USSR

UDC 8.74

DUVALYAN, A. V., ZVEREV, V. YU.

"A sequential Pattern Recognition Algorithm"

V sb. Avtomat. upr. i vychisl. tekhn. (Automatic Control and Computer Engineering -- collection of works), Vyp. 10, Moscow, Mashinostroyeniya Press, 1972, pp 206-220 (from RZh-Kibernetika, No 9, Sep 72, Abstract No 9V674)

Translation: In statistical pattern recognition theory the methods of sequential analysis permit us to create effective recognition algorithms. In this paper a pattern recognition algorithm is proposed the attributes of which satisfy the multidimensional normal probability distribution.

The algorithm is based on using the generalized sequential criterion of the probability ratios. The algorithm is trained by means of the recurrent procedure of the method of stochastic approximation. The effectiveness of the proposed algorithm is confirmed by experiments on a digital computer in the recognition of three types of cardiac disease by electrocardiograms.

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Acc. Nr.: AP0032013

Ref. Code: UR 0475

PRIMARY SOURCE: Vrachebnoye Delo, 1970, Nr 1, pp 9-14

SUMMARY

RESULTS OF SPECTRAL ANALYSIS OF THE BALLISTOCARDIOGRAM IN HEALTHY PERSONS

K. V. Zvereva, Y. A. Zverev and I. K. Spiridonova (Gorky)

Spectral analysis of the BCG was done in 109 healthy persons (age: 20—47 years). Two spectral types were seen: discrete and continous, the latter prevailing in young healthy subjects. Three main spectral forms have been singled out and analysed. The continuous spectrum is most frequently characterized by irregular distribution of spectral components whereas in the discrete they are distributed regularly in the normal ballisto-cardiogram. The discrete spectrum of changed ballistocardiograms is characterized by a marked level decrease of the first harmonic — average cardiac cycle. The appearance of discrete BCG spectrum in the second half of life or in clinically healthy persons but with pathological BCG evidences development of inverse links in the cardio-vascular system, which is apparantly an adaptive mechanism and reflects complex processes of selfregulation and compensation.

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REEL/FRAME
19700165

1/2 008 UNCLASSIFIED PROCESSING DATE--16OCT70

TITLE--EXPERIMENTAL DESALINATION OF TEREK DELTA SOIL WITH A DEEP DRAINAGE NETWORK BY A RICE CROP -U-

AUTHOR-(02)-ANDRYUSHIN, M.A., ZVEREVA, L.D.

COUNTRY OF INFO--USSR

SOURCE--POCHIVOVEDENIE 1970, (2), 119-32

DATE PUBLISHED-------70

SUBJECT AREAS--AGRICULTURE

TOPIC TAGS--SOIL TYPE, DESALINATION, RICE

CONTROL MARKING--NO RESTRICTIONS

DOCUMENT CLASS--UNCLASSIFIED

PROXY REEL/FRAME--1994/0089 STEP NO--UR/0500/70/000/002/0119/0132

CIRC ACCESSION NO--AP0114485

UNCLASSIFIED

2/2 008 UNCLASSIFIED PROCESSING DATE--16OCT70

CIRC ACCESSION NO--AP0114485

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. RICE WAS GROWN ON A STRONGLY SALINE SOIL AND SOLONCHAKS IN THE DELTA OF THE TEREK RIVER. THE RICE PADDIES WERE IRRIGATED WITH 28,000 M PRIME3 H SUB2 O-HA. DURING A YEAR, THE AV. SALT CONTENT IN THE UPPER 1 M HORIZON DECREASED FROM 1.23 TO 0.78PERCENT, AND DURING THE 2ND YEAR TO 0.60PERCENT. A SIMILAR DECREASE WAS OBSERVED IN THE SALT CONTENT OF UNDERGROUND WATER OF THE UPPER WATER CARRYING HORIZON. THE RICE YIELD WAS 4.05 TONS A. FACILITY: PYATIGORSK, FILIAL YUZHGIPROVODKHOZ, PYATIGORSK, USSR.

UNCLASSIFIED

USSR

UDC 621.385.6:621.314.6

KLYUSHIN, A. S., ZVEREVA, L. Ye.

"Test of the Development of Technology for Production of Magnetic Field Rectifiers"

Elektron. tekhnika. Nauchno-tekhn. sb. Elektron. SVCh (Electronic Technology. Scientific-Technical Collection. Microwave Electronics), 1971, Issue 1, pp 88-94 (from RZh--Elektronika i yeye primeneniye, No 5, May 1971, Abstract No 5A152)

Translation: In order to decrease the level of the parasitic components of the magnetic field at the axis of the magnetic system of Type O electronic devices, a rectifier is used which consists of Permalloy and aluminum disks. It is shown that the residual level of the transverse component at the axis of the rectifier is determined by the inclination of the Permalloy disks. The technology is described which makes it possible to assemble amplifiers with an inclination of the disks not more than $1.5 \cdot 10^{-3}$ radian with a 25-mm diameter of the disks, which assures a magnitude of the transverse component of the value of ~ 0.2 percent of the axial component. A method for inspection of the magnitude of the transverse component at the system axis with the aid of a Hall-effect device and an evaluation of measurement errors are presented. 6 ref. Author's Abstract.

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USSR

UDC 547.1'118'112

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

"1-Halogen-1-thioxophospholenes"

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

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

UDC 581.1.036+581.13

SEMENENKO, V. YE., and ZVEREVA, M. G., Institute of Plant Physiology imeni K. A. Timiryazev, Academy of Sciences USSR, Moscow, Institute of Photosynthesis, Academy of Sciences USSR, Pushchino

"Comparative Study of Photobiosynthesis Modification in Two Chlorella Strains in Which the Cellular Functions Were Disturbed by High Temperature"

Moscow, Fiziologiya Rasteniy, Vol 19, No 2, Mar/Apr 72, pp 229-238

Abstract: Chlorella pyrenoidosa accumulated more substances of a noncarbon and nonprotein nature with lipids predominating, when subjected to 36°C (control 26°C) for 30 hr. The lipid fraction constituted 60% of the total biomass, and its amount in a single cell increased 13-fold in comparison with controls. The lipid fraction in Chlorella sp. subjected to 43°C (control 36°C) was 40% and in a single cell it increase 7-fold during identical time interval. The accumulation of biomass in both strains was identical. The concentration of polysaccharides and suchrose in Chlorella pyrenoidosa during the same period was 18.0 and 82.0% (control 67.6, 32.4%), respectively. The same fractions for Chlorellar sp. amounted to 72.3 and 27.7 (control 96.0, 4.0%), respectively. In both strains cell division was blocked to some extent by high temperature. On the other hand, gigantic cells appeared in Chlorella sp. These results showed that the potential ability of cells of different Chlorella strains to carry on photosynthesis and to accumulate

1/2

USSR

SEMENKO, V. YE., and ZVEREVA,M.G., Fiziologiya Rastenii, Vol 19, No 2, Mar/Apr 72, pp 229-238

polysaccharides or lipids under extreme conditions is determined by the strain genotype and not by the specificity of environmental factors. The signal which induces the synthesis of substances is of intracellular origin and it comes at a time when the rates of photosynthesis and metabolism differ because of the environment.

USSR

UDC 551.511

ZVEREVA, S. V., ROMANOVA, G. P., SAMOYLENKO, A. V.

"Relationship Between the Transparency of the Atmosphere in Individual Regions of the USSR and Characteristics of Atmospheric Circulation"

Tr. Leningr. gidrometeorol. in-ta (Works of the Leningrad Hydrometeorological Institute), 1971, vyp. 38, pp 150-162 (from RZh-Mekhanika, No 10, Oct 71, Abstract No 10B755)

Translation: The authors compare conditions of atmospheric transparency in different parts of baric formations on both terrestrial and altitude weather maps in the western sector of the Arctic (Kheys, Uyedineniye and Dikson Islands) and in the East Arctic (Chetyrekhstolbovaya and Dikson Islands), and also at Voyeykovo, Verkhoyansk, Yakutsk and Turukhansk stations.

In winter in the western sector of the Arctic in anticyclones and ridges, coefficients of transparency predominate which are greater than the average monthly value, while in cyclones and depressions the coefficients are less than the average monthly value. In anticyclones in summer, deviations of the coefficient of transparency from the average

1/3

USSR

ZVEREVA, S. V. et al, Tr. Leningr. gidrometeorol. in-ta, 1971, vyp. 38, pp 150-162

to either side are equally probable, while high values of the coefficient of transparency predominate in cyclones. An explanation is given for this distribution of the coefficient of transparency.

In Voyeykovo in anticyclones throughout the year, but especially in summer, high transparency of the atmosphere predominates, while in cyclonic circulation low transparency is the rule.

In the East Arctic there is pronounced repeatability of anticyclonic situations as compared with cyclonic, which is attributed to the proximity of this region to the quasistationary central arctic cyclone, resulting in very high values of the coefficient of transparency (Vrangel' Island).

In anticyclones of the East Arctic pronounced transparency of the atmosphere predominates throughout the year even in the face of high repeatability of low values of the coefficient of transparency, which is due to condensation haze in the winter and increased humidity in the summer. This is also seen in Eastern Siberia.

In cyclones of western trajectories in winter in the East Arctic, increased transparency of the atmosphere predominates, since such cyclones are mostly already occluded, high and dry, whereas cyclones from the

2/3

USSR

ZVEREVA, S. V. et al., Tr. Leningr. gidrometeorol. in-ta, 1971, vyp. 38, pp 150-162

Aleutian minimum give low transparency of the atmosphere. In summer cyclones of the East Arctic and Eastern Siberia, increased transparency of the atmosphere is usually observed, which is due to the continental origin of these cyclones.

No relation is detected between the transparency of the atmosphere and forms of the baric field on the AT_{700} map. An investigation is made of forms of the transparency of the atmosphere accompanying various forms of atmospheric circulation according to V. Ya. Vangengeym. Bibliography of 15 titles. Authors' abstract.

3/3

USSR

ZVEREVA, Yu. N.

"Arcs in a Projective Plane of Translations of Order 9"

Kombinator. Analiz. [Combinatorial Analysis -- Collection of Works], No 2, Moscow, 1972, pp 99-102 (Translated from Referativnyy Zhurnal Kibernetika, No 6, 1973, Abstract No 6V346, by Ye. Gonin).

Translation: A plan is described for successive listing of all arcs of a finite projective plane with full usage of the possibilities of identity of arcs by colineations in each stage. The results of such a linsting performed by the author for a plane of order 9 translations are reported. Only a few, primarily full, arcs of this plane were known earlier.

1/1

UDC 615.38.014.4

USSR

DUDKO, N. Ye., Professor, DASHKEVICH, V. P., ZVERKOVA, A. S., and PYASTA, A. N., Kiev Institute of Hematology and Blood Transfusion

"Some Data from Studies of Blood Preserved with TsOLIPK-13 Solution for Different Periods of Storage"

Moscow, Problemy Gematologii i Perelivaniya Krovi, No 3, 1970, pp 18-20

Abstract: A study was made of morphological and biochemical changes, serological properties and therapeutic effectiveness of blood preserved at high dilution (1:1) with TsOLIPK-13 solution. Indices measured included the amount of erythrocytes and leukocytes, hemoglobin, latent hemolysis, blood pH resistance of erythrocytes and their morphological changes, and blood inorganic phosphorus and sugar content. Tests were conducted on the day the blood was taken, and then on every sixth day until the 30th day of preservation. Twenty series of experiments were conducted, and in all series the results were similar. Serological characteristics of blood stored at 4-6°C were investigated every fifth day. Study of erythrocyte morphological changes showed that erythrocytes almost completely lose the ability to form rouleaux on the sixth storage day. However, the first spherocytes appear only on the 18th day of storage, and on the 30th day comprise 18-25%. Shift in the osmotic resistance of erythrocytes in blood preserved with citric acid occurred, mainly,

1/2

DUDKO, N. Ye., et al., Problemy Gematologii i Perelivaniya Krovi, No 3, 1970, pp 18-20

because of minimal resistance. In all series of experiments, the minimal resistance decreased on an average from 0.7 on the day the blood was taken to 0.85 on the 30th day of storage. Traces of latent hemolysis were detected on the 18th day of storage, and by the 30th day hemolysis did not exceed 0.65-0.75%. There were two exceptions where hemolysis on the 30th day was higher than 1%. Blood sugar content gradually decreased during the 30 days of storage. During the first 18 days, this decrease was more intensive than in the latter days. Analysis of inorganic phosphorus content in the blood revealed a gradual 3.5-fold increase with the passage of storage time. This was analogous to blood stored with other preservatives. Results of serological investigations showed that erythrocytes containing antigen A lowered their agglutination activity by the 30th day. The agglutinability of erythrocytes containing agglutinogen B dropped much more sharply. A significant decrease in agglutination activity was also noted in erythrocytes containing antigens M and N. Patients of different ages and different medical problems received blood transfusions of this preserved blood at varying intervals, and in various amounts. The blood storage time varied from 8 to 35 days. A therapeutic effect was observed in all patients. There was an improvement in the general condition, increase in hemoglobin content and number of erythrocytes, and cessation of hemorrhage. It was especially effective in cases of third and fourth degree traumatic shock.

USSR

GOL'DENVEYZER, A.L., ZVERYAYEV, YE. M. (Moscow)

"The Stressed State of Unfastened Shells of Zero Curvature"

Moscow, Prikladnaya Matematika i Mekhanika, No 2, March-April 1971, pp 194-205k

Abstract: An investigation is made of the stressed state of a thin elastic shell of zero curvature with free edges. It is derived that the conditions for the zero-moment state formulated by I.N. Vekua for shells of positive curvature remain in force also for shells of zero curvature, if the edges of such a shell are nonasymptotic. It is shown that the stressed state and the deformability of a shell increase greatly even in case of small infractions of zero-moment conditions. 5 figures, 2 bibliographic entries.

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1/2 047 UNCLASSIFIED PROCESSING DATE--20NOV70

TITLE--THERMAL SELF FOCUSSING OF RADIATION FROM A FREE RUNNING LASER IN KDP AND ADP CRYSTALS -U-

AUTHOR-(03)-ZVERYEV, G.M., LEVCHUK, YE.A., MALOUTIS, E.K.

COUNTRY OF INFO--USSR

SOURCE--ZHURNAL EKSPERIMENTAL'NOY I TEORETICHESKOY FIZIKI, 1970, VOL 58, NR 5, PP 1487-1490

DATE PUBLISHED--------70

SUBJECT AREAS--PHYSICS

TOPIC TAGS--LASER SELF FOCUSING EFFECT, LASER BEAM, ANISOTROPY, Q SWITCHED PULSE LASER

CONTROL MARKING--NO RESTRICTIONS

DOCUMENT CLASS--UNCLASSIFIED

PROXY REEL/FRAME--3002/0018 STEP NO--UR/0056/70/058/005/1487/1490

CIRC ACCESSION NO--AP0127668

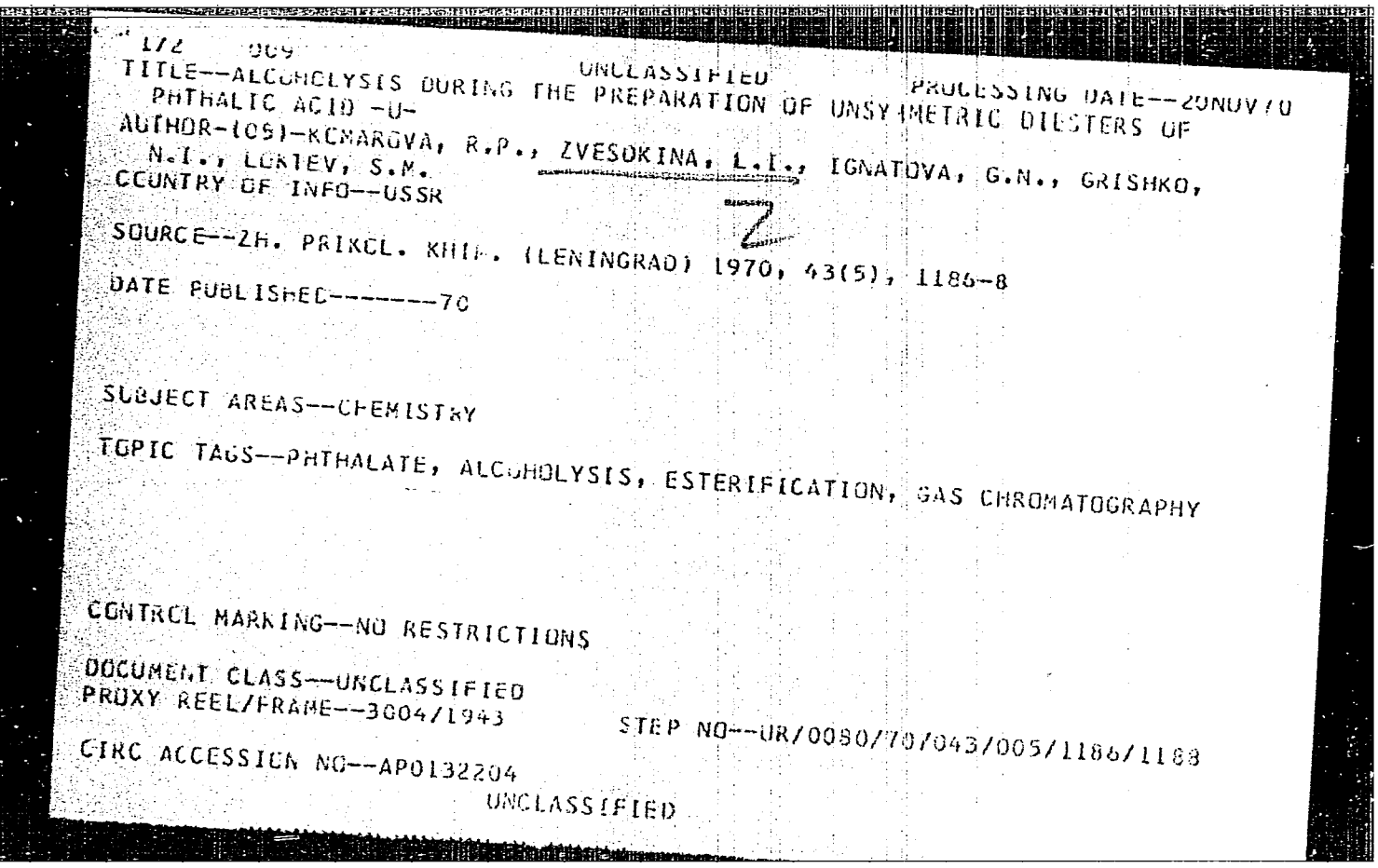
UNCLASSIFIED

2/2 047 UNCLASSIFIED

CIRC ACCESSION NO--AP0127668 PROCESSING DATE--20NOV70

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. SELF FOCUSSING FILAMENTS PRODUCED IN KDP AND ADP CRYSTALS BY THE RADIATION FROM A FREE RUNNING LASER ARE REPORTED. SELF FOCUSSING IS THE RESULT OF HEATING OF THE MATERIAL BY THE LASER BEAM. FILAMENTARY DEFECTS ARE PRODUCED ONLY UNDER THE ACTION OF E POLARIZED LIGHT ON THE SAMPLE. SELF FOCUSSING ANISOTROPY IS EVIDENTLY DUE TO ANISOTROPY OF DN-DT. THE POSSIBILITY OF OBSERVING THERMAL SELF FOCUSSING IN KDP AND ADP MATERIALS WITH A TABULAR VALUE DN-DT SMALLER THAN 0 IS ASCRIBED TO NONUNIFORM PULSED HEATING. IN CONTRAST WITH FREE RUNNING OPERATION CONDITIONS, SELF FOCUSSING OF A Q SWITCHED LASER RADIATION IS OF A STRICTIONAL NATURE.

UNCLASSIFIED



1/2 009 UNCLASSIFIED PROCESSING DATE--20NOV70

TITLE--ALCOHOLYSIS DURING THE PREPARATION OF UNSYMMETRIC DIESTERS OF PHTHALIC ACID -U-

AUTHOR-(05)-KOMAROVA, R.P., ZVESOKINA, L.I., IGNATOVA, G.N., GRISHKO, N.I., LUKIEV, S.M.

COUNTRY OF INFO--USSR

SOURCE--ZH. PRIKL. KHIM. (LENINGRAD) 1970, 43(5), 1186-8

DATE PUBLISHED--------70

SUBJECT AREAS--CHEMISTRY

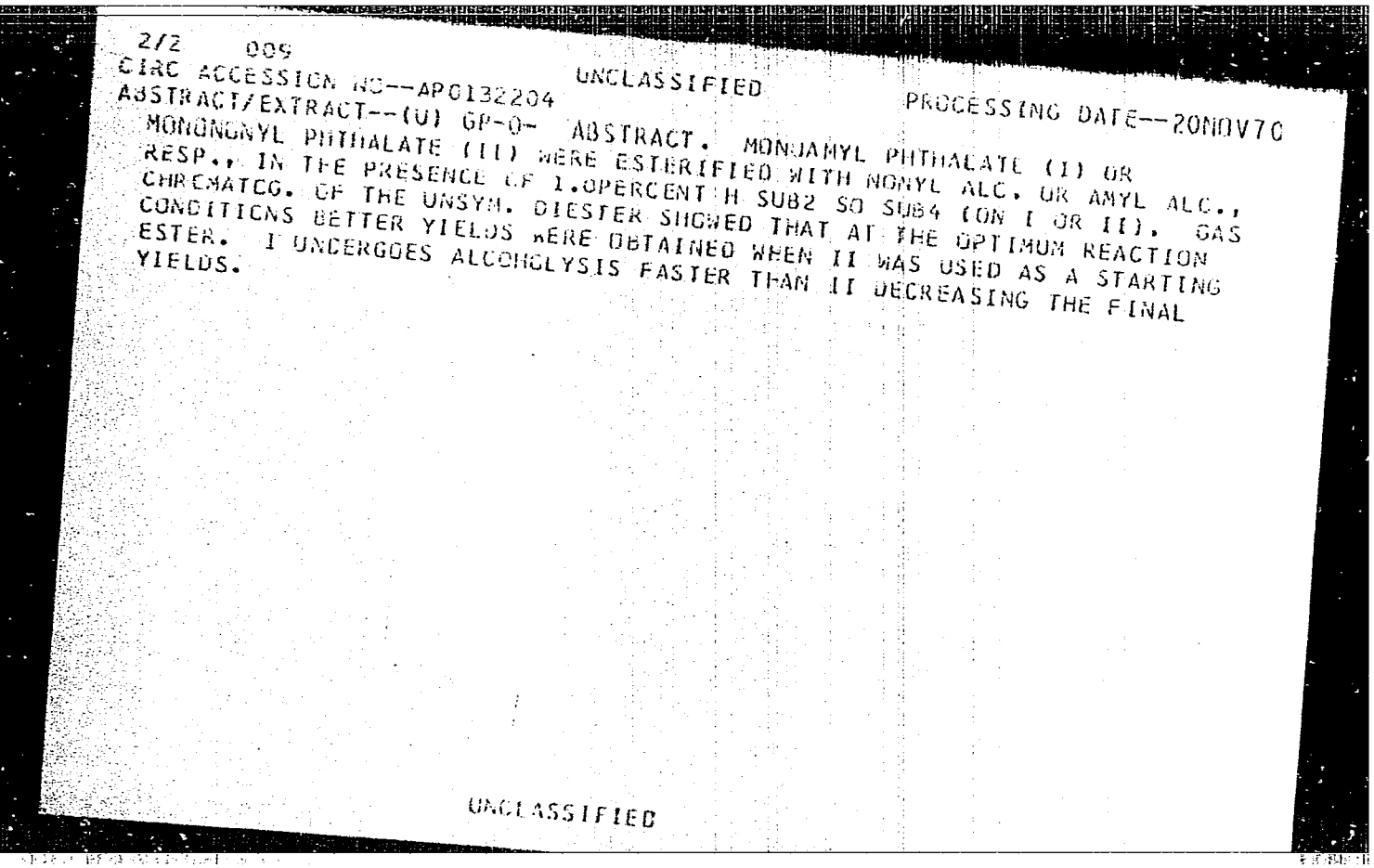
TOPIC TAGS--PHTHALATE, ALCOHOLYSIS, ESTERIFICATION, GAS CHROMATOGRAPHY

CONTROL MARKING--NO RESTRICTIONS

DOCUMENT CLASS--UNCLASSIFIED
PROXY REEL/FRAME--3004/1943 STEP NO--UR/0080/70/043/005/1186/1188

CIRC ACCESSION NO--AP0132204

UNCLASSIFIED



2/2 009 UNCLASSIFIED
CIRC ACCESSION NO--AP0132204 PROCESSING DATE--20NOV70
ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. MONOAMYL PHTHALATE (I) OR MONONONYL PHTHALATE (II) WERE ESTERIFIED WITH NONYL ALC. OR AMYL ALC., RESP., IN THE PRESENCE OF 1.0PERCENT H SUB2 SO SUB4 (ON I OR II). GAS CHROMATOG. OF THE UNSYM. DIESTER SHOWED THAT AT THE OPTIMUM REACTION CONDITIONS BETTER YIELDS WERE OBTAINED WHEN II WAS USED AS A STARTING ESTER. I UNDERGOES ALCOHOLYSIS FASTER THAN II DECREASING THE FINAL YIELDS.

UNCLASSIFIED

1/3 018 UNCLASSIFIED PROCESSING DATE--30OCT70

TITLE--MILITARY POST GRADUATE COURSES ADVERTISED -U-

AUTHOR--ZVEZDA, K.

COUNTRY OF INFO--USSR

SOURCE--MOSCOW, KRASNAYA ZVEZDA, RUSSIAN, 13 JANUARY 1970, P 4

DATE PUBLISHED--13JAN70

SUBJECT AREAS--BEHAVIORAL AND SOCIAL SCIENCES

TOPIC TAGS--MILITARY SCHOOL, MILITARY INSTITUTE, ENTRANCE REQUIREMENT, ARMED FORCE LOGISTICS, POST GRADUATED EDUCATIONAL POLICY, GRADUATE STUDENT ENROLLMENT

CONTROL MARKING--NO RESTRICTIONS

DOCUMENT CLASS--UNCLASSIFIED
PROXY REEL/FRAME--1987/1753 STEP NO--UR/9008/70/000/000/0004/0004

CIRC ACCESSION NO--AN0104931
UNCLASSIFIED

2/3 018 UNCLASSIFIED PROCESSING DATE--30OCT70

CIRC ACCESSION NO--AN0104931

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. THE MILITARY ORDER OF LENIN ACADEMY OF REAR SERVICES AND TRANSPORTATION (VOYENNAYA ORDENA LENINA AKADEMIYA TYLA I TRANSPORTA) ANNOUNCES OPENINGS IN 1970 IN THE RESIDENT POST GRADUATE SCHOOL FOR OPERATIONAL TACTICAL AND MILITARY ENGINEERING SPECIALTIES ANNOUNCED VIA THE REAR SERVICE STAFFS OF THE MILITARY DISTRICTS. THE POST GRADUATE SCHOOL IS ACCEPTING OFFICERS UP TO 35 YEARS OF AGE (UP TO 38 YEARS FOR THE OPERATIONAL TACTICAL SPECIALTIES) WHO HAVE A HIGHER EDUCATION, NOT LESS THAN 2 YEARS PRACTICAL WORK EXPERIENCE IN THE SELECTED SPECIALTY AFTER GRADUATION FROM A HIGHER EDUCATIONAL INSTITUTION, AND WHO HAVE MANIFESTED AN ABILITY FOR PEDAGOGICAL AND SCIENTIFIC WORK. APPLICATIONS FOR ACCEPTANCE INTO THE POST GRADUATE SCHOOL ARE TO BE SUBMITTED THROUGH CHANNELS WITH A COPY OF THE APPLICATION TO BE PRESENTED DIRECTLY TO THE CHIEF OF THE ACADEMY. UNIT "CHAST") COMMANDERS AND CHIEFS OF ESTABLISHMENTS ARE TO SEND THE PERSONAL FILES AND APPLICATIONS OF CANDIDATES FOR THE POST GRADUATE SCHOOL TOGETHER WITH THEIR CONCLUSIONS TO THE CHIEF OF THE ACADEMY NO LATER THAN 1 MAY 1970. AT THE SAME TIME THE FOLLOWING IS TO BE SUBMITTED: A CERTIFIED COPY OF THE DIPLOMA FROM THE HIGHER EDUCATIONAL INSTITUTION AND A TRANSCRIPT OF GRADES, A RECOMMENDATION FROM THE LAST PLACE OF SERVICE, A PARTY POLITICAL APPRAISAL, A MEDICAL RECORD, A STATEMENT ABOUT STATE OF HEALTH WITH AN INDICATION OF THE POSSIBILITY OF COMPLETING THE COURSE OF INSTRUCTION AT THE POST GRADUATE SCHOOL, A SERVICE RECORD, ANY SCHOLARLY WORKS OR REFERENCE PAPERS ON THE SELECTED SPECIALTY, AND A CERTIFICATE ATTESTING THAT ENTRANCE EXAMINATIONS WERE PASSED, IF TAKEN.

UNCLASSIFIED

3/3 018 UNCLASSIFIED

CIRC ACCESSION NO--AN0104931 PROCESSING DATE--30OCT70

ABSTRACT/EXTRACT--COMPETITIVE ENTRANCE EXAMINATIONS ON THE SCOPE OF THE ACADEMY'S PROGRAMS WILL BE GIVEN FORM 1 THROUGH 30 JULY 1970 ON THE SPECIAL DISCIPLINES, THE HISTORY OF THE CPSU AND A FOREIGN LANGUAGE.

UNCLASSIFIED

UDC 681.327

USSR

GORANSKIY, B. P., ZVEZDIN, A. K.

"A Memory Element"

USSR Author's Certificate No. 267119, Filed 12/03/69, Published 20/07/70 (Translated from Referativnyy Zhurnal Avtomatika, Telemekhanika i Vychislitel'naya Tekhnika, No. 4, 1971, Abstract No. 4B348P from the resume).

Translation: Memory elements (ME) for a magnetooptical memory unit consisting of a transparent substrate with an applied transparent film made of a ferromagnetic material with a compensation temperature (T_c) are well known. In order for the magtooptic memory with these elements to operate, it is necessary that their T_c be similar to each other (permissible fluctuation from element to element <0.5°). This places rigid requirements on the technology of manufacture of the magnetic film of the memory elements, since slight changes in the composition of the material and the presence of defects and heterogeneities lead to changes in T_c. When such a memory unit operates, the temperature of the substrate must be maintained at T_c with an accuracy of <0.5°, which is difficult to do. In order to decrease the requirements for thermostating accuracy and identity of threshold temperature T_c in all elements of the memory unit, it is suggested that the ME film be made of a ferromagnetic material in which the direction of the easy axis of magnetization changes as a function of temperature. 2 figs.

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1/2 028 UNCLASSIFIED PROCESSING DATE--20NOV70

TITLE--MECHANISM OF FORMATION OF NEGATIVE RESISTANCE IN SEMICONDUCTORS DURING IMPURITY BREAKDOWN -U-

AUTHOR-(03)-ZAYTSEV, A.N., ZVEZDIN, A.K., OSIPOV, U.U.

COUNTRY OF INFO--USSR

SOURCE--PIS'MA ZH. EKSP. TEOR. FIZ. 1970, 11(5), 257-60

DATE PUBLISHED--------70

SUBJECT AREAS--PHYSICS

TOPIC TAGS--ELECTRON TEMPERATURE, ELECTRON DENSITY, SEMICONDUCTOR CONDUCTIVITY, PHONON EQUILIBRIUM, ELECTRON RECOMBINATION, SEMICONDUCTOR IMPURITY

CONTROL MARKING--NO RESTRICTIONS

DOCUMENT CLASS--UNCLASSIFIED

PROXY REEL/FRAME--1994/0996 STEP NO--UR/0386/70/011/005/0257/0260

CIRC ACCESSION NO--AP0115017

UNCLASSIFIED

2/2 028 UNCLASSIFIED PROCESSING DATE--20NOV70

CIRC ACCESSION NO--AP0115017

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. SOME OF THE MECHANISMS ARE CONSIDERED WHICH RESULT IN THE LACK OF A ONE VALUED DEPENDENCE OF THE TEMP. OF THE HOT ELECTRONS OR OF THEIR CONCN. ON THE ELEC. FIELD AND, THEREBY, IN THE EXISTENCE OF NEG. RESISTANCE. THE FOLLOWING MECHANISMS WERE CONSIDERED: THE NEG. DIFFERENTIAL RESISTANCE IS DUE TO A LACK OF EQUIL. FOR THE PHONONS, IT IS DUE TO THE RELAXATION OF THE ENERGY IN THE IONIZATION AND RECOMBINATION PROCESSES, IT IS DUE TO THE SCREENING OF THE IMPURITY POTENTIAL BY THE NONEQUIL. ELECTRONS. FACILITY: MOSK. INST. RADIOTEKH. ELEKTRON AVTOMAT., MOSCOW, USSR.

UNCLASSIFIED

Acc. Nr: AP0038040 Ref. Code: UR 0056

PRIMARY SOURCE: Zhurnal Eksperimental'noy i Teoreticheskoy Fiziki, 1970, Vol 58, Nr 1, pp 160-168

MOTION OF A CURRENT COLUMN IN A MAGNETIC FIELD IN SEMICONDUCTORS WITH AN *S*-LIKE VOLT-AMPERE CHARACTERISTIC

Zvezdin, A. K.; Osinov, V. V.

The electrical properties of semiconductors with an *S*-like volt-ampere characteristic in crossed magnetic and electric fields are considered. The uniform current distribution in electric fields corresponding to a negative differential resistance is unstable. It is shown that under these conditions and for a certain sample geometry a solitary current density wave (current column) is formed which moves with a constant velocity in a direction perpendicular to the electric and magnetic fields. The wave is stable for a given total current passing through the sample. This phenomenon leads to oscillations of the electric field in the outer circuit. Variation of the volt-ampere characteristic of the sample due to movement of the current column is considered. Estimates of the column velocity are made for various mechanisms of formation of the *S*-like volt-ampere characteristic.

REEL/FRAME
19731082

1/2 031 UNCLASSIFIED PROCESSING DATE--27NOV70

TITLE--COMPARISON BETWEEN THE AUGMENTED WAVE AND GREEN'S FUNCTION METHODS IN THE ZONE THEORY OF SOLIDS -U-

AUTHOR-(04)-OYAKIN, V.V., YEGOROV, R.F., ZVEZDIN, V.K., SHIROKOVSKY, V.P.

COUNTRY OF INFO--USSR

SOURCE--FIZIKA METALLOV I METALLOVEDENIE, MAR. 1970, 29, (3), 579-483

DATE PUBLISHED-------70

SUBJECT AREAS--PHYSICS, MATERIALS

TOPIC TAGS--ELECTRON SPECTRUM, WAVE FUNCTION, ENERGY BAND STRUCTURE, METAL CRYSTAL, CALCULATION, GREEN FUNCTION, VARIATIONAL METHOD

CONTROL MARKING--NO RESTRICTIONS

DOCUMENT CLASS--UNCLASSIFIED

PROXY REEL/FRAME--3002/1819 STEP NO--UR/0126/70/029/003/0479/0483

CIRC ACCESSION NO--AP0129187

UNCLASSIFIED

2/2 031 UNCLASSIFIED PROCESSING DATE--27NOV70

CIRC ACCESSION NO--AP0129187

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. THE MATHEMATICAL PROBLEM OF FINDING THE ELECTRON ENERGY SPECTRUM AND WAVE FUNCTIONS OF METAL CRYSTALS AND DERIVING THE ELECTRICAL AND OTHER PROPERTIES FROM THESE IS CONSIDERED THEORETICALLY IN TWO FORMS BASED ON THE AUGMENTED PLANE WAVE AND GREEN'S FUNCTION METHODS, RESP. IT IS PROVED THAT IN BOTH THE RELATIVISTIC AND NONRELATIVISTIC CASES BOTH METHODS MAY BE DERIVED FROM A SINGLE BASIC VARIATIONAL PRINCIPLE. SOME OF THE SIMILARITIES AND DIFFERENCES BETWEEN THE TWO METHODS ARE DISCUSSED.

UNCLASSIFIED

1/2 019 UNCLASSIFIED PROCESSING DATE--23OCT70

TITLE--TELOMERIZATION OF VINYL CHLORIDE BY CHLOROFORM AND TRICHLOROACETIC ACID ESTERS -U-

AUTHOR-(04)-RAZUVAYEV, G.A., BOBINOVA, L.M., ZVEZDIN, V.L., YEGOROCHKIN, A.N.

COUNTRY OF INFO--USSR

SOURCE--IZV. AKAD. NAUK SSSR, SER. KHIM. 1970, (3), 637-40

DATE PUBLISHED--------70

SUBJECT AREAS--CHEMISTRY

TOPIC TAGS--CHLORINATED ORGANIC COMPOUND, VINYL CHLORIDE, CHLOROFORM, POLYMER, ACETATE, ESTERIFICATION

CONTROL MARKING--NO RESTRICTIONS

DOCUMENT CLASS--UNCLASSIFIED

PROXY REEL/FRAME--1999/1903 STEP NO--UR/0062/70/000/003/0637/0640

CIRC ACCESSION NO--AP0123687

UNCLASSIFIED

2/2 019 .UNCLASSIFIED PROCESSING DATE--23OCT70
CIRC ACCESSION NO--AP0123687
ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. TELOMERIZATION OF VINYL CHLORIDE WAS RUN IN THE PRESENCE OF FECL SUB2.4H SUB2 O IN AN AUTOCLAVE WITH CHCL SUB3 OR ET OR ISO-PR ESTERS OF CCL SUB3 CO SUB2 H. FRACTIONAL DISTN. YIELDED THE TELOMERS CHCL SUB2 CH SUB2 CHCL SUB2, CHCL SUB2 CH SUB2 CHCLCH SUB2 CHCL SUB2, AND CHCL SUB2 CH SUB2 CHCLCH SUB2 CHCLCH SUB2 CHCL SUB2 WHICH HAD PHYS. CONSTS. (B., N PRIME20 SUBD, D PRIME20, RESP.): B SUB20 57-8DEGREES, 1.4820, 1.4555; B SUB1 83-4DEGREES, 1.5030, 1.4585; B SUB1 131-2DEGREES, 1.5139, 1.4524. THE ESTER TELOMERS ISOLATED INCLUDED: (FORMULA SHOWN ON MICROFICHE). THE REACTION RUN WITH CH SUB2:CHCL AND CCL SUB3 CO SUB2 ET IN ISO-PROH GAVE PRODUCTS OF TELOMERIZATION COMPLICATED BY TRANSESTERIFICATION. FACILITY: LAB. STABIL. POLIM., GORKI, USSR.

UNCLASSIFIED

USSR UDC 669.293.5'296'786.018.44:621.785.783

ZVEZDIN, YU. I., POVYSHEV, I. A., PUGACHEV, G. S., YAKOVLEV, V. A.

"Effect of Heat Treatment on the Mechanical Properties of Nb-Zr-N and Nb-Zr-C Alloys"

Metallovedeniye -- V sb. (Physical Metallurgy -- collection of works), No 14, Leningrad, Sudostroyeniye Press, 1970, pp 233-237 (from RZh-Metallurgiya, No 4, Apr 71, Abstract No 4I784)

Translation: A study was made of the problems of heat treatment of dispersion-hardening alloys of the Nb-Zr-N and Nb-Zr-C systems. It was demonstrated that hardening of the alloys is achieved by separation of the interstitial phases in the aging process at 1,000-1,100°. The alloys have maximum strength after special heat treatment consisting in annealing at 1,800° with subsequent aging in the 1,000-1,100° range. There are 4 illustrations, 2 tables, and a 2-entry bibliography.

1/1

USSR

UDC 620.172.251.224

YEFTIKHIN, V. A., ZVEZDIN, Yu. I., KAPRIZOV, V. A., and PUGACHEV, G. S.

"Device for Creep and Fatigue Strength Tests of Metals at High Temperatures in a Vacuum of the Order of 10^{-9}mm Hg"

Moscow, Zavodskaya Laboratoriya, No 2, 1971, pp 228-230

Abstract: A device for creep and fatigue strength tests of metals at high temperatures in a vacuum of the order of 10^{-9}mm Hg is described. Its main components - vacuum system, electro-supply and control systems, charging device, heater, and deformation measuring system - are discussed in detail by reference to a diagram. Results of fatigue strength tests of some niobium alloys in a vacuum of 10^{-7} — 10^{-9}mm Hg are demonstrated and compared with tests conducted on the PB-3012 unit producing a vacuum of 10^{-6}mm Hg. It is concluded that a vacuum of at least 1×10^{-8}mm Hg which is free of oil vapors must be used to obtain the correct strength characteristics of the investigated metals.

1/1

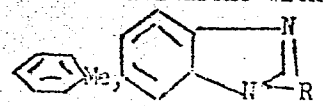
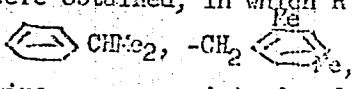
USSR

UDC 547.781.5.785.5

FILIPSKIKH, T. P., POZHARSKIY, A. F., KOROLEVA, V. N., SIMONOV, A. M., and ZVEZDINA, E. A., Rostov State University, Rostov-on-Don

"Derivatives of Imidazole Containing Potentially Labile Groups at the N_1 Atom. VI. Some 2-Amino Derivatives of 1-Aralkyl- and 1-Methoxymethylbenzimidazoles"

Riga, Khimiya Geterotsiklicheskikh Soyedineniy, No 6, Jun 72, pp 809-811

Abstract: By reacting benzimidazole with substituted benzyl chlorides and the Ag salt of benzimidazole with benzhydrylchloride, 1-aralkylbenzimidazoles (I) were obtained, in which R =   By the action of $NaNH_2$ on compounds I, an amino group was introduced in position 2 of the benzimidazole nucleus. In this manner, the 1-aralkyl-2-aminobenzimidazoles (II) derived from I were synthesized. By reacting the Na salt of 2-aminobenzimidazole with methoxymethyl chloride, 1-methoxymethyl-2-aminobenzimidazole (III) was prepared. Compounds II-III were required for the generation of highly reactive 2-aminobenzimidazole anions by the reductive cleavage of the N-R bond with Na in liquid NH_3.

1/1

1/2 010 UNCLASSIFIED PROCESSING DATE--20NOV70

TITLE--IMIDAZOLE DERIVATIVES CONTAINING POTENTIALLY LABILE GROUPS AT THE N ATOM. V. SYNTHESIS OF 2,BENZYLAMINO AND 2,DIBENZYLAMINOBENZIMIDAZOLES

AUTHOR-(03)-ZVEZDINA, E.A., POZHARSKIY, A.F., SOKOLOV, V.I.

2

COUNTRY OF INFO--USSR

SOURCE--KHIM. GETEROTSIKL. SOEDIN. 1970, (3), 419-21

DATE PUBLISHED-------70

SUBJECT AREAS--CHEMISTRY

TOPIC TAGS--IMIDAZOLE, BENZENE DERIVATIVE, AMINE, ORGANIC SYNTHESIS, HETEROCYCLIC NITROGEN COMPOUND

CONTROL MARKING--NO RESTRICTIONS

DOCUMENT CLASS--UNCLASSIFIED

PROXY REEL/FRAME--3001/0218 STEP NO--UR/0409/70/000/003/0419/0421

CIRC ACCESSION NO--AP0126006

UNCLASSIFIED

2/2 010 UNCLASSIFIED PROCESSING DATE--20NOV70

CIRC ACCESSION NO--AP0126006

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. A MIXT. OF 1.47 G I (R EQUALS ME, R PRIME1 EQUALS NH SUB2), 1.62 G PHCH SUB2 OH, AND 0.9 G KOH WAS HEATED (FLAME); AT 150DEGREES A STORMY REACTION OCCURRED. THE MIXT. WAS THEN HEATED TO 250DEGREES, AND KEPT 5 MIN AT 250DEGREES TO YIELD 100PERCENT I (R EQUALS ME, R PRIME1 EQUALS NHCH SUB2 PH), M. 167DEGREES (MEOH). SIMILARLY WERE OBTAINED THE FOLLOWING AS SHOWN ON MICROFICHE.

UNCLASSIFIED

1/2 020 UNCLASSIFIED PROCESSING DATE--02OCT70

TITLE--PROPERTIES OF 2,NITROBENZIMIDAZOLES -U-

AUTHOR-(05)-POZHARSKIY, A.F., PERSHIN, G.N., ZVEZDINA, E.A., ZYKOVA, T.N., MILOVANOVA, S.N.

COUNTRY OF INFO--USSR

SOURCE--KHIM. FARM. ZH. 1970 4(1) 14-16

DATE PUBLISHED-------70

SUBJECT AREAS--BIOLOGICAL AND MEDICAL SCIENCES, CHEMISTRY

TOPIC TAGS--ORGANIC NITRO COMPOUND, BENZIMIDAZOLE, BACTERICIDE, FUNGICIDE

CONTROL MARKING--NO RESTRICTIONS

DOCUMENT CLASS--UNCLASSIFIED

PROXY REEL/FRAME--1992/1520 STEP NO--UR/0450/70/004/001/0014/0016

CIRC ACCESSION NO--AP0112514

UNCLASSIFIED

2/2 020 UNCLASSIFIED PROCESSING DATE--02OCT70

CIRC ACCESSION NO--AP0112514

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. 2, NITROBENZIMIDAZOLE (I) (0.163 G), 0.08 G NAOH, 4 ML ETOH, AND 0.35 ML MEI YEILDED 0.15 G 1,METHYL,2, NITROBENZIMIDAZOLE (II), M. 170DEGREES (ETOH); 79.3PERCENT 1,ETHYL DERIV., M. 105DEGREES (MEOH), WAS ALSO PREPD. II (0.27 G) WAS ALSO PREPD. FROM 0.26 G I AND 0.156 G CH SUB2 N SUB2 IN 40 ML ET SUB2 O. A MIXT. OF 0.163 G I, 0.1 G NAOH, 0.25 G PHME SUB2 (PHCH SUB2)N PRIME POSITIVE CL PRIME NEGATIVE, AND 3 ML H SUB2 O GAVE 0.13 G 1,BENZYL,2,NITROBENZIMIDAZOLE, M. 107DEGREES (MEOH). II (0.15 G), ETONA (FROM 0.08 G NA), AND 7 ML ETOH YIELDED 1,METHYL,2,ETHOXYBENZIMIDAZOLE (0.12 G), PICRATE M. 163-4DEGREES (ETOH). II (0.25 G), 0.32 G PHCH SUB2 NH SUB2, AND 5 ML XYLENE YIELDED 0.25 G 1,METHYL,2,(BENZYLAMINO)BENZIMIDAZOLE, M. 167DEGREES (MEOH). THE COMPDS. WERE TESTED FOR ANTIBACTERIAL (11 STRAINS) AND ANTIFUNGAL (6 STRAINS) ACTIVITY.

UNCLASSIFIED

USSR UDC 621.348.629.113.004.15

KOSSOV, M. A., Candidate of Technical Sciences, BOKAREVA, A. A., ZVEZDINA, N. S., GREKOV, L. I., SEDINA, G. I., NAMI(Central Scientific Research Institute of Motor Vehicles and Motor-Vehicle Engines)

''The Technical and Economic Effectiveness of Using Gas-Turbine Engines on Trucks Under the Conditions of the North''

Moscow, Avtomobil'naya Promyshlennost', No. 7, 1971, pp 5-10

Abstract: For a piston engine in operation, the problem of change of the parameters of the characteristics with a drop in the air temperature is not as acute as for a gas-turbine engine. However, the starting of a piston engine, particularly of a diesel engine, under low air-temperature conditions is considerably more difficult. It is economically advantageous to use gas-turbine motor-vehicle engines in the northern regions when the maximum cost of these engines is up to 20 rubles per horsepower for engines with a capacity of 1200 horsepower, up to 22 rubles per horsepower for a capacity of 660-720 horsepower, and up to 18 rubles per horsepower for an engine capacity of 240 horsepower. These costs are actual costs, and can be obtained

USSR

KOSSOV, M. A., et al., Avtomobil'naya Promyshlennost', No 7, 1971, pp 5-10

in the series production of gas-turbine engines of the types under consideration. The possibility of obtaining large savings in the national economy is an objective prerequisite for the creation of modern and promising gas-turbine engines with a capacity of 1500-1200, 900-600, and 250-400 horsepower with a specific fuel consumption of 0.170-0.210 kg per horsepower, and the preparation of their series production and operation first of all in the northern and northwestern regions of the USSR.

2/2

1/2 012 UNCLASSIFIED PROCESSING DATE--30OCT70
TITLE--USE OF HYDROGEN TO REDUCE A FUSED IRON CATALYST -U-

AUTHOR-(05)-LOKTEV, S.M., MUKHLENOV, I.P., DAROVSKIKH, I.F., ZVEZDKINA, L.I., YAKOVLEVA, G.L.
COUNTRY OF INFO--USSR

SOURCE--KHIM. PROM. (MOSCOW) 1970, 46(2), 108-12

DATE PUBLISHED--------70

SUBJECT AREAS--CHEMISTRY

TOPIC TAGS--ELECTROLYTIC REDUCTION, IRON, CATALYST, CATALYTIC ORGANIC SYNTHESIS, ALIPHATIC ALCOHOL

CONTROL MARKING--NO RESTRICTIONS

DOCUMENT CLASS--UNCLASSIFIED
PROXY REEL/FRAME--1997/0738 STEP NO--UR/0064/70/046/002/0108/0112

CIRC ACCESSION NO--AP0119645
UNCLASSIFIED

2/2 012 UNCLASSIFIED PROCESSING DATE--30OCT70

CIRC ACCESSION NO--AP0119645

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. THE OPTIMUM CONDITIONS FOR THE REDN. OF THE FE OXIDE MIXT. (CONTG. FE 0.4, FEO 32.1, FE SUB2 O SUB3 64, STRUCTURE FORMING AGENTS 2.78, AND K SUB2 O 0.5 WT. PERCENT) BY H IN THE MANUFG. OF A COM. FE CATALYST (USED IN THE SYNTHESIS OF HIGHER ALIPHATIC ALCS.) ARE: 350DEGREES, 50 ATM, LINEAR VELOCITY OF THE H IS LARGER THAN 11 CM-SEC, TIME 20 HR; THE TIME CAN BE REDUCED TO 3 HR BY INCREASING THE TEMP. TO 450DEGREES, AT 20-40 ATM. ELECTROLYTIC H (99.5 VOL PERCENT H) IS USED FOR THE REDN.; THE PARTICLE SIZE BEFORE THE REDN. SHOULD BE 1-3 MM. THE REDUCED CATALYST CONTAINS 90-5PERCENT FE AND HAS A SP. SURFACE OF 14-16 M PRIME2-G; ITS SERVICE LIFE IN SYNTHESIS PROCESSES AT 170-80DEGREES IS LARGER THAN 1000 HR.

UNCLASSIFIED

Acc. Nr: AP0042225 Abstracting Service: CHEMICAL ABST. 4-70 Ref. Code: UR 0057

2

83861s Optimum electrical power of thermionic converters with molybdenum, tungsten, rhenium, and iridium cathodes. Shustov, V. A.; Zvezdkina, T. K. (USSR). *Zh. Tekh. Fiz.* 1969, 39(12), 2231-5 (Russ). The elec. power was calcd. as a function of the distance between electrodes at optimum Cs pressure. Iridium, which has a higher work function, gave max. power ≤50 V/cm² with 0.13 mm between electrodes. G. Thirot

10

1/1

21

REEL/FRAME
19760157

Acc. Nr: AP0043794 Ref. Code: UR 0056

PRIMARY SOURCE: Zhurnal Eksperimental'noy i Teoreticheskoy Fiziki, 1970, Vol 58, Nr 2, pp 597-600

CONTRIBUTION TO THE THEORY OF SPIN-LATTICE RELAXATION IN CRYSTALS WITH PARAMAGNETIC IMPURITIES

N. S. Bendiashvili, L. L. Buishvili, M. D. Zviadadze

The effect of nonuniform EPR broadening on relaxation of nuclei in crystals with magnetic impurities is discussed. It is shown that the concentration dependence of the relaxation rate agrees with the experimental data.

1/1

REEL/FRAME 19770203

21 DI

Steels

USSR

UDC 669.1:620.193.91

BOGACHEV, I. N., ZVIGINTSEV, N. V., and MASLAKOVA, T. N., Ural Polytechnic Institute imeni S. M. Kirov

"Effect of Alloying on the Aging Process and Strengthening of Steel with 20% Nickel"

Sverdlovsk, Fizika Metallov i Metallovedeniye, Vol 33, No 2, Feb 72, pp 362-368

Abstract: The effect of alloying elements on the processes of aging and strengthening was studied according to the change in hardness and a number of physical properties: thermal emf and electrical resistance. The alloys studied were : N20, N20M2, N20M5, N20K10, N20K15, N20K10M5, N20K10M5TYu, N20TYu, and N20M3TYu. An aging temperature between 400 and 550° C produced the highest hardnesses and it was found that Fe-Ni steels N20K10M5, N20Tyu, N20M3TYu, and N20K10M5TYu were much harder than steels N20, N20M2, N20K10, N20K15 and N20M5, which is explained for the most part by their content of titanium and aluminum. On the other hand the harder steels had a lower thermal emf. It was concluded that the processes of aging and strengthening of precipitation hardened Fe-Ni steels was dependent on the content of Mo, Ti, Al, and Co although the effect of these elements differed for the indicated processes. Anomalies in the temperature relationship of the physical properties, dependent on Co and Mo, are weakened by Ti and Al. Four figures, 1 table, 14 bibliographic references.

1/1

USSR

UDC 548.7

ZVIGINTSEV, N. V., Ural Polytechnical Institute imeni S. M. Kirov

"The Role of Molybdenum in the Ductility of Martensitic Aged Steels Containing Titanium"

Sverdlovsk, Fizika Metallov i Metallovedeniye, Vol 31, No 3, Mar 71, pp 654-658

Abstract: The significance of molybdenum in the plasticity of martensite aged steel containing titanium was studied. The chemical composition of the steels studied is shown in the table below:

Steel	Elements, wt. %								
	C	Ni	Al	Ti	Mo	Mn	Si	S	P
N20TYu	0.04	19.8	0.38	1.43	----	0.18	0.2	0.04	0.03
N20MZTYu	0.04	19.8	0.38	1.43	2.82	0.18	0.2	0.04	0.03

After homogenization at 1050° for eight hours, the ingots were forged into bars, which were quenched from 1,000° in water. The specimens were aged in a salt bath. The specimens were tested

1/2

USSR

ZVIGINTSEV, N. V., Fizika Metallov i Metallovedeniye, Vol 31, No 3, Mar 71, pp 654-658

for tensile strength and impact toughness, their hardness was measured, and electron microscope studies of the structure were performed. Molybdenum was found to increase the strength and ductility characteristics in the steel both before and after aging. The electron microscope studies showed that immediately after hardening, plate-like separations were found among the network of dislocations within the martensite needles or along their boundaries. These were identified as titanium carbides. The favorable influence of molybdenum on plasticity in dispersion hardened steels with titanium apparently results from a dual effect: by preventing the separation of titanium carbonitrides as accumulations on grain boundaries or at defects, the molybdenum eliminates stress concentrators in the hardened alloy and thus increases ductility; on the other hand, by changing the disk shape of the titanium intermetallides to spherical, it has a favorable influence on ductility of the steel in the aged state.

2/2

Antennas

USSR

UDC: 621.396.676.2(088.8)

FURMANOV, B. M., ZVORYGIN, A. G., BIZIN, P. S., and LEKHTMAN, L. N.

"Antenna"

/In-t gorn. dela im. A. A. Skochinskogo/ (The A. A. Skochinskiy Institute of Mining Affairs) Authors certificate USSR, class 21a 46/01, (H 01 q), No. 266864, Application 21.10.68, Publication 27.07.70 (from RZh-Radiotekhnika, No. 3, March 71, Abstract No. 3A293P)

Translation: For wireless high-frequency communication in mines, inductive transmitting antennas have hitherto been used in the form of frames with or without cores, operating into unmatched loads and having low Q. To eliminate these deficiencies and increase the current, an antenna has been proposed in the form of two insulated sheets (e.g., paralonic) with electrically conducting layers (e.g., foil) between them. Such a layer is used as the plate of a capacitor, introduced in the tuned circuit of the transmitter, while the upper roof of the electric car storage cell is used as the other plate. Yu. V.

1/1

UDC 548.7

USSR

ZVIGINTSEV, N. V., Ural Polytechnical Institute imeni S. M. Kirov

"The Role of Molybdenum in the Ductility of Martensitic Aged Steels Containing Titanium"

Sverdlovsk, Fizika Metallov i Metallovedeniye, Vol 31, No 3, Mar 71, pp 654-658

Abstract: The significance of molybdenum in the plasticity of martensite aged steel containing titanium was studied. The chemical composition of the steels studied is shown in the table below:

Steel	Elements, wt. %								
	C	Ni	Al	Ti	Mo	Mn	Si	S	P
N20TYu	0.04	19.8	0.38	1.43	----	0.18	0.2	0.04	0.03
N20MZTYu	0.04	19.8	0.38	1.43	2.82	0.18	0.2	0.04	0.03

After homogenization at 1050° for eight hours, the ingots were forged into bars, which were quenched from 1,000° in water. The specimens were aged in a salt bath. The specimens were tested

1/2

USSR

ZVIGINTSEV, N. V., Fizika Metallov i Metallovedeniye, Vol 31, No 3, Mar 71, pp 654-658

for tensile strength and impact toughness, their hardness was measured, and electron microscope studies of the structure were performed. Molybdenum was found to increase the strength and ductility characteristics in the steel both before and after aging. The electron microscope studies showed that immediately after hardening, plate-like separations were found among the network of dislocations within the martensite needles or along their boundaries. These were identified as titanium carbides. The favorable influence of molybdenum on plasticity in dispersion hardened steels with titanium apparently results from a dual effect: by preventing the separation of titanium carbonitrides as accumulations on grain boundaries or at defects, the molybdenum eliminates stress concentrators in the hardened alloy and thus increases ductility; on the other hand, by changing the disk shape of the titanium intermetallides to spherical, it has a favorable influence on ductility of the steel in the aged state.

USSR

UDC 669.15-194:669.26

VINTAYKIN, Ye. Z., ZVIGINTSEV, N. V., KOLONTSOV, V. Yu. and MOGUTNOV, B. M., Central Scientific Research Institute of Ferrous Metallurgy imeni I. P. Bardin, Institute of Metal Studies and Physics of Metals, Ural Polytechnical Institute imeni S. M. Kirov

"Stratification in the Martensite of Kh13N10 and Kh13N8Yu Steels"

Sverdlovsk, Fizika Metallov i Metallovedeniye, Vol 30, No 6, Dec 70, pp 1245-1249

Abstract: Aging of martensite was investigated in Fe-Cr-Ni steels by measuring the electrical resistance, thermal emf, specific volume, hardness, and low-angle neutron scattering. The existence of stratification in the investigated steels was established. Low-temperature aging of the Fe-Cr-Ni martensite causes stratification of the solid solution. Nickel and aluminum intensify the stratification process, and strengthening of Kh13N8Yu maraging steel is due to stratification of the Fe-Cr-Ni matrix and the formation of intermetallic compounds.

1/1

UDC 681.846.73

USSR

ZVOLINSKIY, V. M., LYUBCHENKO, O. M., LUSHCHIKHIN, YU. A.

"Magnetic Recording and Reproduction Device"

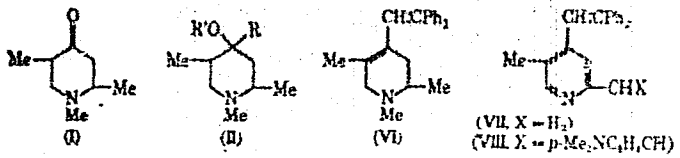
USSR Author's Certificate No 310297, filed 13 Mar 70, published 24 Sep 71 (from RZh --Avtomatika, Telemekhanika i vychislitel'naya tekhnika, No 4, Apr 72, Abstract No 4A533P)

Translation: A magnetic recording and reproduction device is proposed which contains a drive shaft, coils, and an analyzer in the form of a drum with magnetic heads attached to it. In order to achieve the minimum and uniform clearance between the tape and the drum, an air nozzle is installed above the turn of the tape encompassing the drum. This nozzle directs a stream of compressed air on the tape in the area where the drum surface moves under the tape. There is 1 illustration.

1/1

Acc. Nr: AP0100327 Abstracting Service: CHEMICAL ABST. 5/70 Ref. Code: UR 0409

111243n Esters of (1,2,5-trimethyl-4-hydroxy-4-piperidyl)- and phenyl(1,2,5-trimethyl-4-hydroxy-4-piperidyl)acetic acids. Prostakov, N. S.; Pleshakov, V. G.; Dorogov, V. V.; Zvolinskii, V. P. (Univ. Druzhby Nar. im. Lumumby, Moscow, USSR). *Khim. Geterotsikl. Soedin.* 1970, (1), 60–4 (Russ). To $Me_2CHMgCl$ (from 33 g Mg and 146 g Me_2CHCl in 550 ml Et_2O) was added 91.2 g $PhCH_2CO_2H$ in 300 ml C_6H_6, and to this 63 g 1,2,5-trimethyl-4-piperidone (I) in 200 ml C_6H_6 to give 145.9 g hygroscopic product, which was heated with 500 ml MeOH and 45 ml concd. H_2SO_4 to give 52 g II [R = $CHPhCO_2Me$, R′ = H], m. 117–17.5° (petroleum ether); methiodide m. 194° (EtOH). II (R = CH_2CO_2Et, R′ = H) (III) (6.87 g) 15 ml C_6H_6, and 5 ml pyridine with 8.5 g BzCl gave 1.5 g II.HCl (R = CH_2CO_2Et, R′ = Bz) (IV), m. 195–7° (2:1 MeOH-Et_2O). Also prepd. were II (R = CH_2CPh_2OH, R′ = H) (V), m. 148–9.5° [V.MeI, m. 188–91° (EtOH); V picrate, m. 165–8° (EtOH)], and VI, b$_1$ 169–87°, also obtained in 70% yield by dehydration of V.



REEL/FRAME
19841736

AP0100327

VI (30.3 g) in 200 ml C_4H_8 was passed during 8 hr through a tube filled with 100 ml catalyst K-16 at 420–30° to give 4200 ml gas (23°, 754 mm), and 16.3 g of a fraction, $b_{0.8}$ 160–91°, from which 10 g rose VII, m. 97–100° was obtained; VII.MeI m. 198–200.5° (EtOH); VII picrate m. 164–6° (EtOH); VII perchlorate m. 161° (EtOH). VII.MeI (1 g), 0.4 g *p*-$Me_2NC_6H_4CHO$, 0.3 ml piperidine, and 25 ml EtOH gave 0.4 g VIII.MeI, m. 255–8° (EtOH), bright-red. II and V have 6-membered chelate rings through intramol. H-bonding.

S. K. Banerjee

19841737

ZVONAREV, G. P.

Space Medicine

SO: JPRS 54396
03 Nov 71

UDC 612.13-06:612.766.2

DYNAMICS OF MINUTE BLOOD VOLUME DURING PROLONGED HYPOKINESIA AS ESTIMATED BY THE ACETYLENE METHOD (Spisok Avtorov)

[Article by G. P. Zvonarev, Moscow, Kosmicheskaya Biologiya i Meditsina, Russian, Vol 5, No 4, pp 50-53, 1971, submitted for publication 23 May 1969]

Abstract: The minute blood volume of six healthy male test subjects was studied by the Grehlmann acetylene method. By the end of the bedrest experiment the minute volume had declined significantly for all the test subjects. In comparison with the test subjects who performed physical exercises during the experiment, the test subjects exposed to complete hypokinesia exhibited a greater (threefold) decrease in minute and stroke volume. The mechanism underlying the decrease in stroke volume is unrelated to pulse rate variations. It appears to be related to changes in the cardiac contraction phases, blood flow velocity and circulating blood volume. The minute volume decrease came about with a decrease in oxygen consumption in the subjects exposed to maximum hypokinesia and an increase in the arteriovenous difference in the test subjects who were allowed physical exercises.

The most readily usable model of weightlessness is so-called hypokinesia, in which the role of the hydrostatic component of blood pressure in the vessels is reduced considerably and there is a considerable decrease in man's motor activity. A number of investigations have now been made of changes in hemodynamics, especially cardiac debit during a prolonged restriction of motor activity. Fenty, et al. were the first to describe the mechanism of changes in water-mineral metabolism arising during hypokinesia (decrease in plasma volume in the body, blood thickening and decrease in its total volume). A. I. Myasnikov, et al., in an experiment with four healthy males in a bedrest regime for a period of 20 days, demonstrated that the stroke volume decreased on the average by 6 ml and the minute blood volume (MBV) by 1.5 liters (dye dilution and tachosscillographic methods were used) in comparison with the initial levels. Many authors have noted that during hypokinesia there is an increase in cardiac contractions and the stroke and minute blood volumes are reduced (P. V. Buyanov, P. V. Buyanov, et al., N. Ye. Panferova, et al.).

1/2 020 UNCLASSIFIED PROCESSING DATE--18SEP70

TITLE--EFFECT OF LITHIUM OXIDE ON THE PROPERTIES OF A SERIES OF FERROELECTRIC MATERIALS -U-

AUTHOR-(03)-KLIMOV, V.V., DIDKOVSKAYA, O.S., ZVONIK, V.A.

COUNTRY OF INFO--USSR

SOURCE--IZV. AKAD. NAUK SSSR, NEORG. MATER. 1970, 6(1) 182-3

DATE PUBLISHED-------70

SUBJECT AREAS--MATERIALS

TOPIC TAGS--FERROELECTRIC MATERIAL, LITHIUM OXIDE, PIEZOELECTRIC MATERIAL, ABRIUM TITANATE, DIELECTRIC CONSTANT

CONTROL MARKING--NO RESTRICTIONS

DOCUMENT CLASS--UNCLASSIFIED

PROXY REEL/FRAME--1986/0258 STEP NO--UR/0363/70/006/001/0182/0183

CIRC ACCESSION NO--AP0102308

UNCLASSIFIED

2/2 020 UNCLASSIFIED

CIRC ACCESSION NO--AP0102308 PROCESSING DATE--18SEP70

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. THE EFFECT OF LI SUB2 O ADDNS. ON SINTERING AND PROPERTIES OF TIO SUB2 AND SEVERAL TITANATES WITH THE PEROVSKITE STRUCTURE WAS EXAMD. THE SAMPLES TO BE STUDIED WERE PREPD. BY CONVENTIONAL CERAMIC TECHNOLOGY BY FIRING TWICE MIXTS. OF TIO SUB2, LI SUB2 CO SUB3, BACO SUB3, PBCO SUB3, FE SUB2 O SUB3, AND NB SUB2 O SUB3. THE FIRING TEMP. WAS VARIED OVER A BROAD RANGE AS A FUNCTION OF THE COMPN. THE SHRINKAGE COEFF. OF TIO SUB2 WITHOUT ADDNS. IS SIGNIFICANTLY LOWER THAN THAT WITH LI SUB2 O ADDN. THE MAX. SHRINKAGE WAS OBSD. AT 1000 TO 1200DEGREES. SMALL LI SUB2 O ADDNS. ALSO CHANGE THE CHEM. PROPERTIES OF TIO SUB2 SIGNIFICANTLY, IN PARTICULAR ITS REACTIVITY. THE EFFECT OF LI SUB2 O ADDNS. ON THE ELECTROPHYS. PROPERTIES OF BATIO SUB3, AS WELL AS OF SOLID SOLNS. OF THE SYSTEM PBTIO SUB3 NEGATIVE PB(FE SUBONE HALF NB SUBONE HALF)O SUB3, WAS INVESTIGATED. IN THE LATTER SYSTEM, A CONTINUOUS SERIES OF SOLID SOLNS. IS FORMED. AT SIMILAR TO 93 MOL. PERCENT PB(FE SUBONE HALF NB SUBONE HALF)O SUB3, THE TETRAGONAL MODIFICATION CHANGES INTO THE RHOMBOHEDRAL PHASE, AND THE COMPNS. CLOSE TO THE MORPHOTROPIC BOUNDARY HAVE HIGH VALUES OF PIEZOELEC. PARAMETERS. HOWEVER, WITHOUT MODIFYING ADDITIVES, THESE SOLID SOLNS. HAVE A RELATIVELY HIGH COND. AND POLARIZE POORLY, WHICH MAKES THEIR INVESTIGATION AND APPLICATION DIFFICULT. ADDNS. OF LI SUB2 O ENHANCE A MARKED DECREASE IN COND. THIS DECREASE IN COND. IMPROVES THE POLARIZATION CONDITIONS OF THE CERAMIC, AS A RESULT OF WHICH PIEZOELEC. MATERIALS WITH HIGH VALUES OF THE PIEZOELEC. MODULUS, ELECTROMECH. COUPLING COEFF., AND DIELEC. CONST. ARE OBTAINED.

UNCLASSIFIED

USSR

UDC 621.165-22:533.6.011

MOROZOV, D. I., and ZVONITSKIY, M. S.

"Calculation of Peripheral Irregularity of the Flow in the Outlet of a Steam Turbine"

Energ. Mashinostroyeniye. Resp. Mezhved. Temat. Nauch-Tekh. Sb. [Power Engineering. Republic Interdepartmental Thematic Scientific-Technical Collection], No 13, 1972, pp 25- (from Referativnyy Zhurnal, No 10, Oct 72. 49. Turbostroyeniye. Single Issue. Abstract No 10.49.30)

Translation: It is demonstrated that the energy loss in the improved helix of the outlet is not high (8%). Simple calculation methods of the potential plane and nonplane flow in the improved helix are presented. The calculation results of the plane flow are compared with results of flow simulation on an electroconductive paper. It is demonstrated that the high peripheral flow irregularity is one of the main sources of the low efficiency of outlets. Recommendations are given and a series of known outlet improvements is analyzed. Two illustrations, six bibliographic references.

1/1

1/2 025 UNCLASSIFIED PROCESSING DATE--16OCT70
TITLE--CONCERNING THE PROBLEM OF ASSOCIATED CRANIOCEREBRAL INJURIES IN CURRENT TRAUMATOLOGY -U-
AUTHOR-(03)-FRAYERMAN, A.P., ZVONKOV, N.A., LIKHTERMAN, L.B.

COUNTRY OF INFO--USSR

SOURCE--VESTNIK KHIRURGII IMENI I. I. GREKOVA, 1970, VOL 104, NR 4, PP 122-126
DATE PUBLISHED-------70

SUBJECT AREAS--BIOLOGICAL AND MEDICAL SCIENCES

TOPIC TAGS--CEREBRUM, INJURY, TRAUMATOLOGY, BLOOD TRANSFUSION, HEMODYNAMICS

CONTROL MARKING--NO RESTRICTIONS

DOCUMENT CLASS--UNCLASSIFIED
PROXY REEL/FRAME--1988/0044 STEP NO--UR/0589/70/104/004/0122/0126

CIRC ACCESSION NO--AP0105143
UNCLASSIFIED

UNCLASSIFIED PROCESSING DATE--16OCT70

2/2 025

CIRC ACCESSION NO--AP0105143

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. BASED ON THE ANALYSIS OF 367 CLINICAL OBSERVATIONS OF ASSOCIATED CRANIOCEREBRAL INJURIES AND A SERIES OF EXPERIMENTS ON RABBITS, A DETERMINATION OF THE ASSOCIATED CRANIOCEREBRAL INJURY IS GIVEN, AS WELL AS ITS RATIONAL CLASSIFICATION. THE PECULIARITIES OF DIAGNOSIS, CLINICAL COURSE AND SURGICAL POLICY IN SHOCK, OCCURRED DUE TO THE ASSOCIATED CRANIOCEREBRAL TRAUMA IN 36.2PERCENT OF CASES, ARE DISCUSSED. IT IS BELIEVED THAT IN CASE OF SHOCK BLOOD AND BLOOD SUBSTITUTING SUBSTANCES TRANSFUSIONS ARE GREATLY WARRANTED IRRESPECTIVE OF GRAVITY OF CRANIOCEREBRAL TRAUMA AND IN AMOUNTS NECESSARY FOR STABILIZING HEMODYNAMICS.

UNCLASSIFIED

1/2 008 UNCLASSIFIED PROCESSING DATE--20NOV70

TITLE--SYNTHESIS OF D,ERYTHRO,DIHYDROSPHINGOSINE -U-

AUTHOR-(04)-ELLER, K.I., ZVONKOVA, YE.N., MITSNER, B.I., PREOBRAZHENSKIY, N.A.

COUNTRY OF INFO--USSR

SOURCE--ZH. ORG. KHIM. 1970, 6(4), 665-8

DATE PUBLISHED--------70

SUBJECT AREAS--CHEMISTRY, BIOLOGICAL AND MEDICAL SCIENCES

TOPIC TAGS--EPOXY COMPOUND, ORGANIC SYNTHESIS, AMINO ALCOHOL, GLUTAMIC ACID

CONTROL MARKING--NO RESTRICTIONS

DOCUMENT CLASS--UNCLASSIFIED

PROXY REEL/FRAME--2000/2043 STEP NO--UR/0366/70/006/004/0665/0668

CIRC ACCESSION NO--AP0125631

UNCLASSIFIED

APPROVED FOR RELEASE: 09/01/2001 CIA-RDP86-00513R002203820016-7"

2/2 008 UNCLASSIFIED PROCESSING DATE--20NOV70

CIRC ACCESSION NO--AP0125631

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. EPOXION. (SHOWN ON MICROFICHE). RACEMIC II WAS RESOLVED INTO ITS OPTICAL ANTIPODES WITH L AND D,GLUTAMIC ACIDS (H. E. CARTER, ET AL., 1953). FACILITY: MOSK. INST. TONKOI KHIM. TEKHNOL. IM. LOMONOSOVA, MOSCOW, USSR.

UNCLASSIFIED

Alkaloids

USSR

UDC 542.953/.954

CHUMACHENKO, A. V., ZVONKOVA, YE. N., and EVSTIGNEYEVA, R. P., Moscow Institute of Fine Chemistry imeni M. V. Lomonsov

"Synthesis of the Alkaloid Pilocarpine. The condensation of 1-Ethyl-2-carbalkoxymethyl-2-butenolide with Phthaloylglycye Chloride"

Leningrad, Zhurnal Organicheskoy Khimic, Vol 8, Vyp 5, May 72, pp 1100-1103

Abstract: The synthesis of dehydroaminomethyl pilopyl ketine hydrochloride was undertaken, since this is a possible key compound in the synthesis of the alkaloid pilocarpine. The sodium derivative of 1-ethyl-2-carboethoxymethyl or 1-ethyl-2-carbobutoxymethyl-2-butenolide was formed by reacting sodium suspended in ether or benzene with ethanol with the appropriate butenolide. This derivative is then reacted with phthaloylglycye chloride to form the condensation product: 1-ethyl-2-(phthalimidoacetocarbethoxy) or 1-ethyl-2-(phthalimidoacetocarbobutoxy)methyl-2-butenolide. The product was crystallized and its structure confirmed by UV and IR spectroscopy. Subsequently the condensation product was subjected to hydrolysis with simultaneous decarboxylation by HCl to give the desired pilopyl ketone hydrochloride. However, further acid hydrolysis also occurs, producing glycine hydrochloride, so that the desired salt is impure. The authors were unable to separate the two salts by chromatographic of physicochemical means.

1/1

USSR UDC: 51

ZVONOV, Ye. N.

"BESM-6 Computer Realization of a Method for Calculating Linear Models of Optimum Territorial Production Planning"

V sb. Mat. analiz ekon. modeley. Ch. 2 (Mathematical Analysis of Economic Models--collection of works. Part 2), Novosibirsk, 1971, pp 53-336 (from RZh-Kibernetika, No 1, Jan 72, Abstract No 1V807)

Translation: Flowchart and set of programs for the method developed in the foregoing article (abs. 1V806).

1/1

USSR

UDC: 51

BAKHTIN, A. Ye., ZVONOV, Ye. N.

"A Numerical Method for Calculating Linear Models of Optimum Territorial Production Planning"

V sb. Mat. analiz ekon. modeley. Ch. 2 (Mathematical Analysis of Economic Models--collection of works. Part 2), Novosibirsk, 1971, pp 3-52 (from RZh-Kibernetika, No 1, Jan 72, Abstract No 1V806)

[No abstract]

1/1

Pulse Technique

USSR

UDC 621.376.53(088.8)

ZVONTSOV, A. G., GRYZLOV, A. I., BELOV, YU. V., SOLOV'YEV, YU. V.

"Pulse Modulator"

USSR Author's Certificate No 252394, Filed 27 Sep 67, Published 12 Feb 70 (from RZh-Radiotekhnika, No 9, Sep 70, Abstract No 9D246P)

Translation: This author's certificate introduces a pulse modulator containing a high-voltage direct-current source with a charge choke and a separating diode, a hollow commutator made of two thyratrons with autonomous ignition generators, a storage element in the form of an artificial line and a load. In order to accelerate deionization of the thyratron and eliminate repeated breakdown by the return voltage, it is equipped with an auxiliary diode which is connected to the discharge circuit of the thyratron between its anode and a common terminal for connecting the separating diode with the artificial line.

1/1

1/6 013 UNCLASSIFIED PROCESSING DATE--09OCT70

TITLE--TIME AND LABOR: EFFECTS OF THE SCIENTIFIC TECHNICAL REVOLUTION ON THE NATURE AND CONTENT OF WORK -U-

AUTHOR--ZVORYKIN, A.A.

COUNTRY OF INFO--USSR

SOURCE--MOSCOW, SOTSIAL STICHESKAYA INDUSTRIYA, 12 FEB 70, P 3

DATE PUBLISHED--12FEB70

SUBJECT AREAS--BEHAVIORAL AND SOCIAL SCIENCES

TOPIC TAGS--INDUSTRIAL AUTOMATION, INDUSTRIAL PERSONNEL, R AND D MANPOWER GROWTH, PERSONNEL MANAGEMENT, LABOR EMPLOYMENT, WORKING CONDITION

CONTROL MARKING--NO RESTRICTIONS

DOCUMENT CLASS--UNCLASSIFIED
PROXY REEL/FRAME--1988/1129 STEP NO--UR/0533/70/000/000/0003/0003

CIRC ACCESSION NO--AN0105963
UNCLASSIFIED

UNCLASSIFIED PROCESSING DATE--09OCT70

2/6 013

CIRC ACCESSION NO--AN0105963

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. THE SCIENTIFIC TECHNICAL REVOLUTION HAS DEFINITE EFFECTS ON SOCIAL PROCESSES IN A MODERN SOCIETY. NONE OF THE CURRENT PROLBEMS CAN BE SOLVED WITHOUT CONSIDERING THE CONSEQUENCES OF THIE REVOLUTION. "COMMUNIST BUILDING," THE THESES PREPARED BY THE CENTRAL COMMITTEE OF THE CPSU FOR THE CENTENNIAL OF V. I. LENIN'S BIRTH STATE, "PRESUPPOSES A WIDE UTILIZATION OF THE ACHIEVEMENTS OF THE CONTEMPORARY SCIENTIFIC TECHNICAL REVOLUTION WHICH IS BRINGING ABOUT QUALITATIVE CHANGES IN PRODUCTION TECHNOLOGY, POWER ENGINEERING, TOOLS AND OBJECTS OF LABOR, MANAGEMENT ORGANIZATION, AND THE NATURE OF WORK DONE BY PEOPLE. IT ALSO DEEPLY AFFECTS EACH WORKER'S PERSONALITY BY PROMOTING HIS EDUCATION AND CULTURE AND EXPANDING HIS SCIENTIFIC AND TECHNICAL SCOPE". THE GENERAL DIRECTION OF THESE CHANGES WAS LONG AGO DEFINED BY MARXIST THEORY. IT IS AN OVERCOMING OF THE GAP BETWEEN INTELLECTUAL AND PHYSICAL WORK AND BETWEEN INDUSTRY AND AGRICULTURE, WITH INCREASED DEMANDS IMPOSED ON ALL KINDS OF HUMAN ACTIVITY. THIS GENERAL DIRECTION INCLUDES A NUMBER OF PARTICULAR PROBLEMS. FOR EXAMPLES, SOME BELIEVE THAT PHYSICAL WORK WILL BE REPLACED BY INTELLECTUAL WORK. IN THIS REALLY SO? EXTENSIVE STUDIES HAVE SHOWN THAT THE USE OF MODERN MACHINERY INDUCES CHANGES IN THE RELATION BETWEEN PHYSICAL AND INTELLECTUAL WORK IN A NUMBER OF PROFESSIONS. WHAT EXACTLY HAVE THESE INVESTIGATIONS SHOWN? LET US CONSIDER MACHINISTS, MECHANICS, AND THEIR HELPERS, TRACTOR AND TRUCK OPERATORS. THIS NUMEROUS AND RAPIDLY GROWING GROUP OF WORKERS HAVE HIGH QUALIFICATIONS. AS A RULE, THEIR WORK INVOLVES A RELATIVELY SMALL PHYSICAL EFFORT AND MENTAL WORK.

UNCLASSIFIED

3/6 013 UNCLASSIFIED PROCESSING DATE--09OCT70

CIRC ACCESSION NO--AN0105963

ABSTRACT/EXTRACT--IN THE FUTURE, THESE WORKERS WILL BE REPLACED BY AUTOMATED MECHANISMS. HOWEVER, THESE PROFESSIONS WILL REPRESENT THE BASIC CORE OF INDUSTRIAL WORKERS FOR A LONG TIME TO COME. GROWING TECHNOLOGY WILL INCREASE THE ROLE AND SIGNIFICANCE OF WORKERS WHO ASSEMBLE, REPAIR, AND ADJUST EQUIPMENT. I AM REFERRING TO FOREMEN, ADJUSTERS OF MECHANISMS AND MACHINE TOOLS, LOCKSMITHS, AND ELECTRICIANS. WITH INCREASING ROLE OF ENGINEERING AND TECHNICAL WORK, VARIOUSLY AFFECTING WORKERS' JOBS, THERE WILL BE NEW PROFESSIONS ARISING DIRECTELY FROM THE SCIENTIFIC TECHNICAL REVOLUTION. A STUDY OF THE WORK DONE BY THE MODERN WORKER HAS LED US TO THE CONCLUSION THAT INSTEAD OF ONE TYPE OF WORK (PHYSICAL) BEING REPLACED BY ANOTHER (MENTAL), A NEW CORRELATION IS BEING ESTABLISHED BETWEEN THEM. PHYSICAL WORK, FREED OF EXCESSIVE BURDEN, BECOMES MEANINGFUL AND REQUIRES REEVALUATING ALL WORK CONDITIONS AND MAKING OPTIMALLY JUSTIFIED DECISIONS. IN MANY PLACES, THE TRANSITION TO FULLY AUTOMATED PRODUCTION PROCEEDS MUCH TOO SLOWLY. AS A RESULT, THERE IS STILL MUCH TOO MUCH WORK REQUIRING PHYSICAL EFFORT. OCCASIONALLY, ONE CAN OBSERVE THE SEEMINGLY PARADOX SITUATION: THE GREATER THE AUTOMATION IN AN ENTERPRISE, THE LARGER IS THE PROPORTION OF PHYSICAL WORK IN ITS OVERALL STRUCTURE. HOW DOES THIS HAPPEN? WELL, AUTOMATION AND MECHANIZATION SHARPLY REDUCE THE NUMBER OF PERSONS WORKING IN BASIC PRODUCTION. THEREFORE, THE NUMBER OF WORKERS PERFORMING AUZILARY OPERATIONS RELATIVELY INCREASES, AND THUS THEIR SHARE OF WORK IN THE TOTAL LABOR EXPENDITURES ALSO INCREASES.

UNCLASSIFIED

4/6 013 UNCLASSIFIED PROCESSING DATE--090CT70

CIRC ACCESSION NO--AN0105963

ABSTRACT/EXTRACT--THE SECOND PROBLEM IS THE CHANGED NATURE OF WORK ENSUING FROM THE USE OF CONVEYORS AND SEMIAUTOMATED MACHINES. FROM THE VIEWPOINT PHYSICAL EFFORT, THE AMOUNT OF HARD WORK DECREASES. AT THE SAME TIME, THE PROBLEM OF WORK MONOTONY ARISES: THE VERSATILE ACTIONS ASSOCIATED WITH CERTAIN PHYSICAL EFFORTS ARE REPLACED BY AN EASY BUT VERY MONOTONOUS OPERATION. THERE IS A WHOLE SET OF METHODS AND MEASURES WHICH CAN REDUCE THE NEGATIVE EFFECTS OF LABOR MONOTONY. NONETHELESS, THIS IS A REAL PROBLEM WHICH MUST BE EFFECTIVELY DEALT WITH. IN AUTOMATED PRODUCTION MAN IS FREED OF PHYSICAL EFFORT AND OCCASIONALLY EVEN OF ALL PHYSICAL ACTION. HE WATCHES THE PROCESSES BY INSTRUMENTS AND INTERVENES ONLY WHEN DEVIATIONS FROM THE NORM DEVELOP. IN THIS SITUATION, MOTOR FUNCTIONS ASSOCIATED WITH PHYSICAL WORK ARE REPLACED BY SENSORY FUNCTIONS. OFTEN, THIS IS NO IMPROVEMENT BUT WORSENING OF WORK CONDITIONS. WORKERS WHO WATCH INSTRUMENTS BECOME TIRED FROM THE STRAIN OF ANTICIPATING DEVIATIONS WHICH THEY MUST IMMEDIATELY ELIMINATE IN ORDER TO PREVENT SERIOUS CONSEQUENCES AND BREAKDOWNS. IN THE FUTURE, AUTOMATED PROCESSES WILL ALSO BE CONTROLLED BY AUTOMATED MACHINES. HOWEVER, THE CURRENT PROBLEM WILL REMAIN WITH US FOR A LONG TIME. THE DIVERSITY OF WORK AND NEW JOBS HAVE RAISED THE PROBLEM OF INDIVIDUAL SELECTION OF WORKERS. PEOPLE MUST BE PROFESSIONALLY CLASSIFIED AND ORIENTED SO THAT THE PSYCHOPHYSIOLOGICAL PROPERTIES OF EACH MAN CORRESPOND TO HIS JOB. ON THE BASIS OF AVAILABLE INFORMATION, THE INSTITUTE OF CONCRETE SOCIAL RESEARCH OF THE USSR ACADEMY OF SCIENCES HAS WORKED OUT A TYPOLOGY OF INDIVIDUAL BEHAVIOR.

UNCLASSIFIED

5/6 013 UNCLASSIFIED

CIRC ACCESSION NO--AN0105963 PROCESSING DATE--090CT70

ABSTRACT/EXTRACT--ON THE BASIS OF VOLUMINOUS EXPERIMENTAL DATA IT WAS ESTABLISHE THAT FOR EACH OF THE 12 TYPES THERE IS A DEFINITE SPHERE OF ACTIVITY IN WHICH MAN CAN BEST PUT HIS POTENTIAL TO WORK AND RECEIVE SATISFACTION. THIS IS SO, PROVIDED THAT WORK CONDITIONS AND HUMAN RELATIONS DO NOT SUPPRESS HIS INTEREST IN THE JOB. THE TASK OF SCIENCE IS TO FACILITATE OPTIMUM MATCHING OF PERSONALITY TYPE TO JOB TYPE. LET US CONSIDER THE PROBLEM OF YOUNG PERSONS ADAPTING TO THEIR SPHERE OF WORK. RIGHT NOW, MANY OF THEM ARE TRYING TO CHANGE THEIR PROFESSIONS, OFTEN SUCH THAT HAVE BEEN ACQUIRED AT UNIVERSITIES. WHAT IS THE CAUSE OF THIS TREND? THERE ARE MANY CAUSES, INCLUDING INCOMPATIBILITY BETWEEN PERSONALITY AND THE SELECTED SPHERE OF WORK. BY MEANS OF SPECIAL EXPERIMENTAL TESTS WE HAVE ESTABLISHED WHAT PERSONALITY TYPES PREVAIL IN ONE OR ANOTHE SPHERE OF WORK. THE RESULTS HAVE SHOWN THAT, AS A RULE, EACH WORK TYPE IS OPTIMALLY MATCH BY ONE OR SEVERAL PERSONALITY TYPES. THEN WE PERFORMED A STUDY ON 9TH AND 10TH GRADE PUPILS. RELYING ON DATA OBTAINED FROM AN EXTENSIVE INVESTIGATION OF THE MOST COMMON PROFESSIONS, WE ARE ABLE, WITH A CONSIDERABLE DEGREE OF EXACTNESS, TO RECOMMEND TO PUPILS JOBS THAT BEST CORRESPOND TO THEIR PERSONALITY TYPES. OF COURSE, THIS IS ONLY THE INITIAL STAGE OF THIS WORK. MORE RESEARCH IS NEEDED TO DETERMINE THE MOST FAVORABLE SPHERE OF ACTIVITY FOR ANY PERSON. THE SCIENTIFIC TECHNICAL REVOLUTION IS NOT ONLY CHANGING THE NATURE OF WORK PERFORMED BY PRODUCTION WORKERS, BUT IT IS ALSO DEEPLY AFFECTING THE ENTIRE SOCIAL AND PROFESSIONAL STRUCTURE OF THE SOVIET SOCIETY.

UNCLASSIFIED

6/6 013 UNCLASSIFIED

CIRC ACCESSION NO--AN0105963 PROCESSING DATE--090CT70

ABSTRACT/EXTRACT--THEREFORE, METHODS ARE BEING DEVELOPED WHICH WILL ENABLE US TO MAKE QUANTITATIVE ESTIMATES OF THESE CHANGES FOR THE NEXT FIVE YEAR PERIOD AND THE MORE REMOTE FUTURE (UP TO 2000). IN WHICH DIRECTION WILL THE WORK STRUCTURE CHANGE? TAKING INTO ACCOUNT OUR ENTIRE POPULATION (WITHOUT MILITARY PERSONNEL AND STUDENTS), IT HAS BEEN ESTABLISHED THAT THE PROPORTION OF PEOPLE WORKING IN INDUSTRY INCREASED FROM 22.6 PERCENT IN 1950 TO 29.5 PERCENT IN 1968. IF THE PRESENT TREND IS MAINTAINED (AND THIS IS THE PREMISE OF ALL CALCULATIONS), INDUSTRY WILL EMPLOY 30.4 PERCENT OF THE POPULATION IN 1970 AND 35-6 PERCENT IN 2000. IN AGRICULTURE, THE PICTURE IS REVERSE: 45.4 PERCENT WERE EMPLOYED IN 1950, 26.1 PERCENT IN 1968, APPROXIMATELY 24 PERCENT WILL BE EMPLOYED IN 1970, AND 11.4 PERCENT IN 2000. EMPLOYMENT IN BUILDING IS PERSISTENTLY INCREASING; THIS PROCESS IS PROCESS IS SOMEWHAT SLOWER IN TRANSPORTATION. PARTICULARLY CHARACTERISTIC IS THE EMPLOYMENT GROWTH IN SCIENCE AND SCIENTIFIC SERVICE WHERE 1.1 PERCENT OF WORKING PEOPLE WERE EMPLOYED IN 1950, 2.9 PERCENT IN 1968, 3.2 PERCENT WILL BE EMPLOYED IN 1970, AND ALMOST 5 PERCENT IN 2000. IN FACT, THE ACTUAL GROWTH IN 1967-1969 WAS GREATER THAN THAT ESTIMATED. THE PROBLEM OF STUDYING CHANGES IN THE NATURE OF WORK UNDER MODERN CIRCUMSTANCES IS GAINING GREAT SIGNIFICANCE. THE MORE WE UNDERSTAND THE ESSENCE OF THESE CHANGES, THE BETTER WILL WE BE ABLE TO SOLVE PROBLEMS OF COMMUNIST BUILDING.

UNCLASSIFIED

USSR UDC 621.382.002

BORISKINA, L.V., ZVORYKIN, D.B., KABANOV, A.N., YUDAYEV, V.N.

"Electron Lithography"

Tr. Mosk. in-ta elektron.mashinostr. (Works Of The Moscow Institute Of Electrical Machine Building), 1970, No 9, pp 5-31 (from RZh:Elektronika i yeye primeneniye, No 2, Feb 72, Abstract No 23341)

Translation: The possibility and methods are discussed of using an electron beam in the production of semiconductor devices. Results are compared which are obtained with the aid of positive and negative, native and foreign photoresists based on oxide protective films, and also without use of photoresists (in this case organosilicon compounds are used as protective films). Two methods are compared of obtaining an electron image -- the scanning beam and the microshadow method. Use of electron diffraction examination makes it possible to obtain on SiO_2 a line with a width down to 0.6 micrometer. 7 ill. 1 tab. 39 ref. M.K.

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ZVORYKIN, V. N.

Bats

3

JPRS 56073

23 May 1972

(corrected reprint)

UDC 591.185.1+591.185.5

SPATIAL ORIENTATION OF BATS UNDER THE INFLUENCE OF INCREASED GRAVITY

[Article by E. Sh. Ayrapet'yants, V. N. Zvorykin, B. M. Savin; Moscow, Doklady Akademii Nauk SSSR, Russian, No [illegible], [illegible], pp 723-725]

Bats orient themselves in space mainly by echolocation [1]. Presumably, during flight this mechanism must interact closely both with the functional system of acceleration to ensure the perception of body position in space and with the accelerations caused by change in direction and speed of flight [2, 3]. However, no experimental data are available as yet on this matter. One possible way of studying it is to determine the nature of spatial analysis in echolocating animals after sharp functional changes in their acceleration system resulting from exposure to increased gravity.

Chronic experiments were carried out on two bat species, *Myotis oxygnathus* and *Pipistrellus pipistrellus*. Increased gravity (hypergravity) was created by rotation on a centrifuge with a radius of 2 m. The animals were subjected to single or series (of 4 single) accelerations in two directions: head - pelvis (0°) or pelvis - head (180°) - at intensities of 25 to 120 g lasting 15 or 60 seconds. The acceleration increase gradient (Δg) was 5 to 6 g/sec while the declaration gradient was 10 to 12 g/sec. The animals were kept in form-fitting containers in the centrifuge in order to prevent local accelerations.

The effect of preceding hypergravity on spatial analysis was judged from the ability to detect and overcome obstacles in the form of some wires of threshold(?) diameter (0.11 to 0.14 mm) strung vertically. The distance between them in the experiments with *M. oxygnathus* and *P. pipistrellus* was 50 and 25 cm, respectively. The ratio of correct (without touching) and wrong (touching the wires) flights through the barrier served as an indicator of the state of spatial analysis. The threshold values of the diameter of the wires (75% significance) found by each of the experimental animals were determined in control experiments and before each exposure to acceleration. The animals' reaction to hypergravity was assessed from their general condition and behavior as well as from the coordination of

ZVORYKIN, V.N.

Bats

USC 591.185.1+591.185.5

JPRS: 56071

23 May 1972

SPATIAL ORIENTATION OF BATS UNDER THE INFLUENCE OF INCREASED GRAVITY

[Article by E. Sh. Ayrapet'yants, V. N. Zvorykin, S. Ye. Savin; Moscow, Doklady Akademii Nauk SSSR, Russian, [illegible], submitted 12 February 1971, pp 721-723]

Bats orient themselves in space mainly by echolocation [1]. Presumably, during flight this mechanism must interact closely both with the functional system of acceleration to ensure the perception of body position in space and with the accelerations caused by change in direction and speed of flight [2, 3]. However, no experimental data are available as yet on this matter. One possible way of studying it is to determine the nature of spatial analysis in echolocating animals after short functional changes in their acceleration system resulting from exposure to increased gravity.

Chronic experiments were carried out on two bat species, Myotis oxygnathus and Pipistrellus pipistrellus. Increased gravity (hypergravity) was created by rotation on a centrifuge with a radius of 2 m. The animals were subjected to single or series (of 4 single) accelerations in two directions: head - pelvis (0°) or pelvis - head (180°) - at intensities of 25 to 120 g lasting 15 or 60 seconds. The acceleration increase gradient (Δg) was 5 to 6 g/sec while the declaration increase gradient was 10 to 12 g/sec. The animals were kept in form-fitting containers in the centrifuge in order to prevent local accelerations.

The effect of preceding hypergravity on spatial analysis was judged from the ability to detect and overcome obstacles in the form of some wires of threshold(?) diameter (0.11 to 0.14 mm) stretched vertically. The distance between them in the experiments with M. oxygnathus and P. pipistrellus was 50 and 25 cm, respectively. The ratio of correct (without touching) and wrong (touching the wires) flights through the barrier served as an indicator of the state of spatial analysis. The threshold values of the diameter of the wires (75% significance) found by each of the animals were determined in control experiments and before each exposure to acceleration. The animals' reaction to hypergravity was assessed from their general condition and behavior as well as from the coordination of

USSR

UDC 611.84/.85.06-019

ZVORYKIN, V. P., Museum of Brain Evolution, Institute of the Brain USSR, Academy of Medical Sciences, Moscow

"Quantitative and Cytoarchitectonic Characteristics of Auditory and Visual Formations in the Brain Stem of the Bat, Dolphin, and Man, and the Biological Significance of the Analysors"

Leningrad, Arkhiv Anatomii Gistologii i Embriologii, Vol 60, No 4, Apr 71, pp 50-62

Abstract: An extensive histological examination was performed on a series of frontal sections of the brain stem of the bat, dolphin, and man to study the development of auditory and visual pathways and subcortical centers. The selection of the species was based on the fact that bats always rely on the auditory sense, dolphins are guided by audition under water but by vision above water, and human beings use chiefly eyes for discrimination (except for communication by speech, which represents a special case). Significant differences were observed in the cytoarchitecture, the overall size of any formation (geniculate bodies, colliculi, and other nuclei), and the number of individual elements (cells, fibers, and synaptic connections) per unit volume. The findings indicate that the leading or dominant sense is determined by the morphology of the visual and auditory structures in the brain stem.

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1/2 016 UNCLASSIFIED PROCESSING DATE--04DEC70

TITLE--ANISOTROPY OF MANGANESE TUNGSTATE -U-

AUTHOR-(03)-MOISEYEV, V.A., ZVYAGIN, A.I., NESTERENKO, N.M.

COUNTRY OF INFO--USSR

SOURCE--FIZ. TVERD. TELA 1970, 12(5), 1551-2

DATE PUBLISHED--------70

SUBJECT AREAS--CHEMISTRY

TOPIC TAGS--ANISOTROPY, EPR, MANGANESE COMPOUND, TUNGSTATE, HYPERFINE STRUCTURE

CONTROL MARKING--NO RESTRICTIONS

DOCUMENT CLASS--UNCLASSIFIED

PROXY REEL/FRAME--3005/0964 STEP NO--UR/0181/70/012/005/1551/1552

CIRC ACCESSION NO--AP0133050

UNCLASSIFIED

2/2 016 UNCLASSIFIED

CIRC ACCESSION NO--AP0133050 PROCESSING DATE--04DEC70

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. THE 1 ION ANISOTRPY OF MNWO SUB4 WAS EVALUATED BY ANAL. OF THE PER LINE OF MN PRIME2 POSITIVE MEASURED AT 30 GHZ AT ROOM TEMP. THE LINE WAS ANALYZED BY THE METHOD OF MOMENTS UNDER THE ASSUMPTION OF ANISOTROPIC EXCHANGE INTERACTION AND WITHOUT CONSIDERATION OF BROADENING OF THE HYPERFINE STRUCTURE, WHICH IN THIS CASE IS SMALL IN COMPARISON WITH DIPOLE-DIPOLE BROADENING.

FACILITY: FIZ. TEKH. INST. NIZKIKH TEMP., KHARKOV, USSR.

UNCLASSIFIED

Acc. Nr: AP0048281 Abstracting Service: CHEMICAL ABST. Ref. Code: 4/80/81

94653b Magnetic properties of cobalt tungutate. Zvyagin, A. I.; Khats'ko, E. N. (Fiz.-Tekh. Inst. Nizkikh Temp., Khar'kov, USSR). *Fiz. Tverd. Tela* 1970, 12(1), 314–16 (Russ). The temp. dependence of magnetic susceptibility of single-crystal Co tungstate and its anisotropy at 4.2–30°K in a magnetic field of 5 kOe was studied by the Faraday method. In the paramagnetic temp. region, anisotropy of the temp. dependence was obsd. The main axes of the magnetic susceptibility tensor, to which correspond extremum values of susceptibility, are oriented relative to the crystal axes of $CoWO_4$ in such a way that the magnetic axis *y* coincides with the cryst. axis *b*, and axes *x* and *z* are in the basis plane *ac* of the crystal at an angle of ~45° to the axes *a* and *c*. Above the Neel temp., T_N, the temp. dependence of susceptibility obeys the Curie-Weiss law. Below T_N there are also 3 extremum values of magnetic susceptibility corresponding to the *x*, *y*, and *z* axes. This indicates that $CoWO_4$ is a biaxial antiferromagnet.

A. Libackyj

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REEL/FRAME 19792003

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Acc. Nr. AP0048294 Abstracting Service: CHEMICAL ABST. 5/70 Ref. Code 4R0181

105307v Antiferromagnetic resonance in single crystals of $Mn_{1-x}Co_xF_2$ and $Mn_{1-x}Ni_xF_2$ systems. Petrutin, A. I.; Zvyagin, A. I. (Fiz.-Tekh. Inst. Nizkikh Temp., Kharkov, USSR). *Fiz. Tverd. Tela* 1970, 12(2), 623–4 (Russ). Results are given of the investigation of antiferromagnetic resonance in single crystals of mixed fluorides of Mn, Co, and Ni with a large content of MnF_2. Measurements were carried out at 4.2°K with a radiospectrometer of submm range. In mixed fluorides, even with sufficiently large amt. of impurity (≤20%), a homogeneous antiferromagnetic resonance is obsd., the frequency of which depends on the concn. of impurity. In terms of the phenomenological theory, the shift in the resonance frequency from its position in pure MnF_2, depending on the concn. of impurity, can be qual. explained by the variation of the anisotropy and the exchange energies, the 1st variation being the most important. The curves are given of the dependence of the resonance frequency in mixed fluorides on impurity concn. A. Libackyj

1/1

REEL/FRAME 19792016

18 N+

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UDC:

ZVYAGIN, A. I. and KHATS'KO, YE. N., Physico-Technical Institute of Low Temperatures of the Ukrainian Academy of Sciences, Kharkov (Fiziko-tekhnicheskiy institut nizkikh temperatur AN USSR, Khar'kov)

"Magnetic Properties of Cobalt Tungstenate"

Leningrad, Fizika Tverdogo Tela, Vol 12, No 1, January 1970, pp 314-16

Abstract: The authors study the temperature behavior of the magnetic susceptibility of cobalt tungstenate single crystals and its anisotropy in the 4.2-30°K interval in a H~5 kev magnetic field using the Faraday method. Specimen temperatures were measured by a germanium resistance thermometer in the 4.2-30°K range and with a copper thermocouple above 30°K. A graph is given for the temperature variation of the extremal magnetic susceptibility of cobalt tungstenate. The results show that cobalt tungstenate is a biaxial antiferromagnetic. The main source of anisotropy, comparing $CoWO_4$, isomorphic $ZnWO_4$, and $CdWO_4$, is single-ion crystallographic anisotropy. The fact that the main axes of the tensor for the magnetic susceptibility of $CoWO_4$ coincide with the axes of the local crystal field and not with the crystallographic axes of cobalt tungstenate validates the above conclusion.

1/1

USSR

NIKITIN, Ye. Ye.; ZVYAGIN, I. V.

UDC 57.083.1

Moscow, Zamorazhivaniye i Vysushivaniye Biologicheskikh Preparatov (Freezing and Drying of Biological Preparations), "Kolos," 1971, 344 pp

Translation: Annotation: Data on the utilization of low temperatures and drying to preserve formed elements and blood plasma, immune and diagnostic sera, bone marrow, animal tissue and cell cultures, bacteria, viruses and bacteriophages, and live and inactivated vaccines are collated and analyzed in this book.

Along with the thooretical principles of stabilization of biological preparations, and certain problems on the nature of anabiosis of microorganisms, practical recommendations on lyophilization of different biopreparations are presented in the monograph.

The book may serve as a useful manual for scientists -- hematologists, microbiologists, virologists, immunologists, medical and veterinary physicians in diagnostic and bacteriological

1/8

USSR

NIKITIN, Ye. Ye., et al, Zamorazhivaniye i Vysushivaniye Biologicheskikh Preparatov, "Kolos," 1971, 344 pp

laboratories, technicians working in the biological industry, and students at biological, medical, and veterinary schools of higher education and faculties.

Table of Contents

USSR

NIKITIN, Ye. Ye., et al, Zamorazhivaniye i Vysushivaniye Biologicheskikh Preparatov, "Kolos," 1971, 344 pp

3/8

USSR

NIKITIN, Ye. Ye., et al, Zamorazhivaniye i Vysushivaniye Biologicheskikh Preparatov, "Kolos," 1971, 344 pp

USSR

NIKITIN, Ye. Ye., et al, Zamorazhivaniye i Vysushivaniye Biologicheskikh Preparatov, "Kolos," 1971, 344 pp

5/8

USSR

NIKITIN, Ye. Ye., et al, Zamorazhivaniye i Vysushivaniye Biologicheskikh Preparatov, "Kolos," 1971, 344 pp

6/8

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NIKITIN, Ye. Ye., et al, Zamorazhivaniye i Vysushivaniye Biologicheskikh Preparatov, "Kolos," 1971, 344 pp

7/8

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NIKITIN, Ye. Ye., et al, Zamorazhivaniye i Vysushivaniye Biologicheskikh Preparatov, "Kolos," 1971, 344 pp

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USSR

UDC 661.143:546.431'821'185(088.8)

GUGEL', B. M., LODYGIN, N. A., GOLUBEV, I. F., KHIZHA, V. S., BLYAKHMAN, E. A., KUTSENKO, N. A., SIDOROV, M. D., ZVYAGIN, V. B., VAKHRAMOV, V. P., AGAPOV, V. I., GARKUSHA, V. A., KHUSAINOVA, R. S.

"Phosphor for Low-Pressure Luminescent Tubes"

USSR Author's Certificate No 336342, filed 19 May 70, published 22 May 72 (from RZh-Khimiya, No 2(II), Feb 73, Abstract No 2L148P)

Translation: In order to increase the light yield of the tubes, the proposed phosphor includes the following: barium-titanium phosphate, calcium halophosphate, strontium and magnesium orthophosphate and magnesium fluorogermanate. The barium-titanium phosphate, the calcium halophosphate, the strontium orthophosphate, magnesium orthophosphate and magnesium fluorogermanate are introduced in the following proportions by weight: 4-6:2.5-4:0.4-0.8:0.13-0.25 respectively. As an example, let us take weighed samples of 4.36 kg of barium-titanium phosphate, 3.84 kg of calcium halophosphate, 0.40 kg of magnesium-strontium orthophosphate and 0.24 kg of magnesium fluorogermanate. Put them in a porcelain cylinder and mix for 1 hour. A suspension is prepared from the mixture obtained and it is applied to the tubes.

1/1

USSR

UDC 621.382.3

ZVYAGIN, V.I., SUNEP, YU. I., ZATOLOKA, S.I., YEGOROV, A.I., AKMENTYN'SH, YA.YA., PUNDUR, P.A.

"Determination Of The Effectiveness Of Collecting Charge Carriers In Semiconductor Devices"

Elektron. tekhnika. Nauchno-tekhn. sb. Mikroelektronika (Electronic Technology. Scientific-Technical Collection. Microelectronics), 1970, Issue 2(23), pp 67-70 (from RZh--Elektronika i yeye primeneniye, No 4, April 1971, Abstract No 4B233)

Translation: The method described for determination of the effectiveness of collection of non-equilibrium carriers in various regions of a silicon planar transistor involves measurement of the charge collected by a p-n junction. Corresponding measurements are conducted on a KT331 device before and after irradiation by nucleur radiation. Formulas are given which connect the effectivenss of collection with the volume life time of non-equilibrium charge carriers. Author's abstract.

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USSR

UDC 621.382.5

ZVYAGINA, E. N., OSTROVSKIY, G. I., TIKHONOV, V. I., KILIPENKO, V. V., CHERNYAVSKIY, V. V.

"Study of Contact Resistances in Thermoelectric Materials"

V sb. Nizkotemperaturn. termoelektrich. materialy (Low-Temperature Thermoelectric Materials -- Collection of Works), Kisinev, 1970, pp 44-47 (from RZh--Elektronika i yeye primenneiye, No 5, 1971, Abstract No 5B187)

Translation: A method is proposed for measurement of the contact resistances of thermopiles, based on an increase of the number of switching layers in the specimen. In contrast to the sonde-type, the proposed method has great sensitivity, gives good reproducibility of results ($\sim$4%, whereas the sonde type is as much as 20% [sic]) and makes it possible to measure contact resistance in a wide range of temperature. 2 ill. 4 ref. Author's Abstract.

1/1

USSR

UDC 621.382.5

ZVYAGINA, E.N., KILIPENKO, V.V., LEBEDEV, V.V.

"Ceramic Thermojunctions Applicable To Thermoelectric Devices"

Kholodil'n. tekhn. i tekhnol. Resp. mezhved. nauchno-tekhn. sb. (Refrigerator Engineering And Technology. Republic Interdepartmental Scientific-Technical Collection) 1970, No 9, pp 17-23 (from RZh--Elektronika i yeye primeneniye, No 12, December 1970, Abstract No 12B223)

Translation: Effective thermojunctions with minimum temperature losses have been developed. A method is proposed for chemical nickel plating of a ceramic, assuring a strength for bonding it with commutation plates of not less than 150 kg/cm^2. A model technological process is developed for preparation of thermojunctions on ceramic films, on the base of which thermojunctions from ceramics of various sorts are produced. Specimens successfully withstood tests for mechanical stability, moisture resistance, thermal shock, electrical breakdown, etc. Author's Summary.

1/1

USSR

UDC 669.140:620.10

SIDORIN, I. I., Doctor of Technical Sciences, Professor, and ZVYAGINA, L. D., Aspirant, Moscow Higher Technical School imeni N. E. Bauman

"A Comparative Investigation of High-Speed Steels for Red Hardness and Wear at High Temperatures"

Moscow, Izvestiya Vysshikh Uchebnykh Zavedeniy--Mashinostroyeniye, No 10, 1973, pp 139-143

Abstract: New methods have been applied for the investigation of high-speed steels. This has permitted the authors to arrive at the following practical conclusions:

1. The hardness and wear resistance of high-speed steels at high temperatures are determined more precisely by direct methods than by technological methods, since the latter are always affected by extraneous factors.

2. Optimal hardness and wear resistance are possessed not by steels with a high tungsten content (R18, R12), but by steels with a lower content of tungsten, additionally alloyed by cobalt and vanadium (R9K5, R9F5).

3. R9K5 and R9K10 cobalt high-speed steels are practically identical with respect to red hardness and wear resistance, and therefore it is inexpedient to use steel R9K10.

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SIDORIN, I. I. and ZVYAGINA, L. D., Izvestiya Vysshikh Uchebnykh Zavedeniy--Mashinostroyeniye, No 10, 1973, pp 139-143

4. In view of the high cost of cobalt and the undesirability of its employment for the mass production of high-speed steels, steels R6M5 and R6M3 are the most economical and have sufficiently high properties of red hardness and wear resistance.

5. At a temperature of 700°C, all the tested steels have the same hardness, equal to 300-350 HV, and differ with respect to hardness at 600° as follows:

Steel R9K5 -- 750 HV
" R9F5 -- 700 HV
R6M5 -- 700 HV
R6M3 -- 600 HV
R18 -- 600 HV

They should differ with respect to red hardness according to the same sequence. 3 figures. 1 table. 2 references.

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1/2 028 UNCLASSIFIED PROCESSING DATE--04DEC70

TITLE--MAGNETORESISTANCE OF ERBIUM YTTRIUM ALLOYS AT LOW TEMPERATURES -U-

AUTHOR-(02)-NIKOLSKIY, G.S., ZVYAGINA, N.M.

COUNTRY OF INFO--USSR

SOURCE--FIZ. TVERD. TELA 1970, 12(5), 1525-7

DATE PUBLISHED-------70

SUBJECT AREAS--MATERIALS, PHYSICS

TOPIC TAGS--ERBIUM ALLOY, YTTRIUM ALLOY, MAGNETORESISTANCE, MAGNETIC FIELD, ELECTRIC RESISTANCE, MAGNETIC FIELD, LOW TEMPERATURE EFFECT, ANTIFERROMAGNETIC MATERIAL, HIGH PURITY METAL

CONTROL MARKING--NO RESTRICTIONS

DOCUMENT CLASS--UNCLASSIFIED

PROXY REEL/FRAME--3005/0952 STEP NO--UR/0181/70/012/005/1525/1527

CIRC ACCESSION NO--AP0133038

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2/2 028 UNCLASSIFIED PROCESSING DATE--04DEC70

CIRC ACCESSION NO--AP0133038

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. THE DEPENDENCE OF THE ELEC. RESISTANCE OF THE ALLOY ON THE MAGNETIC FIELD IS COMPLETELY DIFFERENT FROM THAT OF THE PURE METAL. THIS CAN BE RELATED TO A HIGHER STABILITY OF THE ANTIFERROMAGNETIC STRUCTURE IN THE ALLOY. ON FURTHER INCREASE IN Y CONTENT, THE GAP IN THE SPIN WAVE SPECTRUM CONTINUES TO DECREASE. THIS IS APPARENTLY DUE TO A DECREASE IN THE EXCHANGE INTERACTION ENERGY.

FACILITY: FIZ.-TEKH. INST. NIZKIKH TEMP., KHARKOV, USSR.

UNCLASSIFIED

1/2 024 UNCLASSIFIED PROCESSING DATE--20NOV70

TITLE--MECHANISMS OF ERBIUM THERMAL CONDUCTIVITY -U-

AUTHOR-(03)-NIKOLSKIY, G.S., ZVYAGINA, N.M., YEREMENKO, V.V.

COUNTRY OF INFO--USSR

SOURCE--FIZ. TVERD. TELA 1970, 12(4), 1275-7

DATE PUBLISHED--------70

SUBJECT AREAS--PHYSICS, MATERIALS

TOPIC TAGS--ERBIUM ALLOY, THERMAL CONDUCTIVITY, MAGNETIC FIELD, RARE EARTH METAL, YTTRIUM ALLOY, MAGNETORESISTANCE, CURIE POINT, SPIN WAVE SPECTRUM, MAGNETIC STRUCTURE

CONTROL MARKING--NO RESTRICTIONS

DOCUMENT CLASS--UNCLASSIFIED

PROXY REEL/FRAME--3001/0477 STEP NO--UR/0181/70/012/004/1275/1277

CIRC ACCESSION NO--AP0126229

UNCLASSIFIED

2/2 024 UNCLASSIFIED

CIRC ACCESSICN NO--AP0126229 PROCESSING DATE--20NOV70

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. THE BEHAVIOR OF THERMAL RESISTIVITY OF ER IN A MAGNETIC FIELD IN THE NEIGHBORHOOD OF THE CURIE POINT WAS INVESTIGATED. ISOTHERMS ARE GIVEN OF THE MAGNETORESISTANCE EFFECT IN ER. THE EFFECT OF A MAGNETIC FIELD ON ELEC. RESISTANCE IN GENERAL AFFECTS THE CONDUCTION ELECTRON DOMAIN BOUNDARIES, AND THE ENERGY SPECTRA OF CONDUCTION ELECTRONS AND SPIN WAVES. THE EFFECT OF A MAGNETIC FIELD ON THE ENERGY SPECTRA OF CONDUCTION ELECTRONS CAN BE REALIZED BY MEANS OF THE ACTION OF THE MAGNETIC STRUCTURE AND PRIMARILY ON ITS PERIODICITY. THE EFFECT OF THE MAGNETIC FIELD IS IMPORTANT ONLY ON THE SPIN WAVE SPECTRUM. SPLITTING OF THIS SPECTRUM DUE TO STRONG ANISOTROPY IS SUFFICIENTLY LARGE TO PREVENT EXCITATION OF THE SPIN WAVES AT LOW TEMPS. WITH THE TRANSITION INTO THE ANTIFERROMAGNETIC STATE, THE SPECTRUM OF THE SPIN WAVES CHANGES IN SUCH A WAY THAT A BRANCH APPEARS WHICH DESCRIBES VIBRATIONS OF MAGNETIC MOMENTS, THE FREQUENCIES OF WHICH ARE LOWERED IN A MAGNETIC FIELD. THE CURVES ARE ALSO GIVEN OF THE CONCN. DEPENDENCE OF ELEC. AND THERMAL RESISTANCES OF ER-Y ALLOYS.

FACILITY: FIZ.-TEKH. INST. NIZKIKH TEMP., KHARKOV, USSR.

UNCLASSIFIED

USSR

ZVYAGINA, R. A.

"A General Method of Solving Problems in Linear Planning of Block Structure"

Sb. tr. In-t mat. Sib. otd. AN SSSR [Collected Works of Mathematics Institute, Siberian Division Academy of Sciences USSR], No 1(18), 1971, pp 22-40, (Translated from Referativnyy Zhurnal, Kibernetika, No 3, 1972, Abstract No 3 V405 from the Article).

Translation: An earlier work by the author (RZhMat, 1971, 8V575) suggested a new approach to the solution of large volume linear programming (lp) problems, in which all nonzero elements in the matrix of the system of limitations are enclosed in specially segregated submatrices (blocks). This approach consists of ordering of set P of the block numbers of the matrix in question. In this connection, it was possible to construct a computing system using the method of successive improvement for this class of problems, designed to solve arbitrary lp problems such that at each stage of transformation in this method, the quadratic matrix of size $m \times m$ is replaced by quadratic submatrices corresponding to blocks with numbers from a certain chain of ordered set P. In this article, we will limit ourselves basically to analysis of the computational effects of this approach to the solution of the problem of lp and, ignoring for the moment the problem of the selection of the order in set P, presents only the basic definitions and properties which this order should have.

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USSR

ZVYAGINA, R. A.

"The Construction of Hierarchical Orders with Fixed Comparability Conditions"

Sb. tr. In-t mat. Sib. otd. AN SSSR [Collected Works of Mathematics Institute, Siberian Division Academy of Sciences USSR], No 1(18), 1971, pp 41-54, (Translated from Referativnyy Zhurnal, Kibernetika, No 3, 1972, Abstract No 3 V406 from the Introduction).

Translation: The problem of ordering of discrete set P with a certain symmetrical binary ratio R between elements in such a way that the maximum length of a chain, the ordered set P produced is minimal and that the ratio of comparability in this order is an expansion of ratio R is studied. The theorem proven in §2 allows the problem of construction of this ratio to be included in the class of problems of dynamic programming, and allows separation of the class of ratios R in set P for which in each step of the dynamic Bellman process, the selection of the best version is optimal. As an application to this problem, the ordering of blocks of matrices which is effectively used in the solution of large volume linear programming problems is studied.

1/1