISZAVI, V. D., and KUPSEVA, N. A.

"Study of Uranium Sorption on Carbonate Forms of Anion Exchangers"

Tbilisi, Soobshcheniya Akademii Nauk Gruzinskoy SSR, Vol 65, No 1, Jan 74, pp 57-60

Translation of Russian summary: A study was made of uranium sorption on carbonate forms of AN-17, AN-20, BEE-10, and AN-2F anion exchangers under dynamic conditions. IR and X-ray analysis was used to explain the sorption mechanism. Optimal sorption conditions were determined, as well as prospects of using these anion exchangers for the extraction of uranium from the analyzed solutions.

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USSR

UDC 539.4

RENDOLL, DZH., and ERLI, K.

"On the Dependences of Applied Ultimate Tensile Stress, Critical Tensile Stress, the Yield Limit and the Coefficient of Stress Concentration for High-Strength Steels"

Moscow, Novyye metody otsenki soprotivleniya met. khrupkomu razrusheniyu (New Methods of Evaluating the Resistance of Metals to Cleavage Fracture, Collection of Works), Mir, 1972, pp 193-212 (from Referativnyy Zhurnal -- Mekhanika, No 4, 1973, Abstract No 4V1369 by P. F. Koshelev)

Translation: Experiments were conducted on geometrically similar samples to the Sharp type with a wedge notch and dimensions of transverse cross section 10x10 mm and 25x25 mm, divided into three types of laboratory fusions of secondarily congealed alloys; the samples were tested to destruction in three-point bending with a static speed of loading at temperatures +20, -73 and -196°. The samples of small dimensions and the samples for determining the mechanical properties were divided from the destroyed half of the large samples. It is shown that the value of the destroying load during bending tests is decreased with an increase in the yield point of the steel higher than 120 kg/mm² independent of the method of measurement of this characteristic. The basic relationships

1/2

- 94 -

USSR

RENDOLL, DZH, and ERLI, K., *Novyye metody otsenki soprotivleniya met. khrupkomu razrusheniyu*, 1972, pp 198-212

between the normal ultimate tensile stress, the critical value of the maximal tensile stress at a certain point around the notch, the yield limit and stress concentration in the plastic region are determined. It is also shown that the decrease of the normal tensile stress observed with an increase in the yield point, can be explained as the relationship between the coefficient of stress concentration in the plastic region and the value of the ratio of maximal bending stress of the notch foundation without a calculation of the elastic concentration to the yield point of the material; a numerical evaluation of the dependences demonstrated is conducted. (13 bibliographic entries)

2/2

USSR

UDC 51

ERLIKH, A. I.

"A Problem of Simulating Multilevel Systems"

V sb. Detsentralizovan. metody upr. (Decentralized Methods of Control--collection of works), Moscow, 1972, pp 86-92 (from RZh-Kibernetika, No 12, Dec 72, Abstract No 12V377)

No abstract

1/1

USSR

UDC 8.74

EFROS, L. B.

"Introduction to BESM-6 Programming"

Vvedeniye v programmirovaniye dlya EVM BESM-6 (cf. English above), USSR Academy of Sciences, Siberian Division of the Computation Center. Algorithm and Program Libraries. Computer Software, Novosibirsk, 1971, 66 pp, 28 k. Knizh. letopis; 1972, No 7, p 36 (from RZh-Kibernetika, No 12, Dec 72, Abstract No 12V491K)

No abstract

1/1

- 93 -

USSR

UDC 8.74

ERSHOV, A. P.

"Axiomatics of Memory Distribution"

V sb. Teoriya yazykov i metody postroyeniya sistem programmir. (Language Theory and Methods of Constructing Programming Systems--collection of works), Kiev-Alushta, 1972, pp 3-21 (from RZh-Kibernetika, No 12, Dec 72, Abstract No 12V429)

Translation: A procedure is discussed for constructing a correct and complete system of transformations which for any program system permits systematic construction of any admissible memory distributions for the arguments and results of its operators. For admissible memory distributions we mean those which retain all the information links available in the initial system. The basis for the procedure is the method of equivalent transformations of the systems. By the transformation rules for the system we mean the logical calculus which in the form of an axiom postulates certain elementary equivalent transformations of the individual fragments of the system and permits derivation of chains of equivalent transformations of the systems as a whole.

1/1

UDC: 51

USSR

VEN, V. L., ERLIKH, A. I.

"A Linear Model of the Production Possibilities of Industry"

V sb. Programmn. metod upr. Vyp. 1 (Program Method of Control, No 1--collection of works), Moscow, Computing Center of the Academy of Sciences of the USSR, 1971, pp 46-58 (from RZh-Kibernetika, No 6, Jun 72, Abstract No 6V467)

Translation: A method is proposed for constructing a linear model of the possibilities for production of goods based on linear models of the production capacities of enterprises. The concept of technological sectors is generalized, and an algorithm is proposed for partitioning industry into such sectors.

1/1

- 33 -

USSR

UDC: 621.319.4

KOVALEV, K. S., ZHIKHAREV, Yu. V., NOVIKOVA, S. M., ERLIKH, E. A. OK

"Increasing Cold Resistance in Foil Tantalum Capacitors With a Working Voltage of 6 and 15 Volts"

Nauch. tr. N.-i. i proyekt. in-tredkomet. prom-sti (Scientific Works of the Scientific Research and Design Institute of the Rare Metals Industry), 1971, 32, pp 76-83 (from RZh-Radiotekhnika, No 5, May 71, Abstract No 5V327)

Translation: The authors investigate factors which have a considerable influence on the electrical characteristics of tantalum foil capacitors with a working voltage of 6 and 15 volts. A new grade of paper is selected for the liners. The optimum coefficient ϕ for the paper and its thickness are determined. The tantalum foil oxidation voltage and geometric dimensions of the plates are more precisely determined. Two illustrations, bibliography of five titles. Resumé.

1/1

- 156 -

USSR

UDC 621.372.85

GOLOVANOV, V. A., KRASNOV, YE. S., MERKIN, E. I., OSNOVINA, G. O., POLYAK, N. M.,
PROKOPENKO, V. G., and ERLIKH, E. I.

"Adhesives for the Ferrites of Super-High Frequency Instruments"

Elektron. tekhnika. Nauch.-tekhn. sb. Ferrit. tekhn. (Electronics Technology.
Scientific-Technical Collection of Articles. Ferrite Technology), 1971, vyp.4
(31), pp 111-114 (from RZh-Radiotekhnika, No 11, Nov 72, Abstract No 11 B154)

Translation: The authors study problems associated with the selection of an ad-
hesive for mounting ferrite inserts in high power level, super-high frequency in-
struments. Test results are also presented for various working conditions. Ori-
ginal article: one table and three bibliographic entries. Resume.

1/1

1/3 028 UNCLASSIFIED PROCESSING DATE--02OCT70
TITLE--STRUCTURE OF TSIOLKOVSKIY CRATER -U-

AUTHOR--(04)-GORSHKOV, G.S., MELEKESTSEV, I.V., SHTEYNBERG, G.S., ERLIKH,
E.N.

COUNTRY OF INFO--USSR **E**

SOURCE--MOSCOW, IZVESTIYA AKADEMII NAUK SSSR, SERIYA GEOLOGICHESKAYA, NO.
2, 1970, PP 13-19
DATE PUBLISHED-----70

SUBJECT AREAS--ASTRONOMY, ASTROPHYSICS, SPACE TECHNOLOGY

TOPIC TAGS--LUNAR CRATER, SPACEBORNE PHOTOGRAPHY/(U)LUNIK 3 LUNAR PROBE,
(U)TSIOLKOVSKIY LUNAR CRATER, (U)ARCHIMEDES LUNAR CRATER

CONTROL MARKING--NO RESTRICTIONS

DOCUMENT CLASS--UNCLASSIFIED
PROXY REEL/FRAME--1992/1020

STEP NO--UR/0011/70/000/002/0013/0019

CIRC ACCESSION NO--AP0112171

UNCLASSIFIED

2/3 028

UNCLASSIFIED

PROCESSING DATE--020CT70

CIRC ACCESSION NO--AP0112171
ABSTRACT/EXTRACT--(U) GP-0-

ABSTRACT. THIS ARTICLE GIVES INFORMATION ON TSIOLKOVSKIY CRATER, SITUATED ON THE FAR SIDE OF THE MOON. THE STUDY WAS MADE USING PHOTOGRAPHS TAKEN IN FEBRUARY 1967 BY LUNAR ORBITER 3 (PHOTOGRAPHS FURNISHED THE AUTHORS BY THE GODDARD SPACE CENTER). THE CRATER IS ROUND, 230-250 KM IN DIAMETER, SITUATED IN AN EXTENSIVE MOUNTAINOUS REGION. THIS CRATER OR DEPRESSION IS SURROUNDED BY A RING MOUNTAIN SYSTEM 40-70 KM WIDE. A DISTINGUISHING CHARACTERISTIC OF THIS CRATER IS THE ABSENCE OF A SOLID RING WALL SUCH AS AROUND ARCHIMEDES CRATER. THE RING MOUNTAIN SYSTEM SURROUNDING THE CRATER IS SIMILAR TO THAT OF ALPHONSUS CRATER. THE DEGREE OF DESTRUCTION OF THE RING MOUNTAIN SYSTEM IS NONUNIFORM: THE SECTORS ON THE NORTH AND SOUTH ARE MOST DESTROYED. IN CONTRAST TO MOST LARGE CRATERS, THERE ARE NO CRATERLETS OF SIGNIFICANT SIZE IN THE RING MOUNTAIN SYSTEM OF TSIOLKOVSKIY. THE FLOOR OF THIS CRATER HAS A COMPLEX STRUCTURE. THE DETAILED MORPHOLOGY OF THIS FORMATION CANNOT BE EXPLAINED ON THE BASIS OF THE METEORITE HYPOTHESIS. TAKING INTO ACCOUNT THE TECTONIC NATURE OF THE RING MOUNTAIN SYSTEM SURROUNDING THE CRATER, IT CAN BE SAID THAT IT IS MUCH UNLIKE CRATERS OF THE ARCHIMEDES TYPE CHARACTERISTIC FOR "SEA" REGIONS. THE RING MOUNTAIN SYSTEM OF THE LATTER HAS AN ACCUMULATIVE NATURE AND UNDERGOES A TRANSITION INTO THE "SEA" DEPOSITS SURROUNDING THE CRATER. CRATERS OF THE TSIOLKOVSKIY TYPE ARE CUSTOMARY FOR THE "MOUNTAIN" REGIONS. THE DEPOSITS OF THE DIRECTED EXPLOSION, ASSOCIATED WITH THE DEPRESSION, INDICATE A MAJOR ROLE OF THE GAS PHASE SEPARATED AT THE TIME OF THE EXPLOSION FROM THE SILICATE COMPONENT OF MAGMA.

UNCLASSIFIED

PROCESSING DATE--0230T70

UNCLASSIFIED

3/3 028

CIRC ACCESSION NO--AP0112171

ABSTRACT/EXTRACT--UNDER TERRESTRIAL CONDITIONS SUCH DEPOSITS ARE USUALLY ASSOCIATED WITH ACIDIC PYROCLASTIC PRODUCTS (PUMICES, IGNIMBRITES). IT CAN BE ASSUMED BY ANALOGY THAT THE DEPOSITS ASSOCIATED WITH THE EXPLOSIVE PHASE OF ACTIVITY OF TSIOLKOVSKIY CRATER AND OTHER CRATERS OF A SIMILAR TYPE HAVE A SIMILAR COMPOSITION. FACILITY: INSTITUTE OF VOLCANOLOGY SIBERIAN DEPARTMENT ACADEMY OF SCIENCES USSR.

UNCLASSIFIED

1/2 016 UNCLASSIFIED PROCESSING DATE--30OCT70
TITLE--COMPOSITION FOR HERMETIZATION -U-

AUTHOR-(05)-^{OK}ERLIKH, I.M., GITINA, I.G., PETROV, G.N., RAPPDPORT, L.YA.,
VASILYEVA, I.N.
COUNTRY OF INFO--USSR

E

SOURCE--USSR 265,344
REFERENCE--OTKRYTIYA, IZOBRET., PROM. OBRAZTSY, TOVARNYE ZNAKI 1970,
DATE PUBLISHED--09MAR70

SUBJECT AREAS--CHEMISTRY, MATERIALS
TOPIC TAGS--HERMETIC SEAL, POLYGLYCOL, PLASTICIZER, ORGANIC ISOCYANATE,
PATENT

CONTROL MARKING--NO RESTRICTIONS
DOCUMENT CLASS--UNCLASSIFIED
PROXY REEL/FRAE--3002/1459 STEP NO--UR/0482/70/000/000/0000/0000
CIRC ACCESSION NO--AA0128858

UNCLASSIFIED

2/2 016

UNCLASSIFIED

PROCESSING DATE--30OCT70

CIRC ACCESSION NO--AA0128858

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. THE TITLE COMPN., WITH ENHANCED
MECH. STABILITY, ELASTICITY, AND ADHESION, IS BASED ON UNSATD.
POLYGLYCOLS OF REGULAR STRUCTURE AND CONTAINS A PLASTICIZER,
POLYISOCYANATES, AND AN ACTIVATING SYSTEM. FACILITY: KALININ, M.
I., POLYTECHNIC INSTITUTE, LENINGRAD.

UNCLASSIFIED

Devices

3

UDC 621.3.049.7

USSR

GOLOVANOV, V. A., YEREMICHEVA, K. A., KRASNOV, Ye. S., MERKIN,
E. I., OSNOVINA, G. C., POLYAK, N. M., and ERLIKH, I. M.

"Adhesive with Epoxy Base"

Moscow, Otkrytiya, izobreteniya, promyshlennyye obraztsy, tovarnyye
znaki, No. 33, 1971, p 200

Abstract: This adhesive is designed to improve the operation of ferrite UHF devices in the face of low and high powered signals as well as temperature variations. A recipe for its manufacture is given.

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USSR 021.791.16.007

USSR

OK E

ANDROPOL, YU. A., Candidate of Technical Sciences, LAYBET, N. P., Candidate of Technical Sciences, SAKHNOV, A. S., Engineer, BOLDYRKHIN, V. A., Engineer, and ERLIKH, K. G., Engineer VNIIESO (All-Union Scientific Research Institute of Electric Welding Equipment)

"The MTU-0.4-3 Machine for the Ultrasonic Welding of Metals"

Moscow, Svarochnoye Proizvodstvo, No 5, May 70, pp 47-48

Abstract: A description is given of the MTU-0.4-3 machine for the ultrasonic welding of metals. Exploitation of the machine under industrial conditions shows that it is simple and reliable in its operation. Wear-resistant welding tips may produce up to 81,000 spot welds before servicing, and up to 250,000 before being replaced. The use of the machine in the production of K50-6 and K50-7 aluminum electrolytic condensers resulted in a 14.5% reduction of rejects, and in increased welding reliability, greater service life of the articles, and a 39% increase in labor productivity. Specifications of the machine are as follows:

Power in kw	0.4
Operational frequency in kc	22±7.5%

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USSR

KHOLOPOV, YU. V., et al, Svarochnoye Proizvodstvo, No 5, May 70, pp 47-48

Contact pressure in kg	8-60
Thickness of welded articles in mm	0.01-0.2
Productivity	15-90 spots per min.
Welding tip feeding in mm	120 x 47 or 120 x 74
Gap between tips in mm	0-20
Dimensions in mm	1300 x 600 x 1235

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72 018 UNCLASSIFIED PROCESSING DATE--11DEC70
 TITLE--MTU 0.4-3 FOR ULTRASONIC METAL WELDING -U-
 AUTHOR--(C5)--KHCLOPOV, YU.V., ZAYTSEV, M.P., SMIRNOV, A.S., SLEDATENKOV,
 V.A., ERLIKH, M.G. OK
 COUNTRY OF INFO--USSR, UNITED KINGDOM, UNITED STATES E 1
 SOURCE--MOSCOW, SVARGHNOYE PROIZVODSTVO, NB. 5, 1970, PP 47-48
 DATE PUBLISHED-----70
 SUBJECT AREAS--MECH., IND., CIVIL AND MARINE ENGR
 TOPIC TAGS--PATENT, WELDING EQUIPMENT, FOREIGN TECHNICAL RELATION,
 ULTRASONIC WELDING, MACHINERY MANUFACTURING PLANT/(U)MTU04 3 ULTRASONIC
 WELDER
 CONTROL MARKING--NO RESTRICTIONS
 DOCUMENT CLASS--UNCLASSIFIED
 ROXY FICHE NO----FD70/605041/B10 STEP NO--JR/0135/70/000/005/0047/0048
 IRC ACCESSION NO--APO142720
 UNCLASSIFIED

PROCESSING DATE--11DEC70

UNCLASSIFIED

2/2 018

IRC ACCESSION NO--AP0142720

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

ABSTRACT.

THE MACHINE FOR ULTRASONIC WELDING

OF METALS CONSISTS OF AN ACOUSTICAL SECTION, USING A MECHANICALLY

OSCILLATORY SYSTEM, THE WELDING HEAD, FIXED TO A TABLE, A HORIZONTAL

DRIVE SERVO FOR THE ACOUSTICAL SECTION, A CONTACT PRESSURE SERVO,

CONTROL EQUIPMENT FOR THE ENERGY FEED SOURCE, AND CONTROL PEDALS. THE

ACOUSTICAL SECTION HAS A MAGNETOSTRICTIVE TRANSDUCER, A KNIFE

EXPONENTIAL CONCENTRATOR, AND A RESONATING ROD OPERATING IN THE BENDING

OSCILLATION MODE. A PHOTOGRAPH OF THE MACHINE IS GIVEN TOGETHER WITH

FURTHER DETAILS OF ITS CONSTRUCTION, AND A CROSS SECTIONAL DIAGRAM OF

THE ACOUSTICAL SECTION IS PRESENTED. OPERATION OF THE MACHINE UNDER

PLANT CONDITIONS HAS SHOWN THAT IT IS SIMPLE AND RELIABLE IN OPERATION.

EXPERIMENTS WERE CONDUCTED ON THE MECHANICAL STABILITY OF WELDS MADE BY

THE MACHINE IN THE COURSE OF FILM TRANSFORMER AND ELECTRICAL CAPACITOR

MANUFACTURE; THE RESULTS OF THOSE EXPERIMENTS ARE GIVEN IN TABULAR FORM.

ASSEMBLY LINE MANUFACTURE OF THE MTU 0.4-3 MACHINE HAS BEEN ORGANIZED

IN THE "ELEKTROSVARKA" PLANT IN KALININGRAD. PATENTS HAVE BEEN OBTAINED

FOR THE MACHINE IN GREAT BRITAIN AND THE UNITED STATES.

FACILITY: VNIIESO.

UNCLASSIFIED

1/2 011 UNCLASSIFIED PROCESSING DATE--30OCT70
TITLE--KINETICS OF BENZENESULFONAMIDE SOLVOLYSIS IN DILUTE FUMING SULFURIC
ACID -U- ^{OK}
AUTHOR--(04)--RYABOVA, R.S., VINNIK, M.I., LAZAREVA, V.T., ERLIKH, R.D.
COUNTRY OF INFO--USSR
SOURCE--ZH. ORG. KHIM. 1970, 6(4), 797-800
DATE PUBLISHED-----70
SUBJECT AREAS--CHEMISTRY
TOPIC TAGS--CHEMICAL REACTION KINETICS, AMIDE, SULFURIC ACID, BENZENE
DERIVATIVE, ORGANIC SULFUR COMPOUND, CHEMICAL REACTION MECHANISM
CENTREL MARKING--NO RESTRICTIONS
DOCUMENT CLASS--UNCLASSIFIED
PROXY REEL/FRAE--2000/2153 STEP NO--UR/0366/70/006/004/0797/0800
CIRC ACCESSION NO--AP0125736
UNCLASSIFIED

2/2 011

UNCLASSIFIED

PROCESSING DATE--30OCT70

CIRC ACCESSION NO--AP0125736

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. THE SOLVOLYSIS OF PHSO SUB2 NH SUB2 IN OLEUM CONTG. 0.01-1.63PERCENT SO SUB3 GIVES PHSO SUB3 H AND H SUB2 NSO SUB3 H AND IT IS A 1ST ORDER REACTION IN RESPECT TO PHSO SUB2 NH SUB2. THE EFFECTIVE RATE CONSTS. INCREASE WITH SO SUB3 CONC. IN THE LINEAR FASHION. A REACTION MECHANISM IS PROPOSED INVOLVING THE FORMATION OF A COMPLEX BETWEEN PHSO SUB2 NH SUB2 AND H SUB2 S SUB2 O SUB7 (WHICH EXISTS IN OLEUM) AND ITS DECOMP. TO PHSO SUB3 H AND H SUB2 NS SUB2 O SUB6 H WHICH REACTS WITH H SUB2 SO SUB4 GIVING H SUB2 NSO SUB3 H AND H SUB2 S SUB2 O SUB7.

UNCLASSIFIED

ERLIKH, R. N.

5/12/5
5/20/5
6.75

XIV-13. STUDY OF THE CHARACTERISTIC FEATURES OF CRYSTALLIZATION OF MICRODROPS OF THE MELT ON THE SURFACE OF AMORPHOUS SILICON LAYERS

Article by R. N. Erlikh, N. A. Belov, I. S. Kondrat'eva, V. A. Shlyenskaya, Leningrad: *Inzhenering i Prikladnaya Fizika*, No. 1, 1972, p. 20-24. (Russian)

Data are presented from a statistical analysis of the frequency of nucleating growth defects caused by crystallization of microdrops of the melt on the surface of amorphous silicon layers obtained by the method of reducing the silicon tetrachloride by hydrogen. The growth conditions of the amorphous silicon layers promoting the formation of microdrops of the melt were studied. Silicon plates alloyed with iron and gold containing contamination by metal, graphite, dust, and traces of washing solutions on the surface were used as substrates in the experiments. It was demonstrated that the formation of microdrops of the melt is favored by the presence of such admixtures as iron, gold, hydrogen, oxygen, nitrogen and others, the sources of which can be the crystal itself (above all, the contamination of the grown surface) and the crystallization medium. The movement of the defects toward the surface with respect to the morphological characteristics of the defects formed corresponds to the directions of predominant growth. The build-up of the melt can be accompanied by the partial effect of the admixtures from the surrounding regions of the crystal and can serve as a cause of the formation of growth defects of the following type: plate-like droplets, faceted whiskers, cones, growth hillocks of pyramidal appearance, and complex twins -- triplets. According to the morphological characteristics of the defect connected with the presence of the liquid phase on the growth surface of the crystal and on its back side -- the sandwich layer -- a correct judgment of the conditions of the growth process of the amorphous silicon layers, in this paper the possible mechanisms of crystallizing microdrops of the melt are discussed, and the different technological methods of lowering the probability of their occurrence are proposed.

ERLIKH, R.N.

SPMS 59303
6-73

SESSION XV

XV-1. HARDNESS OF AUTOEPITAXIAL SILICON LAYERS

[Article by T. S. Yombat'yeva, H. A. Belov, R. N. Erlich, L. N. Belikyan, I. H. Guseva, Leningrad: Novotel'sk. III Simpozium po Protsessam Rost'a i Sinteza Poluprovodnikovkh Kristallov i Plenok, Ruzan, 13-17 June 1972, p 212]

This paper is devoted to the study of the hardness of silicon crystals used as substrates and autoepitaxial layers grown by the method of reducing silicon tetrachloride by hydrogen.

Experimental data are presented on the hardness of crystals as a function of the mechanical, chemical and electrochemical processing and with respect to the effect of different types of treatment on the mechanical properties of the autoepitaxial layer. It is demonstrated that the anisotropy of the hardness of the crystals and the autoepitaxial layers of silicon has an analogous nature -- the magnitude of the hardness (H_v) decreases on going from the {111} facets to the {110} ones. The magnitude of H_v is defined as a function of the concentration of the alloying mixture in the layers. The data obtained were checked by calculating the Kolmogorov criterion on the Minak-22 computer by the H. N. Ulin procedure. The statistical analysis indicates a decrease in hardness with an increase in the phosphorus concentration in the layers.

The variation in hardness with respect to depth of the layer was observed which is caused by the effect of the substrate properties: the type and concentration of the alloying admixture, the type of surface machining.

In this paper it is demonstrated that the magnitude of the hardness is a parameter which permits estimation of the perfection of the autoepitaxial layers reflecting the interrelation of the mechanical and structural properties with the crystallization conditions.

USSR

UDC 621.315.592:546.28

CHETYRKINA, N.A., KARACHENTSEVA, Z.V., MITROFANOV, V.V., DEDECKAYEV, T.T.,
BELOV, N.A., ERLIKH, R.N., VASYUTINA, Z.V.

"Carbon Insertion In Epitaxial Layers Of Silicon And Effect Of Growth Conditions
On Their Formation"

Elektron.tekhnika. Nauch.-tekhn.sb. Poluprovodn.pribory (Electronics Technology.
Scientific-Technical Collection. Semiconductor Devices), 1971, Issue 1(58), pp
47-50 (from RZh:Elektronika i yeye primeneniye, No 9, Sept 1972, Abstract No
9B79)

Translation: A study is made of the defectiveness of epitaxial layers of Si
connected with a high carbon content. It is shown that in the initial state
epitaxial layers grown by hydrogen reduction of tetrachlorated silicon have a
microuniformity characteristic of the presence of finely-divided insertions of
the second phase. In the process of heat treatment at 1150° C in an oxygen at-
mosphere, a decrease takes place of the density of microdefects and an increase
of separation of the second phase containing carbon and oxygen. The results are
presented of tests of preparation of epitaxial layers with a reduced carbon con-
tent. 6 ref. Summary.

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USSR

UDC 621.315.592:546.28

MOKIYEVSKIY, V.A., ERLIKH, R.N.

"Mechanism Of Formation Of Packing Defects In Autoepitaxial Layers Of Silicon"

Elektron.tekhnika. Nauch.-tekhn.sb. Poluprovodn.pribory (Electronics Technology. Scientific-Technical Collection. Semiconductor Devices), 1971, Issue 1(58), pp 58-61 (from RZh:Elektronika i yeye primeneniye, No 9, Sept 1972, Abstract No 9B80)

Translation: A study was made of the effect of an oxide on the formation of packing defects in autoepitaxial layers of Si. A mechanism is suggested which accounts for the appearance of twin islands--nuclei in the autoepitaxial layers, which are the reason for the formation of packing defects because of epitaxial coalescence of Si with crystallographic films of oxides. 11 ref. Summary.

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- 120 -

USSR

UDC 621.315.592.546.28

BELOV, N. A., ERLIKH, R. N., KAZANOV, V. M., and KONDRAT'YEVA, T. S.

"Properties of Autoepitaxial Silicon Layers"

Elektron. prom-st'. Nauchno-tekhn sb (Electronic Industry--scientific and technical collection of works), 1970, No 1, 99-100 (from RZh-Metallurgiya, No: 11, Nov 70, Abstract No 11G388)

Translation: The layers were grown by the method of hydrogen reduction of SiCl_4 in a unit with vertically and horizontally distributed radiation chambers. Under the conditions of decreasing temperature in the process of growing (down to $\sim 1170^\circ$), autoepitaxial layers were obtained with good reproducibility of results and a mirror-smooth surface (density of growth figures and packing defects $\leq 10 \text{ cm}^{-2}$), and the width of the concentration transition sublayer-autoepitaxial layer was reduced to 2-3 μ . During growth under constant low temperature conditions, the production of layers with perfect structure was hindered owing to the necessity of rigid stability of the parameters of the process. (From RZh A 1 R)

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- 36 -

Acc. Nr: AP0044179

ERLIKH Z.A.

Ref. code: UR9115

PRIMARY SOURCE: Ortopediya, Travmatologiya i Protezirovaniye,
1970, Nr / , pp 27-31

**TREATMENT OF CLOSED AND COMPOUND FRACTURES OF THE TUBULAR
BONES OF THE HAND**

Z. A. Erlich

The author believes that in multiple closed fractures of the metacarpals and finger-phalanges the conservative reposition and fragment retention does not always end with success. In these cases the operative treatment is indicated. Though not denying the role of metal fixators, the author prefers osteosynthesis of tubular bone fractures of the hand with aid of biological fixators — heterobiological rods from feather. Primary tendinosuture is indicated in combined injuries to the bone and tendon apparatus. The primary surgical debridement of open hand injuries should be maximum sparing. Frequently, in indicated cases, the excision of nonviable tissues necessitates substitutive skinplasty. Primary skinplasty is considered to be the final stage of the initial surgical debridement. Remedial physical culture and physiotherapy in treatment of tubular bone fractures of the hand are important factors favouring restoration of the hand function. The treatment of 92,8% of the injured with closed fractures and 82,9% with compound fractures was ambulatory. Utilization of the residual working capacity in patients with trauma of the hand tends to accustom them to work and solve one of the problems of medical rehabilitation.

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ERNADES L.F.
UR 0482

Soviet Inventions Illustrated, Section II Electrical, Derwent,

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243012 CIRCUIT FOR SUPPLYING INFORMATION TO A TELEPRINTER. The readers (3) have their digits of the same value connected in parallel to the first stage (8) of the commutator (1). The inputs of the readers are connected to the inputs of the second stage (9) of the commutator (1). The outputs of both stages of the commutator are connected to the input of the amplitude decoder (4) which is connected in series with the code converter (5) and the teleprinter (6). The

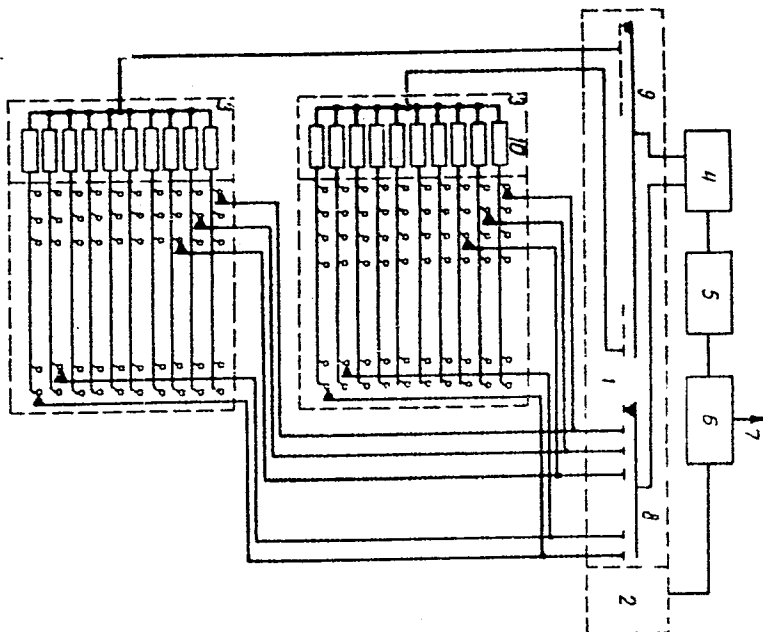
information is recorded in the module (2).
6.6.66 as 1082311/18-24.G.I.STRIZHAK et al.VOLGOGRAI
MACHINERY CONSTRUCTION RES.INST.(23.9.69)Bul 16/
5.5.69. Class 2lc. 74b. Int.Cl.G 05g. G08c.

AUTHORS: Strizhak, G. I.; Ryabov, K. G.; Ernandes, L. F. 4
Volgogradskiy Nauchno - Issledovatel'skiy Institut Tekhnologii
Mashinostroyeniya

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AA0047088



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USSR

probably OK

UDC 547.26'118

TSIVUNIN, V. S., KRUTSKIY, L. N., ERNAZAROV, and KAMAY, G. Kh.

"The Reaction of Diethylamidoethylphosphonous Acid Chlorides and Ethyl-dichlorophosphine, With the Orthoformic Ester and Acetic Aldehyde Diethyl Acetal"

Leningrad, Zhurnal Obshchey Khimii, Vol XL, No 12, Dec 70, pp 2560-2563

Abstract: For a comparison of the electrophilic properties of the diethyl-amidoethylphosphonous acid chloride and those of the halides of trivalent phosphorus, the authors studied the above reaction.

It was found that ethyldichlorophosphine reacts vigorously with the orthoformic ester, to form the ethyl ester of ethyldiethoxymethylphosphinic acid, and with the diethyl acetal of acetaldehyde to form (depending on the ratio of reagents) the ethyl ester or the acid chloride of ethyl-1-ethoxyethylphosphinic acid. Alcohols react with the latter to produce the esters of ethyl-1-ethoxyethylphosphinic acid, and also the acid itself. It was also found that the diethylamidoethylphosphinic acid chloride, as distinct from ethyldichlorophosphine, reacts with the orthoformic ester, but is practically inactive with respect to the diacetal of acetaldehyde.

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USSR"

KAMAY, G. KH., ERRE, E. A., and KHARRASOVA, F. M.

"Synthetic Method for Amidoesters of Alkyl(aryl)thiophosphoric Acids"

USSR Author's Certificate No 367112, filed 1 Mar 71, published 12 Mar 73
(from RZh-Khimiya, No 19, Oct 73, Abstract No 19N504 P)

Translation: The method is based on the reaction of acid alkyl esters of alkyl(aryl)thiophosphonous acids with amines or hydrazines in CCl_4 :

$$\text{RP(S)(OR')} + 2\text{R}''_2\text{NH} + \text{CCl}_4 \longrightarrow \text{RP(S)(OR')NR}''\text{R}''(\underline{\text{I}}) + \text{R}''_2\text{NH}\cdot\text{HCl} + \text{CHCl}_3$$

the following $\underline{\text{I}}$ being obtained (R, R', R'', R''' or R''R'''N, yield in %, b.p. in °C/mm or m.p. in °C, n_D^{20} , d_4^{20} being reported): Et, Pr, iso-Pr, H, 72.8, 78-80/1, 1.4804, 0.9980; Et, Pr, Ph, H, 57.4, 118-120/2, 1.5532, 1.217; Et, Pr, NPh, H, 73.6, 72-3, -, -; Et, Pr, Pr, Pr, 64, 88-91/1, -, (n_D^{20} 1.4760), -, Et, Pr, morpholino, 63.2, 101-2/1, 1.4997, 1.0976; Ph, Et, morpholino, 79.1, 75-6, -, -, Ph, Et, iso-Pr, H, 68, 108-9/0.8, 1.5495, 1.0924. The synthesized $\underline{\text{I}}$ are interesting as possible pesticidal agents.

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USSR

UDC 547.241

KAMAY, G. Kh. (deceased), KHARRASOVA, F. M., ERRE, E. A., Kazan' Institute of Chemical Technology imeni S. M. Kirov

"On Synthesis of Dialkyl-(Aryl)phosphinic and Thiophosphinic Acid Amides and Alkyl-(Aryl)-phosphonic Acid Ester Amides"

Leningrad, Zhurnal Obshchey Khimii, Vol 42(104), No 6, Jun 72, pp 1295-1299

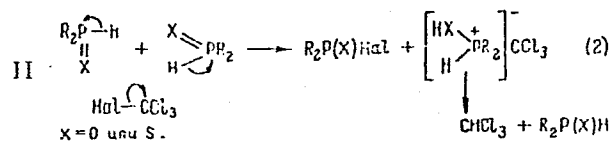
Abstract: Amides of dialkyl- and diarylphosphinic and thiophosphinic acids and mixed ester amides of alkyl(aryl)phosphonic acids were synthesized in order to study their pesticidal properties. Oxides and sulfides of secondary phosphines, and also partial esters of alkyl and aryl phosphonous acids reacted with amines in the presence of carbon tetrachloride to give amides of dialkyl-(aryl)phosphinic and thiophosphinic acids, and amide esters of alkyl-and aryl-phosphonic acids, respectively. It was found that sulfides of secondary phosphines react with carbon tetrachloride and trichlorobromomethane in the absence of bases to form the corresponding dialkyl(aryl)-phosphinic acid halides.

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- 37 -

USSR

KAMAY, G. Kh. (deceased), et al., Zhurnal Obshchey Khimii, Vol 42(104), No 6, Jun 72, pp 1295-1299



The resultant compounds are herbicides.

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USSR

UDC 547.558.1

KIREYEV, V. V., KORSHAK, V. V., ERYAN, M. A., and MINAS'YAN, R. M., Moscow
Chemical Technological Institute Imeni D. I. Mendeleev

"Aromatic Bisphosphazo Compounds"

Leningrad, Zhurnal Obshchey Khimii, Vol 43 (105), No 2, Feb 73, pp 434-435

Abstract: A new synthetic route was proposed for 1,4-bis(triphenylphosphazo)-benzene (I) and tetraphenyl-p-phenylene-bis(phosphazophenyl) (II) based on the Kirsanov reaction. The phosphazo reaction was carried out in refluxing anhydrous xylene using excess diphenyltrichlorophosphorus in the synthesis of (I) and an excess of aniline hydrochloride during the synthesis of (II).

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- 38 -

Phytology

USSR

ESENOV, R.

"Wilt - 'Plague' of Cotton"

Moscow, Zemledeliye, No 12, 1970, pp 42-44

Abstract: Fusarium wilt is the deadliest enemy of cotton and some other crops grown in the southern regions of the Central Asian republics. All efforts to control the agent have so far proven ineffective. Even specially bred, apparently resistant cotton varieties succumb after a few years. To cope with the problem, the USSR Academy of Sciences, All Union Academy of Agricultural Sciences, and USSR Ministry of Agriculture appointed a Coordination Council for the Control of Cotton Wilt. The Council assigned responsibility for supervising the research to the Turkmen Academy of Sciences. Most of the research is being conducted by the Laboratory of Physiology and Biochemistry of Fungi, Institute of Botany, directed by Professor Zinaida E. Bekker. The work done by some of the sections attempting to grow anti-fungal agents is described, and the use of trace elements, creation of anaerobic conditions, and alteration of the toxic structure are covered. The following measures which have been found to provide partial control of

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USSR

ESENOV, R., Zemledeliye, No 12, 1970, pp 42-44

the disease are mentioned: planting of green manure, use of crop rotation, proper proportions of mineral fertilizers, and prevention of salinization.

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USSR

ESENOV, R.

"Wilt -- the Plague of Cotton"

Ashkhabad, Turkmenskaya Iskra, 18 Jun 70, p 3

Abstract: The fight against cotton wilt (especially in the last 3 years) has been carried on under the leadership of the Turkmen Academy of Sciences, supported by special funds from the State Committee of the USSR Council of Ministers for Science and Technology. The USSR Academy of Sciences, the All Union Academy of Agricultural Sciences imeni V. I. Lenin, and the USSR Ministry of Agriculture organized a special coordinating council for this purpose. Wilt seriously threatens cotton production in the Central Asian republics, especially Turkmenistan (current annual production plan: 150,000 tons), for even the virgin soil in the region where the Karakum canal is under construction is infected by a saprophytic stage of the fungus. So far, no final solution has been found, either here or abroad. To date, a thorough biochemical study of wilt (mainly *Fusarium*) has been made; there are some practical suggestions for reducing the damage it causes. Some wilt-resistant varieties of cotton have been developed, and different varieties may be rotated to delay the rate of infestation. Use of trace elements (zinc, cobalt, copper) in fertilizer, use of ammonium sulfate, crop rotation using alfalfa and other green crops, and leaching and flooding of the fields help reduce toxin production and curtail the spread of the fungus.

USSR

probably OK

MUMINOV, A. I., ESHKABYLOV, T. D., and MUKHITDINOV, A. G., Chair of Pathological Anatomy and Otorhinolaryngological Diseases, Samarkand Medical Institute

"Toxicological Characteristics of Sevin"

Tashkent, Meditsinskiy Zhurnal Uzbekistana, No 5, 1971, pp 18-20

Abstract: All but 1 out of 18 rabbits chronically poisoned with sevin (5 mg/kg) for 6 months survived. During this time their general condition remained good and the hematological indexes were within normal limits. Alanine-transaminase and aldolase activities following an initial increase dropped to near-normal levels by the end of the experiment. In another series of experiments, 11 out of 18 rabbits given much larger doses of sevin (50 mg/kg) died within 94 to 179 days. These animals ate poorly, lost weight, and showed various symptoms of poisoning. The hematological indexes were abnormal and aldolase-transaminase and aldolase activities increased considerably, peaking at day 80 and decreasing slowly thereafter. Pathological examination of the animals of both groups revealed vague degenerative changes in the liver, myocardium, kidneys, lungs, and ears of those that received 5 mg/kg of sevin and much more pronounced changes in the parenchymatous organs of animals poisoned with the larger dose.

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MEDICINE
Diagnosis

USSR

probably OK

UDC 616.981.136-039:616.322-002(479.22)

ESIAVA, O. P., KVITAISHVILI, G. V., and DEVDARIANI, L. G., Institute of Sanitation and Hygiene imeni Natradze, Ministry of Health, Georgian SSR, and Tbilisi Medical Institute

"A Case of Listerial Angina in Tbilisi"

Moscow, Zhurnal Mikrobiologii Epidemiologii i Immunobiologii, No 5, May 71, pp 144-145

Abstract: Listeriosis is one of the diseases which have not yet been investigated among the inhabitants of Georgia. One case of listeriosis was identified in Tbilisi in 1969 in a 6-year old boy who was admitted to the City Hospital with a diagnosis of infectious mononucleosis. He was successfully treated with streptomycin -- a total of 4,800,000 units given in doses of 200,000 units (every 12 hours and supplemented with vitamins -- and recovered after about 2 weeks, when he was discharged from the hospital. Bacteriological examinations performed on mice caught in the house where he lived were negative, and thus the source of infection was not established. Reports on the study of listeriosis among farm animals in Georgia were published in 1953, 1957, and 1965. Evidence suggests that human listeriosis in Tbilisi is more frequent

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USSR

ESIAVA, O. P., et al, Zhurnal Mikrobiologii Epidemiologii i Immunobiologii,
No 5, May 71, pp 144-145

than the officially recorded number indicates. Therefore, whenever gram-positive motile bacilli (some coccoid forms) are found in throat smears, further biochemical, serological, and biological tests must be performed for proper identification of the microorganisms.

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- 26 -

Nitrogen Compounds

USSR

UDC 542.91:547.824

probably OK
AZERBAYEV, I. N., ESKAIROV, M. E., and KUATBEKOV, A. M.

"The Synthesis of Cyanoethyl Ethers of N-Alkyl-2,6-diphenyl-4-ethylpiperidin-4-one"

Izvestiya Akademii Nauk Kazakhskoy SSR, Seriya Khimicheskaya, No 2, Mar-Apr 71, pp 68-70

Abstract: The addition of acrylonitrile to ethylpiperidones takes place in 40% aqueous potassium hydroxide. Acrylonitrile adds to the hydroxyl group to form β -cyanoethyl ethers of 1-alkyl-2,6-diphenyl-4-ethylpiperidin-4-one.

The condensation of freshly distilled acrylonitrile, in the presence of stannic chloride, with 2,6-diphenylpiperidin-4-one and 2,6-diphenyl-4-ethylpiperidine-4-one yields 1- β -cyanoethyl-2,6-diphenylpiperidine-4-one and 1- β -cyanoethyl-2,6-diphenyl-4-ethylpiperidin-4-one.

The structures of the compounds were confirmed by infrared spectroscopy.

The products were separated and identified by thin layer chromatography.
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ESKIN

E. A.

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Soviet Inventions Illustrated, Section I Chemical, Derwent, 241474

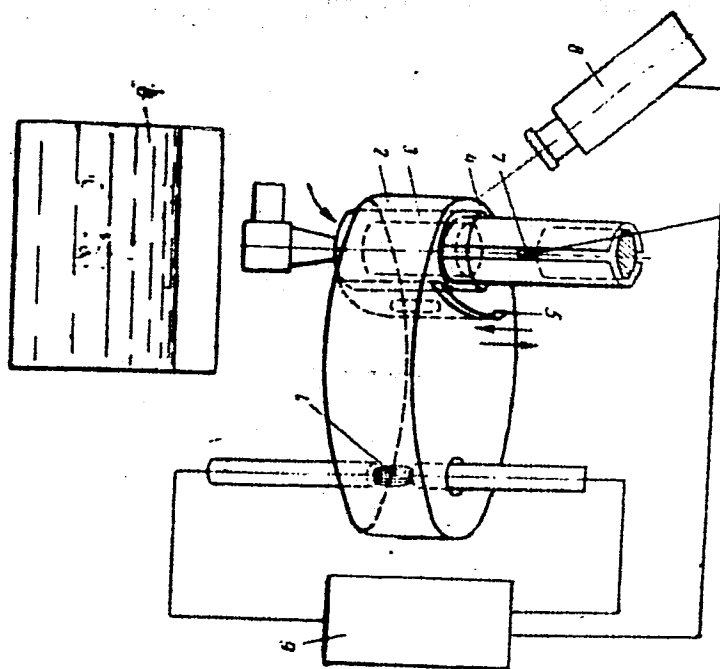
HEATING SYSTEM reduces heating time, produces a required thickness of the hardened layer and permits local hardening. It consists of a heat source 1 and a body 2 which focuses the heat energy on to the product mounted inside a quartz tube 3. The body is in the form of an elliptical cylinder with end covers 4. It is water cooled and mirror polished inside. For local heating a suitably cut-out screen 5 is positioned between the source and the product. Quenching bath 6, mechanism 7 for feeding and discharging product into the bath, the temperature sensor 8 and the light heat controller 9 complete the installation. When the correct temperature is reached, the product is discharged automatically into the bath and the heat source is switched off. The heat source can be a super high tension arc lamp of 10 KWT. 2/70

22.1.68 as 1213610/22-1 G.V. ISAKHANOV et al. Strength Problems Inst. Acad. Sciences Ukrainian SSR (29.9.69) Bul. 14/18.4.69. Class 18c, Int. Cl. C 21d. 1

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AA0052625

Isakhanov, G. V.; Lyashenko, B. A.; Eskin, E. A.; Rodichev, Yu. M
Institut Problem Prochnosti AN Ukrainskoy SSR

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USSR

UDC 669.71:669.046.517

ESKIN, G. I., SHVETSOV, P. N., and IOFFE, A. I., Moscow

"On the Relationship Between Cavitation and Degassing During Ultrasonic Treatment of Aluminum and Magnesium-Containing Aluminum Alloys"

Moscow, Akademiya Nauk SSSR. Izvestiya. Metally, No 6, Nov-Dec 72, pp 69-74

Abstract: It is shown experimentally and theoretically that effective ultrasonic degassing of molten aluminum and magnesium-containing aluminum alloys requires treatment in a regime of developed cavitation. A dependence of the threshold of cavitation in molten aluminum and magnesium-containing aluminum alloys on the concentration of solid nonmetallic impurities is shown, a fact which leads to an assumption that propagation of cavitation in molten metal is realized on nonwetttable solid impurities of the Al_2O_3 type. The analysis of the results of experimental and analytical investigations shows that under the conditions of cavitation regime treatment ($P_{\text{св}} \gg 10$ atm abs.) cavitation cavities, approximately equal in size to solid impurities, multiply rapidly (hundred- and thousand-fold) and gas pressure in them decreases to 10^{-8} atm (abs.). This leads to formation of relatively large gas blowholes due to rectified diffusion that leaves the melt or as a result of collapse lead to multiplication of cavitation nuclei in molten metal.

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USSR

UDC 621.74

SIDORIN, I. I., Doctor of Technical Sciences, Professor, SILAYEVA, V. I., Candidate of Technical Sciences, Docent, SLOTIN, V. I., Candidate of Technical Sciences, SOLOV'YEVA, T. V., Candidate of Technical Sciences, Docent, and ESKIN, G. I., Candidate of Technical Sciences, Moscow Higher Technical School imeni N. E. Bauman

"Obtaining a Composite Casting Alloy for Percussive Rock Drills by Means of Ultrasonic Treatment of the Melt"

Moscow, Izvestiya Vysshikh Uchebnykh Zavedeniy, Mashinostroyeniye, No 8, 1972, pp 116-121

Abstract: A composite alloy for cumulative-action percussive rock drills is obtained on the basis of alloy MVTU-3. This alloy has high hardness and strength values, and possesses considerable brittleness and fragmentability. In order to make the alloy still stronger, and to increase its brittleness and fragmentability, refractory carbide particles and oxides, of varied dispersity, were introduced into the alloy in combination with ultrasonic treatment of the molten metal. Best results were obtained with silicon carbide.

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USSR

SIDORIN, I. I., et al., Izvestiya Vysshykh Uchebnykh Zavedeniy, Mashinostroyeniye, No 8, 1972, pp 116-121

As a result of ultrasonic treatment in the molten metal, intensive cavitation processes originate, which bring about dispersion and destruction of the refractory particles; this facilitates wetting of the particles by the base metal, and facilitates their uniform distribution in the composition material. Study of the mechanical properties of compositions of varied content showed that they are determined by the nature of their components, as well as by the quantity and dispersity of the strengthening particles. The properties of the obtained composition alloy in a cast state are presented, before and after ultrasonic treatment. The obtained composition is recommended for the production of cumulative-action percussive rock drill parts operating at high hydrostatic pressures and temperatures of 100-150° C. 1 table. 5 figures. 3 references.

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- 47 -

USSR

UDC 669.71.042.6

DANILKIN, V. A., ^{OK} ESKIN, G. I., BOROVIKOVA, S. I.

"Study of the Process of Formation of the Ingot Structure of Aluminum and Its Alloys under the Effect of Ultrasonic Treatment in the Crystallization Process"

Tekhnol. legkikh splavov. Nauchno-tekhn. byul. VILSa (Light Alloy Technology. Scientific and Technical Bulletin of the VILS), 1970, No 5, pp 135-136 (from RZh-Metallurgiya, No 4, Apr 71, Abstract No 4G181)

Translation: The quantitative relation between the ultrasonic treatment parameters, the chemical composition of the aluminum, and the intensity of development of cavitation in the melt with refinement of the aluminum grain size was studied more precisely to define the ultrasonic treatment parameters to obtain fine grained structure in aluminum alloys under laboratory conditions and on an experimental industrial unit. The optimal conditions of ultrasonic treatment of aluminum and its binary alloys with Zn, Mn, Zr, and Si are defined.

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USSR

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ANSYUTINA, A. I., SOKOLOVA, A. I., SVETISOV, P. N., USNIN, S. I., GURCHEN, T. I.,
CHUKHROV, M. V., and AL'TMAN, N. B., Moscow

OK

"The Effect of Ultrasonic Treatment on the Structure and Properties of Ingots
of a Magnesium Alloy"

Moscow, Izvestiya Akademii Nauk SSSR, Metallurgy, No 4, Jul-Aug 76, pp 76-81.

Abstract: Results are presented of an investigation of the effect of ultrasonic treatment on the crystallization process of a flat ingot (500 x 40 mm) of the MA2-1 alloy of the Mg-Al-Zn-Mn system. The method of introducing ultrasonic vibrations into the hole of the ingot is described and the macrostructure and microstructure of ingots cast with and without ultrasonic treatment are given. Ultrasonic treatment of the MA2-1 alloy ingot during crystallization under conditions casting conditions makes it possible to coarsen the structure, to decrease the H-content by a factor of 2, and to improve the mechanical properties by 10-20%. To make the ultrasonic treatment efficient, it is necessary to locate the emitter at 1/3 the depth of the hole and to maintain the relation of the sound emission surface to the molten metal surface $\approx 4/1$.

USSR

ANSYUTINA, A. Ye., et al, *Izvestiya Akademi Nauk SSSR, Metallurgiya*, 1970, pp 76-81

The development of cavitation in the molten metal is the determinant in the crystallization mechanism of magnesium alloy ingots under the effect of ultrasound.

2/2

Miscellaneous

USSR

OK

UDC 621.9.048.6

ESKIN, G. I.

"Ul'trazvuk Shagnul v Metallurgiyu" (Ultrasound Has Taken a Step Into Metallurgy), "Metallurgiya," Moscow, 1970, 192 pp

Annotation: Information in popular-scientific form is presented on the use of ultrasound in the principal areas of metallurgical production, from metal-bearing ore dressing to processing and controlling the quality of finished articles. The mechanism of the ultrasonic effect on the development of various metallurgical processes is discussed. Technological schemes involving the introduction of ultrasound into the production cycle are described. The effect of ultrasonic processing on properties of articles of metallurgical production is demonstrated through numerous examples. Ninety illustrations, 12 tables, 81 bibliographic references.

TABLE OF CONTENTS

Foreword	
Introduction	3
Chapter 1. The use of ultrasound in metal-bearing ore dressing.	5
Chapter 2. Ultrasonic treatment of molten metal	12
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USSR

ESKIN, G. I., "Ul'trazvuk Shagnul v Metallurgiyu" (Ultrasound Has Taken a Step Into Metallurgy), "Metallurgiya," Moscow, 1970, 192 pp

Chapter 3.	Die casting with use of ultrasound	52
Chapter 4.	Ingot casting with ultrasonic processing	69
Chapter 5.	The use of ultrasound in plastic deformation processes	84
Chapter 6.	The use of ultrasound in metalloceramic production	106
Chapter 7.	Ultrasonic heat-treatment	122
Chapter 8.	Ultrasonic welding and soldering of metals	138
Chapter 9.	Ultrasound in production of coatings	147
Chapter 10.	Ultrasonic cleaning and etching	157
Chapter 11.	Creation of new materials with the help of ultrasound	167
Chapter 12.	Ultrasonic control methods of metal quality	183
In place of conclusion		189
Bibliography		191

2/2

USSR

UDC 669.715:66.065.51:621.9.048.6

ESKIN, G. I., DANILKIN, V. A., SHVETSOV, P. N., and BOROVIKOVA, S. I., All-Union Institute of Light Alloys

"Influence of Ultrasonic Treatment on the Crystallization Process of Aluminum and Its Alloys"

V sb. Modifitsir. siluminov (Modification of Silumins — Collection of Works), Kiev, 1970, pp 148-157 (from RZh-Metallurgiya, No 12, Dec 70, Abstract No 12 I742 by O. PIMENOVA)

Translation: Results are presented of experiments involving ultrasonic treatment of crystallized ingots of aluminum and alloys (Al-Mn, Al-Mg, Al-Cu-Mn-Zr, Al-Cu-Mn-Mg-Si, etc.) during continuous casting in a water-cooled crystallizer. The authors determined the shrinkage, hydrogen content, structure, chemical composition, and mechanical properties of the ingots. With ultrasonic treatment, uniform size reduction of macrograin over the entire ingot cross section can be obtained. The effectiveness of modifying additives (Ti, Zr, etc.) rises, and the hydrogen content of ingots declines 2-3 times. Apart from a 10 to 15% increase in strength and plasticity characteristics, ultrasonic treatment makes it possible to equalize properties over the cross section, which is of the greatest practical importance. Seven illustrations. One table. Bibliography of 13 titles.

1/1

USSR

UDC 517.944

ESKIN, G. I. (Moscow)

"Degenerate, Elliptic Pseudodifferential Equations of the Principal Type"

Moscow, Matematicheskii Sbornik, Vol 82, No 4, Aug 70, pp 585-628

Abstract: The article studies systems of pseudodifferential operators on a closed n -manifold Γ , elliptic outside a certain $(n-1)$ -dimensional submanifold $\omega \subset \Gamma$. $T_0^*(\Gamma)$ is a cotangent fiber bundle on Γ , consisting of nonzero cotangent vectors; $A(x, \xi_x) \in C^\infty(T_0^*(\Gamma))$ is the symbol, of a certain order, of a system of pseudodifferential operators, homogeneous with respect to ξ_x . It is assumed that at those points $(x, \xi_x) \in T_0^*(\Gamma)$, $x \in \omega$, where $\det A(x, \xi_x) = 0$ the derivative of $\det A(x, \xi_x)$ with respect to ξ_x is non-zero and transversal with respect to ω , so that the symbol $A(x, \xi_x)$ is a symbol

USSR

ESKIN, G. I., Matematicheskiy Sbornik, Vol 82, No 4, Aug 70, pp 585-628

of the principal type in the sense of Hörmander. Proof is given of the solvability in Sobolev-Slobodetskiy spaces of a system of equations of the form:

$$Au + G(p \times \delta(\omega)) = f,$$

$$Bu|_{\omega} = g(x'), \quad x' \in \omega;$$

where B, G are systems of pseudodifferential operators on Γ ; $u(x), p(x')$ are unknown functions, $x \in \Gamma, x' \in \omega$; $f(x), g(x')$ are given functions;

2/3

USSR

ESKIN, G. I., Matematicheskiy Sbornik, Vol 82, No 4, Aug 70, pp 585-628

$\delta(\omega)$ is the delta function of submanifold ω . The symbols B and G are subject to a certain number of boundary conditions on ω . The article concludes with additions to noncoercive boundary value problems for elliptic differential equations in the region $E \subset \mathbb{R}^{n+1}$ with the boundary of Γ , in which the Shapiro-Lopatinskiy condition is violated on $\omega \subset \Gamma$.

3/3

USSR

UDC 624.97:534.1

ESKIN, I. D. and KONDRASHOV, N. S.

"Free Oscillation of a Sandwich Rod with Dry Friction at the Contact Surface"

Kuybyshev, Tr. Kuybyshev. aviats. in-t (Transactions of the Kuybyshev Aviation Institute), Vyp 51, 1972, pp 35-44 (from Referativnyy Zhurnal -- Mekhanika, No 4, 1973, Abstract No 4V342 by Yu. A. Belyayev)

Translation: An approximate method for solving the problem of the free oscillation of a multilayer constructions with dry friction between the layers with arbitrary initial and boundary conditions is described. The nonlinear characteristic of rigidity of the systems being considered with distributed parameters, and in the general case the nonlinear boundary conditions are replaced by a piecewise-linear condition. The motion of the system is determined successively in stages. The partition of the system motion at the different stages is produced by the value of the increment of the zone of lamination, which satisfies the requirements of calculation accuracy. At each stage the solution is constructed for a linear system. Solutions to the problem are obtained according to the conditions and solutions at each stage. A method for evaluating the error of the solution is given and a means of evaluating the accuracy of the calculation is demonstrated. The method of calculation assumes
1/2

USSR

ESKIN, I. D. and KONDRASHOV, N. S., Tr. Kuybyshev. aviats. in-t, Vyp 51, 1972,
pp 35-44

the use of a high-speed computer. The essence of the method and its use are
presented in an example problem on the free oscillations of a sandwich rod.

2/2

- 86 -

USSR

UDC 534

ESKIN, I. D.

"An Investigation of the Forced Periodic Oscillations of an Elastic-Friction System With One Degree of Freedom and With Hysteresis Loops in the Form of a Parallelogram"

Kuybyshev, Tr. Kuybyshev. aviats. in-t (Transactions of the Kuybyshev Aviation Institute), Vyp 51, 1972, pp 24-34 (from Referativnyy Zhurnal -- Mekhanika, No 4, 1973, Abstract No 4A218)

Translation: The forced, periodic oscillations of a system with one degree of freedom is examined in the presence of nonlinearity of the hysteresis type in the form of a parallelogram around the unloaded position of the system ($q=0$) under the action of a harmonic exciting force

$$F(t)=F_0\sin(pt+\varepsilon) \quad (F_0 > 0)$$

satisfying the conditions

$$\dot{q} < 0(t_0 < t < t_2) \quad \dot{q} > 0(t_2 < t < t_4)$$

where \dot{q} is the generalized velocity of the system, $t_0, t_2,$ and t_4 are the successive moments in time when the system is found in the extreme positions $q=q_0$ and $q=-q_0$; ($q_0 > 0$ and q are the generalized displacement of the system.

1/1

General

USSR

UDC 595.799:638.12:591.58

ESKOV, E. K., Scientific Research Institute of Agriculture, Rybnoye, Ryazan District

"Sound Signalization of Honey Bees During the Swarming Process"

Moscow, Zoologicheskii Zhurnal, Vol 50, No 5, May 71, pp 704-712

Abstract: A detailed study of sound communication was done with an attempt to code the acoustic information and the character of the sounds themselves. For this purpose, a queen bee was placed into a metal enclosure at a certain location on a test stand. In this way, the experiments could be repeated more conveniently. The sounds made by the swarming bees were recorded on magnetic tape. The sounds made by the "quartermaster" bees -- flying at distances of some 50-200 m from the swarm -- and the sounds issued by dancing "foragers" were recorded also. The signals carrying specific information are characterized by a stable frequency, amplitude, and time pattern. The spectra of these signals range from 100 to 660 cycles. The spectra of the sounds transmitted by a swarm taking off or "landing" has two peaks at frequencies of 235 \pm 40 and 470 \pm 40 cycles. As soon as a cluster of swarming bees has formed, some of the bees fly off in search of a home. When they have found one, they transmit signals and a "dance" begins on the bee cluster, which may last 6
1/2

- USSR

ESKOV, E. K., Zoologicheskiy Zhurnal, Vol 50, No 5, May 71, pp 704-712

seconds. The pause between the sound components of the dance is 0.6 seconds. The various sound patterns were recorded over the frequency region from 0 to 500 cycles. It was established that the collection of swarming bees is stimulated by sound signals with a carrying frequency of 150 ± 50 cycles. Flight is stimulated by sounds with three peaks in their spectra: at 175 ± 35 , 350 ± 35 , and 525 ± 35 cycles. Sounds with two identical peaks of frequencies at 200 ± 10 and 400 ± 50 cycles serve as calling signals for swarming bees.

2/2

- 92 -

ESMAN A.P.

2

USSR

UDC 523.164

YEFANOV, V. A., KEYS, Ye. M., KLICH, S. M., MOISEYEV, I. G.,
CHESNOKOV, A. A. (Deceased), and ESMAN, A. P.

"Radiometer in the 8-mm Range With a Parametric Amplifier"

Moscow, Radiotekhnika i Elektronika, Vol 15, No 3, 1970,
pp 627-629

Abstract: Although parametric amplifiers have been successfully used in centimeter-wave radiometric receivers, no information has hitherto appeared in the literature concerning similar use of these amplifiers in the millimeter range. This brief communication gives the characteristics and some of the results of a radiometer used in the 8-mm wavelength range with a semiconductor parametric amplifier at its input. The observations were made with the radiotelescope RT-22 in the Crimean Astrophysical Observatory. The amplifier in question is a single tuned-circuit type with a circulator and ferrite valve at the input for additional decoupling, connected to the modulation radiometer with no change in the latter. Observations using

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USSR

YEFANOV, V. A., et al, Radiotekhnika i Elektronika, Vol 15,
No 3, 1970, pp 627-629

Abstract: this device were made of the planets Jupiter and
Venus, and of discrete sources such as 3C273, 3C279, etc. The
use of this amplifier improved the sensitivity of the radio-
meter and the reliability of the operations.

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- 2 -

USSR

UDC 621.762

2

OGNEV, R. K., KOLOMOYETS, G. G., TER-POGOSYAN, E. D., ESTRAKH, L. M.,
ANOKHIN, V. M., and PEREVYAZKO, A. I.

"The Effect of Technological Parameters on the Qualities of Construction
Articles Obtained by the Method of Compacting Titanium Powders"

Moscow, Metallurgiya i Khimiya Titana (Institut Titana), Metallurgiya
Publishing House, Vol 6, 1970, pp 94-97

Translation: The effect of the features of initial powders and the techno-
logical parameters in manufacturing construction articles on their mechanical
properties is considered. When identical compacting pressures, the density
of articles made of electrolytic powder is greater by 4-7% than for similar
articles made of hydride powder, and this gap decreases during the process
of heat treatment. Increasing the sintering temperature of the powder
metallurgy titanium leads to an increase in tensile strength and elongation
per unit length. Where heat treatment is at a temperature of 1,300°C, the
tensile strength is equal to 55-65 gigacalories/mm² and the elongation per
unit length reaches 11%. Two illustrations, one table, and three biblio-
graphic entries.

1/1

- 63 -

USSR

UDC 621.762

2

OGNEV, R. K., TER-POGOSYAN, E. D., KOLOMOYETS, G. G. PEREVYAZKO, A. I.,
ESTRAKH, L. M., and ANOKHIN, V. M.

"Powder Metallurgy Filters Made of Titanium Scraps"

Moscow, Metallurgiya i Khimiya Titana (Institut Titana), Metallurgiya
Publishing House, Vol 6, 1970, pp 97-99

Translation: The effect of the technological parameters of manufacture and properties of the initial titanium powder on filter productivity are studied. It is discovered that it is expedient to compact filters at pressures up to two tons/cm² and to sinter them at temperatures not exceeding 1,100°C. Filter productivity is determined during filtration of liquids, and the dependence of productivity on a drop in pressure to one atmosphere and on the size and shape of grains of the initial powder is established. It is determined that the water carrying capacity of filters manufactured from hydride powder is 3-5 times greater than similar ones made of electrolytic powder. Two illustrations and two bibliographic entries.

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USSR

UDC 518.12

ETERMAN, I. I."Approximation Using Rational Functions"

Uch. zap. Penz. politekhn. in-t (Scientific Notes of the Penza Polytechnic Institute), No 3, 1970, pp 3-6 (from Referativnyy Zhurnal -- Matematika, No 7, July 71, Abstract No 7B991, by I. Shelikhova)

Translation: Properties of rational $E_{n, m}(x)$ functions which represent a generalization of asymptotic first-order polynomials of the first type are studied. The asymptotic properties of $E_{n, n}(x)$ functions were investigated for the approximation of $|x|$ for different systems of cusps. The sufficient condition for the convergence of $E_{n, n}(x)$ to $|x|$ was derived. It is shown that, in the case of Neumann cusps, $E_{n, n}(x)$ uniformly and with any desired degree of accuracy approximates $|x|$ in $[-1, 1]$ and, for the case of equidistant cusps, $E_{n, n}(x)$ converges to $|x|$ at all points on the real axis.

1/1

- 28 -

1/2 021 UNCLASSIFIED PROCESSING DATE--16OCT70
TITLE--GLUCOSE 6, PHOSPHATE DEHYDROGENASE AND LACTATE DEHYDROGENASE FROM
MEMBRANOUS STRUCTURES OF THE RETINA -U-
AUTHOR-(03)-^{ck}ETINGOF, R.N., ZHUCHIKHINA, A.A., SHUKOLYUKOV, S.A.
COUNTRY OF INFO--USSR **E**
SOURCE--BIOKHIMIYA 1970, 35(1), 35-41
DATE PUBLISHED-----70

SUBJECT AREAS--BIOLOGICAL AND MEDICAL SCIENCES
TOPIC TAGS--LACTATE DEHYDROGENASE, RETINA, CELL PHYSIOLOGY,
MITOCHONDRIUM, HOMOGENIZATION, CENTRIFUGATION, ISOENZYME,
ELECTROPHORESIS

CONTROL MARKING--NO RESTRICTIONS
DOCUMENT CLASS--UNCLASSIFIED
PROXY REEL/FRAE--1996/0640 STEP NO--UR/0218/70/035/001/0035/0041
CIRC ACCESSION NO--AP0117866
UNCLASSIFIED

2/2 021

UNCLASSIFIED

PROCESSING DATE--16OCT70

CIRC ACCESSION NO--AP0117866

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. MITOCHONDRIA AND OUTER SEGMENTS OF BOVINE RETINA POSSESSED GLUCOSE,6,PHOSPHATE DEHYDROGENASE (I) AND LACTATE DEHYDROGENASE (II). ALMOST ALL II PERTAINING TO THE MEMBRANOUS STRUCTURE WAS RECOVERED IN EXTS. AFTER HOMOGENIZATION IN 0.9PERCENT NA CL AND CENTRIFUGATION. I WAS RECOVERED FROM EXTS. TREATED WITH 1PERCENT TRITON X-100 IN 0,9PERCENT NA CL. EXTS. OF RETINA AND SEGMENTS CONTAINED 5 AND 4 II ISOENZYMES, RESP., AS REVEALED BY AGAR GEL ELECTROPHORESIS. THERE WERE NO ESSENTIAL DIFFERENCES IN I ACTIVITIES IN AQ. AND SALT EXTS. AND EXTS. TREATED WITH TRITON X-100. FACILITY: INST. EVOL. PHYSIOL. BIOCHEM., LENINGRAD, USSR.

UNCLASSIFIED

USSR

E UDC: 621.375.7:621.382

MANOKHIN, V. M., Strukov, I. A., and Etkin, V. S.

"Investigating the Saturation of Regenerative Semiconductor Parametric Current Amplifiers"

Moscow, Radiotekhnika i Elektronika, No. 5, 1970, pp 1068-1076

Abstract: This paper investigates the saturation power of the amplifier named in the title when the amplifier is operating in the current regime. The assumption is made that three harmonic voltages -- the signal frequency, the difference frequency, and the pumping frequency -- are acting on the p-n junction. The authors begin their analysis with the experimentally determined fact that with the application of a positive bias voltage to the p-n junction, an excess capacitance appears which is an exponential function of the applied voltage. This capacitance is in parallel with the barrier capacitance, so that the total capacitance of the two is equal to the sum of their individual capacitances. The equivalent circuit of the amplifier is given. It has three resonant circuits, each connected to the parametric diode capacitance, and each tuned to one of the three frequencies named above. A
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USSR

MANOKHIN, V. M., et al, Radiotekhnika i Elektronika, No. 5, 1970,
pp 1068-1076

formula is obtained for the diode admittance in the current regime, and the barrier capacitance with saturation is computed. The authors conclude that their method for computing the saturation power of the amplifier agrees with the experimental data.

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USSR

UDC 621.762.01:669.295

2

OGNEV, R. K., KOLOMOYETS, G. G., TER-POGOSYAN, E. D., ESTRAKH, L. M.,
ANOKHIN, V. M., and PEREVYAZKO, A. I.

"Influence of Technological Parameters on Properties of Structural
Products Produced by Pressing Titanium Powders"

Sb. tr. Vses. n.-i. i proyekt. in-t titana [Collected Works of All-Union
Scientific-Research and Planning Institute for Titanium], 6, 1970, pp.
94-97, (Translated from Referativnyy Zhurnal-Metallurgiya, No. 1, 1971,
Abstract No. 1 G453 by the authors).

Translation: The authors studied the influence of the properties of the
initial powders and technological parameters in the manufacture of
structural products on their mechanical properties. With identical
pressing pressures, the density of products of electrolytic powders is
higher than that of similar products of hydride powders by 4-7%, although
this difference is reduced during heat treatment. Increasing the
sintering temperature of metal ceramic Ti causes an increase in σ_b and δ .
With a heat treatment temperature of 1300°, σ_b is 55-65 kg/mm², δ reaches
11%. 2 figures; 1 table.

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2

UDC 621.762:669-496.295

USSR

OGNEV, R. K., TER-POGOSYAN, E. D., KOLOMOYETS, G. G., PEREVYAZKO, A. I.,
ESTRAKH, L. M. and ANOKHIN, V. M.

"Metal Ceramic Filters of Titanium Wastes"

Sb. tr. Vses. n.-i. i proyekt. in-t titana. [Collected works of All-Union Scientific-Research and Planning Institute for Titanium], 6, 1970, pp. 97-99, (Translated from Referativnyy Zhurnal-Metallurgiya, No. 1, 1971, Abstract No.1 G475 by the authors).

Translation: The influence of technological parameters of the manufacture and properties of initial Ti powder on productivity of filters is studied. Pressing of filters should be performed at pressures up to 2 t/cm², sintering at temperatures of less than 1100°. The productivity of filters is determined for filtration of fluids. The dependence of productivity on pressure drop of up to 1 atmosphere and on size and shape of initial powder particles is determined. The throughput capacity for water of filters made of hydride powder is three times higher than the throughput capacity for filters made of electrolytic powder. 2 figures.

1/1

- 50 -

UDC 678.762.2/.3.002.2

USSR

KROL', V. A., and ESTRIN, A. S., All Union Scientific Research Institute of Synthetic Rubber imeni S. V. Lebedev

"Production of Stereoregular Butadiene and Isoprene Rubbers in the USSR"

Moscow, Kauchuk i Rezina, No 2, 1971, pp 13-14

Abstract: Research, experimental and planning-and-design work on the synthesis of regularly constructed cis-1,4 polymers of butadiene and isoprene with the use of complex organometallic catalysts first suggested by Ziegler and Natta was climaxed in 1964 with the creation of large-scale industrial facilities for the production of isoprene rubber (SKI-3) at the Kuybyshev and Volzhsk Synthetic Rubber Plants and the production of butadiene rubber (SKD) at the Yefremov Synthetic Rubber Plant. These rubbers are now being turned out by six major enterprises. The proportion of stereoregular rubber consumption was 30 percent in 1970 and is slated to rise in the future. Industry's mastery of the technology of stereoregular rubber production is evidenced by the fact that the technological cycle of putting polybutadiene and polyisoprene production facilities into production was accomplished in 20-30 days in 1967-1970. The article describes the principal properties of SKI-3 and SKD rubbers and

1/2

USSR

KROL', V. A., and ESTRIN, A. S., Kauchuk i Rezina, No 2, 1971, pp 13-14

their vulcanizates. The following directions for the further development of the production of these rubbers are listed:

1. Expanding the assortment of rubbers with the optimal complex of physico-mechanical properties for use in different sectors of industry (cable, electrical engineering, light industry, etc.).
2. Mastering the production of rubbers with non-discoloring antioxidants, as well as oil- and oil furnace black-reinforced rubbers.
3. Improvements in manufacturing processes for the purpose of raising the quality of rubbers and improving the technical and economic indicators of their production.

2/2

- 91 -

1/2 021 UNCLASSIFIED PROCESSING DATE--18SEP70
TITLE--PROTECTIVE ATMOSPHERE ANNEALING ELECTRICALLY WELDED PIPING MADE OF
STEEL 10 -U-
AUTHOR-(03)-ESTRIN, B.M., GLADKIKH, B.S., PLETNEV, V.I.

COUNTRY OF INFO--USSR

SOURCE--STAL' 1970, 30(1) 65-8

DATE PUBLISHED-----70

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

TOPIC TAGS--PIPE WELDING, ELECTROSLAG WELDING, STEEL PIPE, STEEL HEAT
TREATMENT, INERT GAS WELDING/(U)10 STEEL

CONTROL MARKING--NO RESTRICTIONS

DOCUMENT CLASS--UNCLASSIFIED

PROXY REEL/FRAME--1983/0297

STEP NO--UR/0133/70/030/001/0065/0068

CIRC ACCESSION NO--AP0053282

UNCLASSIFIED

2/2 021 UNCLASSIFIED PROCESSING DATE--18SEP70
CIRC ACCESSION NO--A0053282
ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. THE USE OF FLAME CURTAINS AT BOTH
ENDS OF A CONTINUOUS FURNACE WORKING WITH A PROTECTIVE ATM. PERMITS A
CONVENIENT MAINTENANCE WITHIN IT OF 0.5 TORR PRESSURE NEEDED FOR
FLUSHING AIR FROM THE INSIDE OF ENTERING PIPES TO KEEP O BELOW
0.004PERCENT IN THE FURNACE; THIS PROCEDURE REDUCES THE TOTAL
CONSUMPTION OF THE REDUCING ATM. ESCAPING FROM BOTH ENDS OF THE PIPES.
THE AMTS. INVOLVED ARE SHOWN BY CALCNS. AND BY DATA OBTAINED ON A
PRODUCTION FURNACE. A SKETCH ILLUSTRATES BURNERS TO BE USED FOR FLAME
CURTAIN.

UNCLASSIFIED

USSR

UDC 536.42:620.181.5+669.017.3

ESTRIN, E. I., and SOSHNIKOV, V. I., Institute of Physical Metallurgy and Metal Physics and the Central Scientific Research Institute of Ferrous Metallurgy imeni I. P. Bardin

"Kinetics of the Polymorphous Gamma-Alpha Transformation in Iron-Nickel Alloys"

Sverdlovsk, Fizika Metallov i Metallovedeniye, Vol 35, No 6, June 73, pp 1271-1277

Abstract: This work was devoted to studying the kinetics of the polymorphous gamma-alpha transformation in Fe-Ni alloys containing 5-20% Ni at a hydrostatic pressure of up to 20 kbar. Temperatures of the gamma-alpha and alpha-gamma transformations are lowered by 9.6 and 2.9 deg/kbar, respectively, under pressure. It was established that the gamma-alpha transformation in Fe-Ni alloys can occur by thermally active and "athermal" (martensitic) means. The thermally active transformation possesses features which distinguish it from "normal" polymorphous transformations and are characteristic for bainite and isothermal martensite transformations. It was established that, in relation to alloying or pressure, the mutual positioning of temperature intervals of thermally active and athermal gamma-alpha transformations can vary. 5 figures, 16 bibliographic references.
1/1

USSR

UDC 536.424.1:539.89:546.8

ZIL'BERSHTEYN, V. A., NOSOVA, G. I., and ESTRIN, E. I., Institute of Metal Science and Physics of Metals, Central Scientific Research Institute of Ferrous Metallurgy imeni I. P. Bardin

"Alpha - Omega Transformation in Titanium and Zirconium"

Sverdlovsk, Fizika Metallov i Metallovedeniye, Vol 35, No 3, 1973, pp 584-589

Abstract: An attempt was made to determine the positions of the thermodynamic equilibrium of the α - and ω phases in Ti and Zr. Titanium and zirconium iodides were studied by the following methods: electrical resistance, x-ray diffraction analysis of phases, dilatometry, and shear strength. The electrical resistance (given in arbitrary units) of Ti and Zr as a function of pressure (up to 90 kbar) at room temperature with a constantly changing pressure by 3 kbar/min increased constantly when the pressure was decreased to ~ 10 kbar. The breaking point for the electrical resistance increase due to α - ω transformation for Ti was a pressure of 63 kbar. A sharp decrease in the electrical resistance for Zr took place at 38 kbar. No significant changes in the electrical resistance of both metals were observed during the second cycle of compression. This indicated that the phase transformation was absent. A sharp increase in the electrical resistance of samples at $\sim 250^\circ\text{C}$ was a good

1/2

USSR

ZIL'BERSHTEYN, V. A., et al, Sverdlovsk, Fizika Metallov i Metallovedeniye, Vol 35, No 3, 1973, pp 584-589

sign that the $\alpha - \omega$ transformation took place at this temperature. Samples subjected to pressure at room temperature also showed the presence of the $\alpha - \omega$ transformation. The x-ray diffraction analysis of these samples indicated that they consisted almost entirely of ω phase at 100 kbar pressure. Only a scant amount of α phase was present in them. The x-ray diffraction analysis data were used for calculating the lattice parameters for both metals (parameters are given). Dilatograms showed that an $\omega - \alpha$ transformation in zirconium took place at 205°C and continued to 255°C. Data on the shear strength of Ti samples indicated the presence of $\alpha - \omega$ and $\omega - \alpha$ transformations at 20 kbar pressure. This means that appearance of the ω phase in Ti at room temperature and pressure of > 20 kbar is thermodynamically possible. Temperature - pressure diagrams were plotted for both metals on the basis of obtained data.

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- 54 -

AA0040761

ESTRIN

VN UR 0482

2

Soviet Inventions Illustrated, Section I Chemical, Derwent, 1-70.

241094 CHROMATOGRAPH for gas impurities analysis, consisting of the enrichment column unit; measuring unit with a recording instrument; thermal conduction detector; recording potentiometer and a power pack with a control unit. The enrichment column unit comprises an electric motor with a drive electric heater; chromatographic column; a liquid nitrogen tank. This unit serves to enrich and separate the analysed impurities. The measurement unit records the isolated impurities, and the potentiometer records the analysis results.

Gas from the tested cylinder (10) flows through a reducing valve (11), input adjusting valve (12) and rotameter (13) to the detector comparator cell. The gas pressure is controlled by a pressure gauge at the reducing valve. Then the gas flows to the chromatographic column and from there to the detector working chamber and through the outlet control valve (14) escapes into the air. A gas meter can be placed after the outlet valve. The control valve (15) is used for blowing out. The

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A0040761

residual pressure is controlled by the pressure gauge (16). All gas pipes are metal capillary tubes, some of them are flexible.

The chromatographic column is in form of a coiled copper tube filled with a sorbent, e.g. with molecular sieves 13X. The column can be moved from a liquid nitrogen bath to a heater and back again. Thus a variable temperature field from -196 to 300°C moves along the sorbent layer.

2.1.64 as 873985/26-25. GENKIN, Yu.M. et alia:
EXPERIMENTAL FACTORY OF THE INST OF NATURAL GAS.
(12.8.69.) Bul 13/1.4.69. Class 421. Int.Cl.G Oln.

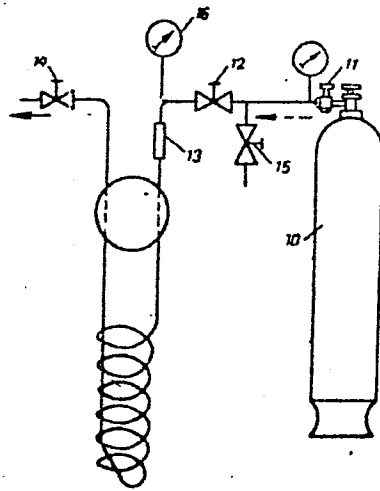
AUTHORS: Genkin, Yu. M.; Shevelev, B. P.; Sidorov, A. P.; Podol'skaya, Ye. V.; Maksimov, P. K.; and Estrin, V. N.

Opytnyy Zavod Vsesoyuznogo Nauchno - Issledovatel'skogo
Instituta Prirodnogo Gaza

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AA0040761



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19750453

ESTRIN, M. YA.

SPRS 59208
6-73

IV-7. SOME METHODS OF LOW TEMPERATURE EPITAXY OF SILICON

[Article by I. N. Mikheylov, H. Ya. Estrin, A. S. Adonin, V. V. Kondarenko, L. I. Kuz'mina, Moscow; Novosibirsk, Ill Sibirskiy Nauchno-Issledovatskiy Tsentr, 12-17 June, 1977, p 48]

A study was made of the temperature dependence of the growth rate of the epitaxial layers in the chloride system for epitaxy with high temperature insulation. The decrease in apparent activation energy of the growth process was noted for high temperature inoculation, ultraviolet radiation and preliminary heating of the hydrogen to a value of - 3 kcal/mole which is explained by a decrease in the gas adsorption on the substrate surface.

The use of a mixture of monosilane with an inert gas (helium) also led to a significant reduction in the epitaxial growth temperature. The perfect epitaxial layers were obtained for a temperature of 850°C. The reduction in growth temperature is explained by a significant shift of equilibrium of the reaction of the decomposed monosilane in the direction of formation of elementary silicon and a decrease in the adsorption of hydrogen on the substrate surface.

Conclusions were drawn regarding the possibilities of a further reduction in the epitaxy temperature.

USSR

UDC 621.357.5:669.715
(088.8) ①

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"Process for Preparing the Surface of Aluminum and Aluminum Alloys for the
Application of a Galvanized Coat"

Avt. sb. SSSR, kl. (USSR Authors' Certificate kl. [expansion unknown]) C 23 b
5/00, C 23 c 3/00, No 336375, applied 26/01/70, published 19/05/72 (from
Referativnyy Zhurnal -- Khimiya, No 7, 1973, Abstract No 7L356P)

Translation: A process is patented for the preparation of the surface of Al
and its alloys for galvanization by treating the surface in a solution contain-
ing the fluoroborates of zinc and ammonia followed by cathodic treatment in
the same solution. The process is distinguished in that nickel fluoroborate
is added to the solution, the formation of the Ni-Zn alloy on the surface of
the Al providing an increase in the durability of the adhesion of the subse-
quent galvanic film to the substrate. The reaction proceeds at a temperature
of 20-30°C and a current density of 0.5-1.5/decimeter² in a solution containing
the following (in g/l: Zn(BF₄), 40-80; Ni(BF₄)₂, 100-250; NH₄BF₄, 5-40. For
example, parts made of Al or one of its alloys are degreased in an organic
1/2

- 7 -

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USSR

EUBYALIS, YU. S., et al., Avt. sb. SSSR, k1 (from Referativnyy Zhurnal --
Khimiya, No 7, 1973, Abstract No 7L356P)

solvent and then treated in a solution containing Na_2CO_3 (56 g/l) and Na [sic] (56 g/l) at 70°C for 5 minutes. Then the parts are treated in a 5% solution of NaOH at 20°C for 5 minutes. After washing in water the Al parts are treated for 30-60 seconds dilute (1:1) HNO_3 . For parts made of the Al alloy D-16, however, 30 g/l of NH_4F is added to the HNO_3 solution before treatment. The parts are washed again with water and treated for 10-60 seconds in a solution -- having pH 3.5-4.5 and a temperature of $20-30^\circ\text{C}$ -- containing the following: $\text{Zn}(\text{BF}_4)_2$, 40-8- g/l; $\text{Ni}(\text{BF}_4)_2$, 100-250 g/l; and NH_4BF_4 , 5-40 g/l. After this the parts are cathodically processed in this same solution for 10-30 seconds at a current density of 0.5-1.5 amps/decimeter² and transferred to a bath for the application of the galvanizing coat.

2/2

USSR

UDC 612.741.074.45

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"The Effect of Toxins on Acetylcholine Contracture"

Leningrad, Tsitologiya, Vol 12, No 10, Oct 70, pp 1,343-1,345

Abstract: The effect of NaF, monoiodoacetic acid, 2,4-dinitrophenol, CdCl₂, NiCl₂, and Pb(NO₃)₂ on the course of acetylcholine contracture of the frog rectus abdominis was studied. It was found that NaF, the respiratory toxin NaN₃, and dinitrophenol by themselves do not produce a contracture of the muscle. In combination with acetylcholine, however, they enhance contracture. The extent of muscular response to acetylcholine under the influence of these compounds depends on the acetylcholine concentration in the solution and the period of action of the toxic compound. Treatment of the muscles with d-tubocurarine reduces but does not prevent the contracture produced by acetylcholine in the presence of the above metabolic toxic compounds.

1/1

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UDC 617-001.17-092.9:616.42'

EYINGEN, L. YE., and EYTSEN, L. F., Department of Normal Anatomy, Therapy Faculty, Tadjik Medical Institute imeni Abu-Ali Ibn Sina, Dushanbe

"Vascular Changes in Some Endocrine Glands After Experimental Burn Shock"

Leningrad, Arkhiv Anatomii, Gistologii i Embriologii, No 10, 1971, pp 5-12

Abstract: The blood vessels of the adrenal and thyroid glands and gonads in dogs were examined after the animals were subjected to burns covering 20 to 25% of the body surface. The vascular system of the glands reacted to the burn within hours in the form of severe circulatory disturbances, hyperemia in particular. The arterial bed expanded due to enlargement of the diameter of the arteries and appearance of numerous accessory connecting branches which are collapsed at the ordinary level of functioning. The venous and lymph beds also expanded as a result of dilatation of all the elements from capillaries to large trunks. Venous and capillary stasis and thrombi in the large veins were common. Hemorrhages were fairly frequent. The vascular response to the trauma was most pronounced in the adrenals and thyroid. There were some indications of increased thyroid function and decreased generative function of the ovaries and testes.

1/1

USSR

UDC 611.12:611.1]-091:612.014.45+612.275.1

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"Morphology of the Intramural Vascular Bed of the Dog Heart After Total-Body Vertical Vibration at High Altitude"

Leningrad, Arkhiv Anatomii Gistologii i Embryologii, Vol 63, No 9, 1972, pp 27-33

Abstract: Fifteen dogs were subjected to daily 30-min long vibrations (46.6 c/sec, amplitude 0.45 mm) for 10 days, beginning with the first day after delivery to Ansoh Pass (3,375 m above sea level). A second group of 15 dogs was subjected to the same vibrations after a 2-week long period of acclimatization to high altitude, while another 20 dogs served as controls. After the animals were sacrificed, dye solutions were injected into coronary blood and lymph vessels, and tissue slices were examined. In the first group, endocardial, myocardial, and epicardial lymph capillaries were enlarged up to a diameter of 110 microns and contorted into loops, and many had poorly visible walls; some lymph veins also had segmental enlargements. Myocardial blood vessels were also enlarged, and numerous blood capillaries (diameter up to 90 microns) were ruptured and surrounded by extravasated blood and dye. In these areas, the

1/2

- 56 -

USSR

ETINGEN, L. YE. and BELKIN, V. SH., Arkhiv Anatomii Gistologii i Embryologii, Vol 63, No 9, 1972, pp 27-33

myocardium was dystrophic. In the second group, the morphological changes were similar but more pronounced and further compounded by large lacunae in lymph vessels and interstitial edema. In the control animals, the pathology was less pronounced yet clearly visible. It is concluded that acclimatization is not accomplished in 2 weeks, and that the effects of hypoxia caused by vibration are augmented by the effects of hypoxia caused by high altitude.

2/2

USSR

UDC 611.45:613.1

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"Morphology of the Adrenal Glands of Dogs Under High-Altitude Conditions"

Dushanbe, Izvestiya Akademii Nauk Tadzhikskoy SSR, No 2, 1970, pp 17-23

Abstract: A study was conducted in which 150 dogs were kept at the Anzob Pass (elevation, 3,375 m) for 1 to 60 days. Controls were kept in Dushanbe (elevation, 800 m). The climatic and geographic conditions at Anzob had a definite effect on the adrenal cortex of experimental dogs. The principal change noted was in blood circulation, as manifested by plethora, hemorrhages, disturbances in the permeability of the blood vessel walls, and edema. Granular dystrophy occurred in the zona glomerulosa, with occasional necrosis of individual cells. In the first few days at high altitude, the DNA in adrenal cells and the RNA in individual glomerular and fascicular zones were lowered. The DNA level returned to normal in 3-7 days. Fats were initially lowered to some extent and after 15-30 days became markedly low. During this period the more important shifts associated with adaptation of the organism to high altitude took place, accompanied by a sharp increase in the functional activity of the adrenal cortex.

1/1

Biochemistry

USSR

UDC 577.153+577.150.5+612.843

DUMLER, I. L., and ETINGOF, R. N., Institute of the Physiology and Biochemistry of Evolution imeni I. M. Sechenov, Academy of Sciences USSR, Leningrad

"A Protein Inhibitor of Phosphodiesterase"

Moscow, Doklady Akademii Nauk SSSR, Vol 213, No 5, 1973, pp 1197-1200

Abstract: A protein inhibitor of phosphodiesterase (PDE; 3',5'-phosphohydrolase) was isolated from the tissue of the outer segments of the bovine retina. This tissue also contained a protein activator of PDE which was similar to that contained in other tissues and corresponded in its properties to that isolated in the present study from rat brain tissue. The inhibitor had a molecular weight of approximately 38,000 and the activator of approximately 15,000. When amounts of the inhibitor and activator that separately exerted equal but opposite effects on PDE were added together to PDE, the inhibitor effect was sharply increased. This indicated that the activator was a subunit of a single protein complex which as a whole exerts an inhibiting action. The assumption to that effect was supported by data obtained in the electrophoresis of the inhibitor fraction. Some results indicate that the cyclic nucleotide 3',5'-AMP participates in

1/2