USSR

PETROS'YANTS, A. M., ALEKSANDROV, A. P., DOLLEZHAL', N. A., and LEYPUNSKIY, A. I. (State Committee on the Use of Atomic Energy in the USSR)

"Prospects for the Development of Nuclear Power in the USSR"

Moscow, Atomnaya Energiya, Vol 31, No 4, Oct 71, pp 315-323

Abstract: According to a talk presented at the Fourth UN Conference on the Use of Atomic Energy for peaceful purposes, the USSR is well furnished with natural sources of energy, particularly in view of the new discoveries of coal, petroleum, and natural gas, but the location of sources of energy does not coincide with the location of industrial centers, the main users of power. With an anticipated increase in the rate of use of power of 7 to 8% per year, it is expected that such regions as the European or Central Ural part of the country will soon require additional sources of atomic power for producing electricity.

It is anticipated that emphasis will be placed, in the first stage of development, on the reactors with thermal neutrons, followed later by reactors with fast neutrons, as the second stage of development. Reactors of two types are at present in existence and are being considered for future development: the tank-type and the canal-type reactors.

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PETROS'YANTS, A. M., Atomnaya Energiya, Vol 31, No 4, Oct 71, pp 315-323

The tank-type reactors, operating at present in Central Russia, Kola Peninsula, the Caucasus, and the Ukraine, have their main tanks and covers built of steel. They operate on one and two circuits, with water brought to boiling in the active part and steam produced in steam generators.

Canal-type reactors with graphite moderators were first built in 1954. They now usually operate with super-heated steam. Their main advantages over the tank-type reactors consist in the use of zirconium instead of steel and in possessing higher unit power and a more efficient use of fuel up to 18,000 Mw·day/ton. They are also safer, as their active zone is split into individual channels. Their main disadvantage consists in greater size and consequently higher cost. These are the areas where improvement is anticipated.

Canal-type reactors are better suited for adaptation to work with fast neutrons, the main area of anticipated development of Soviet nuclear engineering. An intensive research is now being conducted in this field, with some experimental reactors and small pilot plants having already been built and operating. It is expected that after 1985 the whole European part of the country will have only the fast neutron type reactors.

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PETROS'YANTS, A. M., Atomnaya Energiya, Vol 31, No 4, Oct 71, pp 315-323

It is anticipated that from now to the year 2000 construction of new thermal power stations will have stopped, with the main emphasis on the development of fast neutron reactors, while building of thermal neutron reactors will continue at a decreasing rate. It is also anticipated that the application of nuclear power will be extended beyond the production of electricity to the production of heating, refrigeration, chemicals, and finally, to desalinization of sea water.

3/3

1/2 039 UNCLASSIFIED PROCESSING DATE--18OCT70
TITLE--COMPOSITION FOR LOW TEMPERATURE ELECTROLYTIC BORON PLATING -U-

AUTHOR-(05)-LYAKHOVICH, L.S., VOROSHNIN, L.G., KARPENKO, O.P.,
KOSACHEVSKIY, L.N., DOLMANOV, F.V.
COUNTRY OF INFO--USSR

SOURCE--U.S.S.R. 261,086
REFERENCE--OTKRYTIYA, IZOBRET., PROM. OBRAZTSY, TOVARNYE ZNAKI 1970,
DATE PUBLISHED--06JAN70

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

TOPIC TAGS--CHEMICAL PATENT, ELECTROLYTE, METAL PLATING, BORON, LEAD
OXIDE, BORON COMPOUND

CONTROL MARKING--NO RESTRICTIONS

DOCUMENT CLASS--UNCLASSIFIED
PROXY REEL/FRAME--1994/2001 STEP NO--UR/0482/70/000/000/0000/0000

CIRC ACCESSION NO--AA0115800
UNCLASSIFIED

UNCLASSIFIED PROCESSING DATE--16OCT70

2/2 038

IRC ACCESSION NO--AA0115800

BSTRACT/EXTRACT--(U) GP-0- ABSTRACT. THE TITLE COMPN. CONSISTED OF NA SUB2 B SUB4 O SUB7. 10H SUB2 O 60-75 AND PBO 25-40 WT. PERCENT.

FACILITY: BELORUSSIAN POLYTECHNIC INSTITUTE.

USSR

UDC 546.799.94

ZVARA, I., BELOV, V. Z., DOMANOV, V. P., KOROTKIN, Yu. S., CHELNOKOV, L. P., SHALAYEVSKIY, M. R., SHCHEGOLEV, V. A., and YUSSONNUA, M.

"Chemical Isolation of Kurchatovium"

Leningrad, Radiokhimiya, Vol 14, Vyp 1, 1972, pp 119-122

Abstract: Earlier it was shown that during the irradiation of ^{242}Pu with ^{22}Ne ions with energies of 113-119 nev (for z = 104), a short-lived, spontaniously fissionable nuclide was detected whose chemical characteristics corresponded to the characteristics of ekahafnium (Ku). The half lives of ^{259}Ku and ^{260}Ku are about 4.5 and 0.1 sec respectively. For these experiments the target film of plutonium oxide (95% ^{242}Pu) with a density of 0.8 mg/cm^2 was irradiated with ^{22}Ne ions with an energy of 119 mev. This produced a maximum yield for the reaction ^{242}Pu (^{22}Ne, 5n) ^{259}Ku. Gaseous nitrogen was passed over the surface of the target then mixed with small amounts of $TiCl_2$ and $SOCl_2$. The slightly volatile tetrachlorides of the radioactive products formed were separated on a chromatograph. A Ge-Li α-radiation detector was used to analyze the gas at different points along the column. The isotopes ^{170}Hf, ^{171}Hf, ^{44m}Se (the latter the product of ^{22}Ne reaction with the Al of the target base), ^{242}Cm and ^{246}Cf (the latter two being products of a transfer reaction). It was

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APPROVED FOR RELEASE: 07/19/2001 CIA-RDP86-00513R002200710004-5"

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ZBARA, I., et al., Radiokhimiya, Vol 14, Vyp 1, 1972, pp 119-122

found that Na, Cs, Ca, Sr, the lanthanides, Np, Pu, Ru, Rh, and Pd are adsorbed only at significantly higher temperatures than Uf (and also the ekahafnium Ku) whereas the chlorides of In, Sn, Nb, Mo, and Tc are adsorbed only at lower temperatures. Photographs of the expected area of Ku adsorption show tracks of fission products which must be those of the ^{259}Ku with a t-1/2 = 4.5 sec.

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USSR UDC 543.01:546.76:546.681:546.19

DOLMANOVA, I.,F., BOL'SHOVA, T. A., SHEKHOVTSOVA, T. N., and PESHKOVA, V. M., Moscow State University imeni M. V. Lomonosov

"Kinetic Method for Determining Chromium Traces in Gallium Arsenide"

Moscow, Zhurnal Analiticheskoy Khimii, Vol 27, Vyp 9, 1972, pp 1848-1851

Abstract: Column extraction and ion exchange chromatography are used to separate traces of Cr from the major elements $GaAsO_3$, and a Cu-Co-Ni mixture. The sample is dissolved in nitric acid, oxidizing the arsenic to arsenic acid. The arsenic acid is carried through the column while the Cr(III) is adsorbed. The Cr (III) is subsequently removed from the column with 3 N NCl. Interferring ions of Cu (II), Co(II), and Ni(II)--were removed from the acid solution by extraction with dithizone in CCl_4 for 20-30 min on a mechanical shaker. Concentrations of Cr(III)--as the dithizonate in the aqueous phase--were determined from the oxidation by H_2O_2 of O-dimethoxybenzidine if the concentrations were greater than 10^{-3} micrograms/ml and of o-dimethoxybenzidine - γ-picoline for concentrations of 10^{-3} to 10^{-5}. The reaction was followed on a spectrophotometrically at λ_{max} = 350 nm.

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RAN/ / K·760 / 5·ANP·73
Dec 72

IX. EXPLODING WIRES

Dolmatov, K. I. Current break during electric explosion of a wire. IAN UzbSSR, Ser. fiz.-mat. nauk, no. 1, 1972, 97-98.

Characteristics of a current break were studied experimentally for discharge of two capacitors across a thin tungsten or molybdenum wire. Current intensity was determined by measuring voltage across a 0.0198 ohm resistance in the circuit. Duration τ of the current break was measured as a function of discharge potential U, and wire length l, diameter d, mass m, and resistance R. The experimental plots show that τ rapidly decreases with an increase of U from 1 to 3 kv for 15 mm. tungsten wires of 0.129 - 0.200 mm. dia. and 40 mm. molybdenum wires of 0.10 - 0.80 mm. dia. In contrast, at a constant U = 2.5 or 3 kv, τ increases with increased l and attains a very high value with a sufficiently long wire. To assess the effects of increased m and R simultaneous with an increase in l, W and Mo wires of varying m and R = 2.8 and 0.449 ohm, respectively, were exploded. The experimental plots reveal that τ is directly proportional to m, i.e., τ = 750 m for W and 2,250 m for Mo. Wires of different R, but a constant m = 60.36×10^{-4} for W and 15.76×10^{-4} g for Mo, were also exploded (Fig. 1).

DOLMATOV, K. I.

USSR UDC 621.314.26

DOLMATOV, R. G.; GRIGOR'YEV, V. S., BESSARABOV, G. V., ZUYEV, V. N., Taganrog Radio Engineering Institute

"A Converter of the Mean Frequency of a Random Pulse Train"

Moscow, Otkrytiya, izobreteniya, promyshlennyye obraztsy, tovarnyye znaki, No 3, Jan 71, Author's Certificate No 291220, Division G, filed 4 Aug 69, published 6 Jan 71, p 124

Translation: This Author's Certificate introduces a converter of the mean frequency of a random pulse train. The device contains a flip-flop, switches, a shaper, two voltage sources of different polarity, and an integrating amplifier. As a distinguishing feature of the patent, the reliability of the converter is improved by including a threshold device whose output is connected to the inputs of the shaper and flip-flop and to the controlling input of one of the switches, through which the input of the entire device is connected to the second input of the flip-flop. The sources of voltage of opposite polarity are connected through the corresponding switches to the inputs of the integrating amplifier. The output of the amplifier is connected to the input of the threshold device.
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USSR

UDC 543.544.6:546.831'185

DOLMATOV, YU. D., BULAVINA, Z. N., and DOLMATOVA, M. YU.

"Structure and Ion Exchange Properties of Zirconium Phosphate"

Leningrad, Radiokhimiya, Vol 14, No 4, 1972, pp 530-534

Abstract: Structural and ion-exchange properties of two samples of zirconium phosphate were investigated. ZrP_{Cl} was obtained by precipitation with H_3PO_4 from a solution of $ZrOCl_2 \cdot 8H_2O$. ZrP_S sample was also precipitated with H_3PO_4 from a $Zr(SO_4)_2 \cdot 4H_2O$ solution. Both samples appeared to be identical by chemical and x-ray structural analysis. Data from the differential thermal analysis and thermogravimetric analysis showed similarities in both ZrP samples, and some differences related to the dimensions in their crystalline lattice: ZrP_S has a more precisely defined structure of crystals. The ion exchange properties were investigated by the ability to separate Cs, Sr, and Ca ions. The differences observed in the sorption capacity at pH 4 and 7 could be related to the crystal structure differences.

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UDC 66.074.7

USSR

PANTELEYEVA, A. P., DOLMATOVA, M. YU., and DOLMATOV, YU. D.

"Study of the Ion-Exchange Interaction of Bivalent Cations with Alginic Acid"

Leningrad, Radiokhimiya, Vol XIV, No 5, 1972, pp 741-743

Abstract: New experimental data are presented on the interaction of alginic acid with metal cations as a function of the conditions of this process, and the problems of a specific nature of the interaction are discussed. Laboratory samples of alginic acid (AlgH) and its calcium hydride form (AlgCaH) obtained by saturation of alginic acid with calcium ions under static conditions were used for the investigation. The product obtained contained 24-27 mg of calcium per 1 gram of acid. A study was made of the exchange of Mn^{2+}, Ni^{2+}, Co^{2+}, Ca^{2+}, Sr^{2+}, Cu^{2+} ions from $3.0 \cdot 10^{-3}$ normal solutions of the chloride salts tagged by their radioactive isotopes (^{54}Mn, $^{90}Sr + ^{90}Y$, ^{63}Ni, ^{45}Ca, ^{60}Co). All of the experiments were performed under thermostated conditions using the experimental procedure and radiometric and chemical analyses introduced previously (M. Yu. Dolmatova, et al., Radiokhimiya, Vol 10, No 3, 379, 1968). Inasmuch as in aqueous solutions at pH > 5 sodium alginate forms a colloidal solution, the method of dialysis with ultrafiltration was used to separate the phases at pH = 7.5 (S. M. Puchkova, Can-

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PANTELEYEVA, A. P., et al., Radiokhimiya, Vol XIV, No 5, 1972, pp 741-743

didate's Dissertation, Medical Institute, Chelyabinsk, 1969). The experimental data are presented in the form of the ion distribution coefficients during static soprtion. The possible mechanism of the observed effects connected with the structural features of the ion-exchange resins is proposed.

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1/2 019 UNCLASSIFIED PROCESSING DATE--18SEP70

TITLE--STRUCTURE OF TITANIUM (IV) HYDROXIDE STUDIED IN RELATION TO CONDITIONS OF ITS PREPARATION -U-

AUTHOR-(02)-DOLMATOV, YU.D., SHEYNKMAN, A.I.

COUNTRY OF INFO--USSR

SOURCE--ZH. PRIKL. KHIM. (LENINGRAD) 1970, 43(2), 249-52

DATE PUBLISHED--------70

SUBJECT AREAS--CHEMISTRY

TOPIC TAGS--TITANIUM COMPOUND, HYDROXIDE, CRYSTALLIZATION, CRYSTAL STRUCTURE, HYDROLYSIS, SULFURIC ACID, HYDROCHLORIC ACID

CONTROL MARKING--NO RESTRICTIONS

DOCUMENT CLASS--UNCLASSIFIED

PROXY REEL/FRAME--1987/0848 STEP NO--UR/0080/70/043/002/0249/0252

CIRC ACCESSION NO--AP0104284

UNCLASSIFIED

2/2 019 UNCLASSIFIED PROCESSING DATE--18SEP70
CIRC ACCESSION NO--AP0104284
ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. THE X RAY AND THERMOGRAPHIC DATA OF SAMPLES OF TI HYDROXIDES OBTAINED BY ALK. AND THERMAL HYDROLYSIS OF H SUB2 SO SUB4 AND HCL SOLNS. OF TI (IV) ARE PRESENTED. ALK. HYDROLYSIS OF COLD, HCL SOLNS. OF TI (IV) RESULTS IN THE FORMATION OF AMORPHOUS HYDROXIDES WHICH THEN CRYSTALLIZE INTO A MODIFICATION OF ANATASE AT 397-420DEGREES. AN EXOTHERMAL EFFECT IS OBSERVED UPON CRYSTN. SAMPLES WHICH ARE CALCINED AT 400DEGREES FOR 1 HR HAVE THE STRUCTURE OF ANATASE, WHILE THOSE CALCINES AT 200DEGREES ARE AMORPHOUS. ALK. HYDROLYSIS OF COLD, H SUB2 SO SUB4 SOLNS. OF TI (IV) HAVE THE ANATASE STRUCTURE. THERMAL HYDROLYSIS OF HCL SOLNS. RESULTS IN THE RUTILE STRUCTURE WHILE CORRESPONDING HYDROLYSIS OF H SUB2 SO SUB4 SOLNS. RESULTS IN THE ANATASE STRUCTURE.

UNCLASSIFIED

1/2 035 UNCLASSIFIED PROCESSING DATE--20NOV70
TITLE--THERMOELECTRIC METHOD FOR DETERMINING THE DEPTH OF AN ALUMINIZED LAYER -U-
AUTHOR-(03)-SHADRUNOVA, A.P., GINIYATULLIN, I.N., OGLMATOVA, A.A.

COUNTRY OF INFO--USSR

SOURCE--ZAVOD. LAB. 1970, 36(3), 305-6

DATE PUBLISHED--------70

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

TOPIC TAGS--METALLURGIC RESEARCH FACILITY, METAL TUBE, METALLOGRAPHY, SOLID SOLUTION, IRON ALLOY, ALUMINUM ALLOY, INTERMETALLIC COMPOUND, METALLOGRAPHY, ALUMINIZING, METAL COATING, THERMOELECTROMOTIVE FORCE

CONTROL MARKING--NO RESTRICTIONS

DOCUMENT CLASS--UNCLASSIFIED
PROXY REEL/FRAME--3001/0529 STEP NO--UR/0032/70/036/003/0305/0306

CIRC ACCESSION NO--AP0126277
UNCLASSIFIED

2/2 035 UNCLASSIFIED PROCESSING DATE--20NOV70

CIRC ACCESSION NO--AP0126277

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. THE DEPENDENCE OF THE THERMAL EMF. UPON THE AL CONTENT WAS USED FOR DETG. THE DEPTH OF ALUMINIZED LAYERS OF STEEL TUBES. THE THERMAL EMF. HAS A MAX. AT THE SURFACE OF THE SAMPLE, PASSES THROUGH A MIN., THEN RISES TO A CONST. VALUE. THE ALUMINIZED LAYER THICKNESS INDICATED BY METALLOGRAPHIC ANAL. COINCIDES WITH THE MIN. OF THE THERMAL EMF, AND CORRESPONDS TO THE LOCATION OF THE FE SUB3 AL PHASE, WHILE THE THERMOELEC. METHOD GIVES THE ACTUAL DEPTH (UP TO THE POINT WHERE THE THERMAL EMF. BECOMES CONST.) THUS INCLUDING THE THICKNESS OF THE ALPHA SOLID SOLN. FACILITY: MAGNITOGORSK. GORNOMENT. INST. IM. NOSOVA, MAGNITOGORSK, USSR.

UNCLASSIFIED

USSR

UDC 543.544.6:546.831'185

DOLMATOV, YU. D., BULAVINA, Z. N., and DOLMATOVA, M. YU.

"Structure and Ion Exchange Properties of Zirconium Phosphate"

Leningrad, Radiokhimiya, Vol 14, No 4, 1972, pp 530-534

Abstract: Structural and ion-exchange properties of two samples of zirconium phosphate were investigated. ZrP_{Cl} was obtained by precipitation with H_3PO_4 from a solution of $ZrOCl_2 \cdot 8H_2O$. ZrP_S sample was also precipitated with H_3PO_4 from a $Zr(SO_4)_2 \cdot 4H_2O$ solution. Both samples appeared to be identical by chemical and x-ray structural analysis. Data from the differential thermal analysis and thermogravimetric analysis showed similarities in both ZrP samples, and some differences related to the dimensions in their crystalline lattice: ZrP_S has a more precisely defined structure of crystals. The ion exchange properties were investigated by the ability to separate Cs, Sr, and Ca ions. The differences observed in the sorption capacity at pH 4 and 7 could be related to the crystal structure differences.

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USSR

UDC 66.074.7

PANTELEYEVA, A. P., DOLMATOVA, M. YU., and DOLMATOV, YU. D.

"Study of the Ion-Exchange Interaction of Bivalent Cations with Alginic Acid"

Leningrad, Radiokhimiya, Vol XIV, No 5, 1972, pp 741-743

Abstract: New experimental data are presented on the interaction of alginic acid with metal cations as a function of the conditions of this process, and the problems of a specific nature of the interaction are discussed. Laboratory samples of alginic acid (AlgH) and its calcium hydride form (AlgCaH) obtained by saturation of alginic acid with calcium ions under static conditions were used for the investigation. The product obtained contained 24-27 mg of calcium per 1 gram of acid. A study was made of the exchange of Mn^{2+}, Ni^{2+}, Co^{2+}, Ca^{2+}, Sr^{2+}, Cu^{2+} ions from $3.6 \cdot 10^{-3}$ normal solutions of the chloride salts tagged by their radioactive isotopes (^{54}Mn, $^{90}Sr + ^{90}Y$, ^{63}Ni, ^{45}Ca, ^{60}Co). All of the experiments were performed under thermostated conditions using the experimental procedure and radiometric and chemical analyses introduced previously (M. Yu. Dolmatova, et al., Radiokhimiya, Vol 10, No 3, 379, 1968). Inasmuch as in aqueous solutions at pH ≥ 5 sodium alginate forms a colloidal solution, the method of dialysis with ultrafiltration was used to separate the phases at pH = 7.5 (S. M. Puchkova, Can-

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PANTELEYEVA, A. P., et al., Radiokhimiya, Vol XIV, No 5, 1972, pp 741-743

didate's Dissertation, Medical Institute, Chelyabinsk, 1969). The experimental data are presented in the form of the ion distribution coefficients during static soprtion. The possible mechanism of the observed effects connected with the structural features of the ion-exchange resins is proposed.

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1/2 025 UNCLASSIFIED PROCESSING DATE--09OCT70

TITLE--EFFECT OF ALGINIC ACID ON THE DEPOSITION OF SR PRIME90 AND CA PRIME45 IN THE BODY IN CASE OF THEIR LONG INTAKE -U-

AUTHOR-(02)-DOLMATOVA, M.YU., DUBROVINA, Z.V.

COUNTRY OF INFO--USSR

SOURCE--GIGIYENA I SANITARIYA, 1970, NR 3, PP 40-43

DATE PUBLISHED-------70

SUBJECT AREAS--BIOLOGICAL AND MEDICAL SCIENCES

TOPIC TAGS--STRONTIUM ISOTOPE, CALCIUM ISOTOPE, RADIATION BIOLOGIC EFFECT, RADIATION PROPHYLAXIS, RAT, BROWN ALGAE, ORGANIC ACID

CONTROL MARKING--NO RESTRICTIONS

DOCUMENT CLASS--UNCLASSIFIED

PROXY REEL/FRAME--1982/0653 STEP NO--UR/0240/70/000/003/0040/0043

CIRC ACCESSION NO--AP0052113

UNCLASSIFIED

2/2 025 UNCLASSIFIED PROCESSING DATE--09OCT70
CIRC ACCESSION NO--AP0052113
ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. A LONG TERM EXPERIMENT CARRIED OUT OVER ADULT RATS SHOWED ALGINIC ACID TO HAVE A LIGH PROTECTING EFFECT AGAINST THE ACTION OF RADIOACTIVE STRONTIUM. HOWEVER, THIS EFFECT DIMINISHED EVENTUALLY. ALGINIC ACID WAS NOTED TO AFFECT SELECTIVELY RADIOACTIVE STRONTIUM IN COMPARISON WITH CALCIUM.

UNCLASSIFIED

USSR

UDC 613.6:615.187.5.012

AYZENSHTAD, V. S., DOLMATOVA-GUSEVA, E. G., PERKHUROVA, V. P., SHTIFELMAN, A. V., BOGOMOLOVA, L. M., and MERUBAY, S. M., Institute of Hygiene, Kuybyshev

"Labor Hygiene and the State of the Workers' Health in the Malathion Industry"

Moscow, Gigiyena truda i professionalnyye zabolevaniya, No 3, Mar 71, pp 49-51

Abstract: In the reactor section of a large malathion plant, the atmosphere was found to contain xylene, hydrogen sulfide, maleic anhydride, methanol, ethanol, malathion, as well as dimethyl dithiophosphoric acid, and diethyl maleate. More than 3,500 air samples were analyzed for the above compounds and the results reported in tabular form or the various process stages. It was established that contamination of the air in the plant was due to insufficient automation, the use of manual labor in the handling of poisonous materials, imperfect control devices, and so forth. Time studies showed that laboratory workers were in contact with poisons for 59-92% of their working time. Malathion was detected in washings from the hands and in the work clothes. It was established that laundering of the work clothes in a 1% caustic soda solution is 10 times as effective as the sodium tripolyphosphate 1/2

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AYZENSHTAD, V. S., et al., Gigiyena truda i professionalnyye zabolevaniya, No 3, Mar 71, pp 49-51

wash used in the plant. It was recommended that plant ventilation be improved by installation of suction filtration devices at all points of high pesticide concentrations in the air. Also, the state of health of the workers was studied: 18 people had dermatitis and conjunctivitis, the number of cases of nervous system disorders increased from 10 to 38 over a 1 1/2 year period. Gastrointestinal disturbances increased from 5 to 23 cases over the same period. Rapid introduction of sanitary-hygienic measures was recommended plus repeated checks of the work conditions after their introduction.

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USSR

UDC 621.396.6-181.5

DROBYSHEV, Ye. P., DOL'NIKOV, S. S., KUDRYASHOV, A. G.

"Improving the Reliability of Mounting Silicon Microcircuits"

Elektron. prom-st'. Nauchno-tekhn. sb. (The Electronics Industry. Scientific and Technical Collection), 1970, No 1, pp 100-102 (from RZh-Radiotekhnika, No 10, Oct 70, Abstract No 10V170)

Translation: The authors discuss the basic factors which determine the reliability of contacts produced by means of interlayers of low-temperature alloys, specifically Au-Ge and Au-Si eutectics made by electrochemical gold-plating of germanium and silicon crystals. The requirements for the interlayers and coatings of the mounting areas of the housing are discussed. Three illustrations, bibliography of two titles. N. S.

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USSR

DOL'NIKOV, V. L.

"One Problem in Coloring"

Sib. Mat. Zh. [Siberian Mathematics Journal], 1972, Vol 13, No 6, pp 1272-1283 (Translated from Referativnyy Zhurnal Kibernetika, No 4, 1973, Abstract No 4V426, by V. Matyushkov).

Translation: We will state that a family of set has the (p, q)-property if in each subfamily of the p sets there are q sets with non-empty intersection. For example, graph G has the (p, q) property if any subgraph with p points contains an empty q-point subgraph. The full class of ordinary graphs is called class L, having the following property: together with graph $G \in L$, L also includes all subgraphs of G. We represent by $N(p, 2; L) = \text{Sup } \gamma(G)$, where $\gamma(G)$ is the chromatic number of graphs G, while Sup is taken with respect to all $G \in L$ having the (p, q) property. Relative to N(p, q; L) it is proven that: 1. If $p \leq 2q - 2$, then $N(p, q; L) \leq p - q + 1$. 2. If L is a class of graphs such that $N(p, q; L) \leq p(p - 1)/2$ and for a certain integer $m \geq 0$ $p \leq c^2_{q+m+1} - c^2_{m+1}$, then $N(p, q; L) \leq p - q + c^2_{m+2} - m$. 3. If N(p, q; L) does not exceed a linear function of p, there is a q_0 such that $N(p, q; L) \leq p - q + 1$ for all p and $2 \geq q_0$.

USSR

UDC 639.3.331.5

GZHEGOTSKIY, M. I., DOLOSHITSKIY, S. L. and MARTYNYUK, N. V., L'Vov Medical Institute

"Toxicity of Some Chlorine-Containing Herbicides for Fish"

Moscow, Rybnoye Khozyaystvo, No 8, 1971, pp 27-28

Abstract: The toxic effects of chlorine-containing, herbicides acting on roots (propazin, piramin, tselatoks and alitsep) and of chlorine-containing carbamate herbicides (avadeks and karbin) were investigated on 370 carp and guppies. In concentrations of 0.1-10.0 mg per liter of water, the herbicides were nontoxic throughout the duration of the experiment (3 months). The minimum toxic dose ranged from 0.5-10.0 mg/ℓ. The minimum toxic dose caused the death of several fishes, preceded by general irritability and loss of body weight. In the group exposed to the lethal concentration of 5-50 mg/ℓ, all fish died within 2.5 hours to 30 days. Death was preceded by general irritability, periodic clonus, lateral position, and dyspnea. Internal organs emitted a faint odor of the herbicides. It was concluded that the herbicides investigated should be classified as highly toxic compounds able to produce acute and chronic poisoning in fish.

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USSR

UDC 612.791.5:632.954

GZHEGOTSKIY, M. I., and DOLOSHITSKIY, S. L., Chair of General Hygiene, Lvov Medical Institute

"The Skin Resorption Effect of Herbicides"

Kiev, Vrachebnoye Delo, No 11, 1971, pp 133-134

Abstract: The toxicity of several herbicides commonly used in the Ukraine was tested on rabbits, guinea pigs, and rats. After repeated application to depilated skin, trichloro propionitrile, sodium trichloroacetate, dicotex, pyramin, alicep, avadex, and carbin cause local skin irritation; some also induce necrosis. These compounds are absorbed through the skin and induce neutrophilic leukocytosis, reduce erythrocyte and hemoglobin concentration, lower blood peroxidase and cholinesterase activity, increase blood sugar concentration, prolong clotting time, and cause loss of body weight. When applied to the eyes, they induce acute suppurative keratoconjunctivitis. Dichloralurea, ceratox, and propazine are not absorbed through the skin.

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1/2 019 UNCLASSIFIED PROCESSING DATE--27NOV70
TITLE--CORRELATION BETWEEN THE THERMAL STABILITY OF A VINYL IDENE CHLORIDE ACRYLONITRILE COPOLYMER WITH ITS INTRAMOLECULAR STRUCTURE -U-
AUTHOR-(04)-SEMCHIKOV, YU.D., SLAVNITSKAYA, N.N., RYABOV, A.V., DOLOSKOVA, L.M.
COUNTRY OF INFO--USSR

SOURCE--VYSOKOMOL. SOEDIN., SER. B 1970, 12(5), 328-9

DATE PUBLISHED-------70

SUBJECT AREAS--CHEMISTRY

TOPIC TAGS--THERMAL STABILITY, ACRYLONITRILE, COPOLYMERIZATION, MOLECULAR STRUCTURE, CHLORINATION, VINYLIDENE RESIN

CONTROL MARKING--NO RESTRICTIONS

DOCUMENT CLASS--UNCLASSIFIED
PROXY REEL/FRAME--3006/1235 STEP NO--UR/0460/70/012/005/0328/0329

CIRC ACCESSION NO--AP0134909
UNCLASSIFIED

2/2 019 UNCLASSIFIED PROCESSING DATE--27NOV70

CIRC ACCESSION NO--AP0134909

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. THERMAL DECOMP. OF RADICAL, BULK POLYMD. VINYLIDENE CHLORIDE (I) ACRYLONITRILE (II) COPOLYMERS (III) AT 170DEGREES IN VACUO GAVE A MAX. OF THE DEHYDROCHLORINATION RATE FOR III CONTG. SIMILAR TO 33PERCENT II (OVERLAPPING WITH THE MAX. NO OF I I II TRIADS IN III) AND A MIN. AT 50-60PERCENT II FOR III PROBABLY CONTG. II I II TRIADS; WHEREAS SIMILAR DECOMPN. OF A MIXT. OF I AND II HOMOPOLYMERS SHOWED INCREASING DEHYDROCHLORINATION RATES APPROACHING THOSE OF III AT II CONCNS. GREATER THAN 60PERCENT. THUS, AT LESS THAN OR EQUAL TO 60PERCENT II CONTENT THERE WAS AN INTRAMOL. INFLUENCE BY II ON DEHYDROCHLORINATION OF I IN III; BUT AT GREATER THAN 60PERCENT II CONTENT, THE EFFECT WAS INTERMOL.

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USSR

DOLOTOV, V. G.

"Compact Representation of Messages in Information Systems"

Tr. Mosk. Energ. In-ta [Works of Moscow Institute of Power Engineering], 1973, No 158, pp 126-130 (Translated from Referativnyy Zhurnal Kibernetika, No 6, 1973, Abstract No 6V636, from the Introduction).

Translation: Streams of messages in information systems, as a rule, are significantly redundant. In order to reduce the redundancy, it is expedient to reduce data as they are produced, transmitted, stored, processed and displayed. This article studies a number of methods allowing redundancy to be reduced in messages.

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USSR

UDC: 621.398.08

DOLOTOV, V. G., Moscow "Order of Lenin" Power Engineering Institute

"A Transmitter for a Telemetry Device"

USSR Author's Certificate No 319954, filed 2 Jun 70, published 11 Jan 72 (from RZh-Avtomatika, Telemekhanika i Vychislitel'naya Tekhnika, No 7, Jul 72, Abstract No 7A224 P)

Translation: This patent covers a transmitter for a telemetry device. The transmitter contains an information selection block connected to the output of an adaptive **quantizer** and to the input of the output module. The unit also contains a block of adaptive **quantizer** settings and a timer. To improve reliability, the transmitter is made with a data read rate analyzer whose inputs are connected to the outputs of the adaptive **quantizer** and timer, while the outputs of the data read rate analyzer are connected to the inputs of the block of adaptive **quantizer** settings and output module. One illustration.

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DOBROKHOTOV, B. P., MESHCHERYAKOVA, I. S., DOLOTOVA, L. A., POMANSKAYA, L. A., ARSEN'YEV, V. P., LEVACHEVA, Z. A., PANINA, T. V., KATELINA, A. F. and MYASNIKOV, Yu. A., Institute of Epidemiology, and Microbiology imeni Gamaleya, Academy of Medical Sciences, and Tul'skaya Oblast Sanitary-Epidemiological Station

"Application of a New Method of Detecting Tularemia Epizootics Under Practical Conditions"

Moscow, Zhurnal Mikrobiologii, Epidemiologii i Immunobiologii, No 7, 1973, pp 105-108

The timely detection, study, and prognostication of tularemia epizootics occupy an important place in the work of divisions of especially dangerous infections of sanitary-epidemiological stations inasmuch as this makes it possible to plan and carry out prophylactic measures against this infection properly. However, methods employed at the present time for detecting epizootics in nature are extremely labor-consuming and require a great deal of time both for the collection of field material and for its laboratory examination. It is practically impossible to survey each year the entire territory serviced by the station; therefore it is expedient to conduct a detailed study of circumstances in localities only after an approximate determination of the

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probability of the presence of tularemia epizootics in any of their parts. For this preliminary estimate it was suggested that pellets of birds of prey be examined for the presence of the tularemia microbe antigen [1]. Results of the practical application of this method under the conditions of Tul'skaya Oblast are presented in this report.

On the given territory, located in the Central Russian highlands, foci of tularemia of the meadow-field type [2] are widely distributed, the principal carrier being the ordinary field mouse and the long-time preserver of the causative agent, the tick D. pictus. In spite of substantial changes which have taken place in the method of conducting agriculture, these foci continue to exist; although as a result of the mass vaccination of the population, instances of disease among the people are extremely rare [3].

During 1968 to 1972 regular organized zoologic-parasitological work was carried out in the Oblast. A total of 25,832 traps were set up in the fields by workers in the Division of Especially Dangerous Infections during the time indicated; 497 cubic meters of straw were displaced; 84 hectares of the control areas were dug up and as a result 2,199 ordinary field mice were caught.

In the autumn of 1968 a large number of ordinary field mice were observed in the southern rayons of the Oblast: more than 500 per hectare; and in the

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DOBROKHOTOV, B. P., et al., Zhurnal Mikrobiologii, Epidemiologii i Immunobiologii, No 7, 1973, pp 105-108

north up to 1000-1500 in some places. This led to a concentration of small animals in the stacks (19 to 25% falling into the traps) and to the occurrence among them of tularemia epizootics. In December of 1968 and in January 1969 15 strains of the causative agent were isolated in Kurkinskiy and Shchekinskiy rayons of the Oblast: 5 from the carcasses of the field mice and 10 from the excrement. In the course of the entire year 1969 the number of field mice was low and the next increase was not registered until in the autumn of 1970: on isolated fields (clover) up to 2000, and in Shchekinskiy and Odoyevskiy rayons, up to 5000 per hectare. In 1971 the number of ordinary field mice in the entire Oblast was extremely low. During these years negative results were obtained in bacteriological investigations of small animals; only one culture of the tularemia microbe was isolated in June 1970 from the ticks D. pictus collected from cows in Suvorovskiy Rayon. Thus from 1968 to 1971 during an intensive inspection of the Oblast, the presence of tularemia was established by a bacteriological method in only three rayons -- Kurkinskiy, Shchekinskiy, and Suvorovskiy.

During 1969 to 1971, 1490 pellets of birds of prey were collected and examined in the Oblast. Their collection took place primarily in the spring

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DOBROKHOTOV, B. P., et al., Zhurnal Mikrobiologii, Epidemiologii i Immunobiologii, No 7, 1973, pp 105-108

(April - May) at the time of three-to-four-day field trips by automobile; a certain number was collected incidentally while other zoological work was being carried out. The pellets were most frequently found near poles of electro-transmission and communications lines, on stacks, and near other structures on the landscape. During the entire time in the collection of pellets approximately 30 man-days were used which comprised an extremely insignificant part of the time expended by the division for inspecting the Oblast. Unfortunately in some of the 18 rayons covered by the collection, an insufficient number of pellets were found, which did not permit the positive determination of an epizootic condition of the rodent population in their territory (See Drawing). The number of pellets collected at any point was directly dependent on the number of ordinary field mice in a given locality: under an increased concentration of these rodents more birds of prey were observed and it was possible to find more pellets.

In the spring collections pellets (which had been preserved since autumn) of ordinary and rough-legged buzzards that winter in the territory predominated (more than 90%). A large portion of the pellets of the lesser falcons had disintegrated by this time. In 88 to 96% of the pellets the remains of ordinary

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DOBROKHOTOV, B. P., et al., Zhurnal Mikrobiologii, Epidemiologii i Immunobiologii, No 7, 1973, pp 105-108

field mice were encountered; those of other kinds of mammals (mice of plowed land, field mice, grey hamsters, gophers, weasels, shrews) and birds were rarely encountered. During a selective examination in 1969, the remains of 128 small animals were detected in 85 pellets; in 1970, in 232 pellets, the remains of 356 small animals; and in 1971, the remains of 200 small animals in 140 pellets, giving an average of 1.5 small animal per pellet.

In this manner the 1490 pellets collected contained more small animals than those obtained in the fields during these years for investigation by all other methods. One should also keep in view that by consuming in nature primarily the weakened animals or their carcasses, birds of prey ensure the selection out of the animal population of precisely those individuals which are desirable for bacteriological investigation.

The presence of an antigen in the pellets positively confirmed the fact of an epizootic condition while through an analysis of the bone remains it was possible to determine the kinds of mammals involved in the epizootic process.

For the purpose of detecting the antigen the antibody neutralization reaction was employed. The material was prepared and the reaction carried out by the method described earlier [1].

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DOBROKHOTOV, B. P., et al., Zhurnal Mikrobiologii, Epidemiologii i Immunobiologii, No 7, 1973, pp 105-108

The antigen of the tularemia microbe was detected in 173 pellets collected in the territory of 11 rayons of the Oblast. Only those results were considered positive in which there was a sharp delay in hemagglutination which was observed in titrations (from the initial dry weight of the pellet); 1:10 - 1:20 in 73 cases; 1:40 - 1:80 in 67 cases; 1:160 - 1:320 in 23 cases; 1:640 - 1:1280 in 12 cases (See Table).

The number of sites where pellets were found containing an antigen was significantly greater than the number of sites where cultures were formed -- 21 against 4. This made it possible to establish with far greater precision the boundaries of epizootics that had transpired, and it testified to the fact that an epizootic situation with respect to tularemia still exists in a significant part of the territory of Tul'skaya Oblast. Moreover, the presence of epizootics was successfully established for the years having a smaller number of ordinary field mice where it is impossible to detect the causative agent of tularemia by the usually applied methods.

In such torpid epizootics the tularemia microbe antigen is detected only in 1 to 1.5% of the pellets. Cultures of the tularemia microbe from rodents can be isolated only at the time of sufficiently intensive epizootics, and in 6/10

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DOBROKHOTOV, B. P., et al., Zhurnal Mikrobiologii, Epidemiologii i Immunobiologii, No 7, 1973, pp 105-108

such places more than 20% of the collected pellets contained the tularemia microbe antigen.

In this way, results of an examination of pellets (by the antibody neutralization reaction) collected in early spring in meadow-field foci of tularemia can serve as a precise indication of the existence during the past winter of epizootic tularemia in the territory being surveyed and its magnitude. The revelation of this fact is extremely important in determining the enzooticity of the territory for the purpose of conducting prophylactic measures, the first and foremost being systematic vaccinations. Necessarily in a suspect territory a more thorough collection of material must be achieved for the purpose of isolating the causative agent of tularemia by ordinary bacteriological methods.

Conclusions

1. Examination of pellets of birds of prey collected in springtime in meadow-field foci of tularemia for the presence of the tularemia microbe antigen makes it possible quickly and with a small expenditure of work to establish the past winter's epizootics of this infection and their intensity over extensive areas.

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DOBROKHOTOV, B. P., et al., Zhurnal Mikrobiologii, Epidemiologii i Immunobiologii, No 7, 1973, pp 105-108

2. In the course of the years 1969 to 1971, tularemia enzooticity was established by the indicated method in 11 rayons of Tul'skaya Oblast; whereas by the bacteriological method the causative agent was detected in only 3 rayons.

3. With a sufficient amount of research material (100 to 200 pellets from each point) it will be possible to successfully detect each year even torpid tularemia epizootics, given a reduced number of ordinary field mice per focus.

4. The suggested method is completely suitable for use in work of divisions of especially dangerous infections of sanitary-epidemiological stations.

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USSR

DOBROKHOTOV, B. P., et al., Zhurnal Mikrobiologii, Epidemiologii i Immunobiologii, No 7, 1973, pp 105-108

NUMBER OF PELLETS BY YEAR

RAYON	1969 Total	1969 With Antigen	1970 Total	1970 With Antigen	1971 Total	1971 With Antigen
Kurkinskiy	149	33	24	--	22	1
Yefremovskiy	58	23	40	--	14	--
Kamenskiy	--	--	14	--	40	1
Chernskiy	--	--	8	--	117	--
Teplo-Orarevskiy	27	4	24	--	--	--
Kireyevskiy	--	--	30	--	166	2
Odoyevskiy	--	--	2	--	98	42
Dubenskiy	--	--	--	--	185	55
Leninskiy	--	--	22	--	168	5
Venevskiy	2	--	67	2	--	--
Yasnogorskiy	--	--	23	3	--	--
Zaokskiy	--	--	4	--	46	2
Aleksinskiy	--	--	12	--	36	--
Prochiye	8	--	50	--	32	--
Total	244	60	320	5	932	108

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DOBROKHOTOV, B. P., et al., Zhurnal Mikrobiologii, Epidemiologii i Immunobiologii, No 7, 1973, pp 105-108

Drawing

EXAMINATION OF PELLETS OF BIRDS OF PREY FOR TULAREMIA MICROBE ANTIGEN CONTENT IN MEADOW-FIELD FOCI OF TUL'SKAYA OBLAST

1. Sites of Formation of Cultures of Tularemia Microbe From the Smaller Mammals, From Their Excrement and Ixodic Ticks
2. Collection Point of Pellets in 1969
3. Collection Point of Pellets in 1970
4. Collection Point of Pellets in 1971

Crosshatched symbols are points where the tularemia microbe antigen was found in pellets; dotted symbols are points at which more than 5 pellets were collected.

Key:
1. Yasnogorsk
2. Venev
3. Tula
4. Dubna
5. Suvorov
6. Shchekino
7. Kireyevsk
8. Odoyev
9. Teploye
10. Kurkino
11. Yefremov

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Heat Treatment

UDC 669.14.018.298:
:621.78:621.17

USSR

DOLOTOVA, T. S., KUCHERYAVYY, V. I., REVYAKINA, O. K., RYZHAK, S. S., SACHKOV, V. V., and UL'YANOVA, N. V., Moscow Higher Technical School imeni N. E. Bauman, All-Union Scientific Research Institute of Aviation Materials

"Influence of the Conditions of Heat Treatment on the Properties of OOOKh11N10M2T Steel"

Moscow, Metallovedeniye i Termicheskaya Obrabotka Metallov, No 12, 1973, pp 9-13

Abstract: The conditions developed for the heat treatment of OOOKh11N10M2T steel make it possible to produce on the initial large-grained metal properties close to those of semi-finished goods of small section with low temperature at the end of hot deformation and possessing small grains and sufficient high plasticity and viscosity at up to -70°C temperatures. After the heat treatment according to the schedule 1220°C for

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DOLOTOVA, T. S., et al., Metallovedeniye i Termicheskaya Obrabotka Metallov, No 12, 1973, pp 9-13

2 hr, water + threefold austenitization at 1010±10°C for 1-3 hr, water + 600°C for 15 hr, air + 850°C for 1 hr, air + 500°C for 2 hr, the following satisfactory complex of mechanical properties could be obtained: at 20°C - tensile strength σ_t=155 kg/mm^2, specification yield point $\sigma_{0,2}$=149.5 kg/mm^2, residual relative elongation δ=12%, relative narrowing ψ=56.5%, impact ductility a=5.5 kg·m/cm^2, and at -70°C - σ_t=179 kg/mm^2, ψ=43%, a=3.5 kg·m/cm^2. Six figures, three bibliographic references.

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USSR UDC 612.858+612.886

SEMENOV, L. A., and DOLOTOVSKIY, A. N., Laboratory of Physiology of the Vestibular Apparatus, Institute of Physiology imeni I. P. Pavlov, Academy of Sciences USSR, Leningrad

"The Influence of the Semicircular Canals on Otolith Reflexes"

Leningrad, Fiziologicheskiy Zhurnal SSSR, Vol 56, No 11, Nov 70, pp 1546-1553

Abstract: Pigeons were exposed to linear horizontal (0.359-0.397 G) and vertical (0.198-0.212 G) accelerations while on a four-perch swing. A caudal shift of the otoliths resulted in contraction of the m. levator coccygis, while a rostral shift resulted in contraction of the m. depressor coccygis. The reaction ceased when the swinging was slowed and the linear acceleration decreased to 0.2 G. The tonic reaction of the m. levator coccygis is thus a specific otolith reflex arising in repsonse to a caudal shift of the otoliths. In pigeons with the semicircular canals blocked this reaction remained qualitatively unchanged but was quantitatively different from the reaction in intact birds. This fact suggests that, in the latter, afferent impulses from the semicircular canals inhibit the otolith reflex. Exclusion of the canals (through transection), however, facilitates the reflex.

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Acc. Nr: AP0037017 Ref. Code: UR 0239

PRIMARY SOURCE: Fiziologicheskiy Zhurnal SSSR, 1970, Vol 56, Nr 2, pp 279-281

DIGITAL-ANALOGOUS TRANSFORMER FOR ANALYSIS OF THE UNIT ACTIVITY

Dolotovskiy, A. N.

Lab. of Vestibular Apparatus, Pavlov's Institute of Physiology, Acad. Sci. USSR, Leningrad

A small transistorized device for the unit activity analysis is described. Results of the analysis are transferred and fixed as ordinates on an ink-writing recorder. The ordinates show the number of spikes for a given time.

An electronic trigger counter was used for obtaining the binary codes. The codes are transformed into voltage and thus conveyed to a recording device.

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REEL/FRAME
19721953

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DOLUBEVA, Ye. L.

MEDICINE

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G. I. Kositskiy. Tsivilizatsiya i serdtse (Civilization and the Heart). Moscow, 1971, 200 pages with ill., 25,000 copies, 62 k.

JPRS 55568
24 MAR 72

USSR

UDC: None

DOLUKHANOV, , M., Doctor, Engineering Sciences

"Radio Communication on the Moon"

Moscow, Radio, No. 12, 1970, pp 2-3

Abstract: This short popular science article deals with the relative advantages and disadvantages of radio communication on the moon's surface as compared to communication on the earth. Lunar communication is much more complex because the moon has neither atmosphere nor ionosphere; consequently the long-distance reception provided by these factors on earth is unavailable. Also, the soil of the moon's surface is such as to have low conductivity and high absorption to radio waves. Additional factors contributing to difficulties of lunar communication are the greater curvature of the moon's surface and the height of its mountain ranges, which exceeds that of the earth's mountains. Scientists have decided that wave lengths of the order of 1000 meters, depending on the range of coverage desired, are optimal. There are factors, however, in favor of radio reception on the moon. Atmospheric noise is absent, and long distance communication for narrow-band signals is thus possible -- i.e., over several hundred kilometers. The 4-beam process for communication over the moon's mountains is also explained.

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UDC: 621.391.8

DOLUKHANOV M. P.

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ARMY MATERIEL COMMAND

FROM MILLIHERTZ TO TERAHERTZ:
RADIO WAVES IN MARINE COMMUNICATION AND NAVIGATION
(EXCERPTS)

by

M. P. Dolukhanov

USSR

This document is a rendition of the original foreign text without any analytical or editorial comment.

Approved for public release; distribution unlimited.

USSR UDC: 621.317.7

DOLUKHANOV, M. P., VOLOTOVSKAYA, N. K., Leningrad Electrical Engineering Institute of Communications

"An Installation for Hydroacoustic Modeling"

USSR Author's Certificate No 259273, filed 27 Mar 68, published 24 Apr 70 (from RZh-Radiotekhnika, No 12, Dec 70, Abstract No 12A280 P)

Translation: For experimental investigation of conditions of propagation of radio waves and radar reflection from marine targets on the basis of hydroacoustic models, an installation is used which contains a tank with a liquid in which a transmitter and receiver of ultrasonic oscillations are immersed. The surface of the tank is covered with a rigid curved plastic film which simulates the curvature of the earth. A model of the screening barrier or target is placed on the film. The source of ultrasonic oscillations simulates a transmitting antenna. The object being studied produces secondary emission which is picked up by the hydroacoustic receiver. The surface of the liquid has a convex shape with respect to the waves propagating in it, and therefore diffraction effects may be taken into account when setting up an experiment. Three illustrations. A. I.

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AUTHOR--DOLUKHANOV, M.P.

COUNTRY OF INFO--USSR

SOURCE--(OT MILLIGERTZ DO TERAGERTZ. RADIOVOLNY V MORSKOY SVYAZI I NAVIGATSII) LENINGRAD, SUDOSTROYENIYE, 1970, 104 PP
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CIRC ACCESSION NO--AM0132525
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2/2 026 UNCLASSIFIED PROCESSING DATE--13NOV70
CIRC ACCESSION NO--AM0132525
ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. PREFACE 3. CHAPTER I GENERAL PROBLEMS IN RADIO WAVE PROPAGATION 5. II ELECTRIC CHARACTERISTICS OF EARTH SURFACE AND STRUCTURE OF ATMOSPHERE 26. III PROPAGATION OF RADIO WAVES OF VARIOUS RANGES 53. IV PROPAGATION OF ULTRA SHORT WAVES 81. V PROPAGATION OF MILLIMETER WAVES AND OPTICAL RANGE WAVES 99. IN AN EASY LANGUAGE, THE AUTHOR DISCUSSES THE CONTEMPORARY CONCEPTS ON THE MECHANISM AND CHARACTERISTICS OF PROPAGATION OF RADIO WAVES. THE BOOK WAS WRITTEN FOR PEOPLE INTERESTED IN SHIP RADIO COMMUNICATION, MARINE AND GROUND RADAR AND RADIO NAVIGATION EQUIPMENT, AS WELL AS RADIO AMATEURS.

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USSR UDC: None

DOLUKHANOV, M., Doctor of Engineering Sciences

"Underground Radio Wave Propagation"

Moscow, Radio, No. 1, 70, pp 42-43

Abstract: A new medium for the propagation of radio waves has appeared recently to take its place alongside such well-known propagation media as surface, ionosphere, and troposphere. This new medium is to be found in the earth's core. The nature of the earth's core as well as its physical characteristics lending themselves to radio wave propagation is discussed in this article. Underground propagation is possible because of the structure of the core's upper three layers. The uppermost is primarily of sedimentary rock, which has a relatively high conductance. The third layer consists of basalt, which at ordinary temperatures is a poor conductor. At the temperature of the earth's interior,

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however, its conductance is high. Between these two layers is the crystalline layer which is poorly conductive. In these two conductive layers separated by a nonconductive one, we have what amounts to a gigantic waveguide. This, in principle, can be used for long-distance radio communication. Three possible variants of underground radio wave propagation are discussed. The first of these has been theoretically established by Ye. L. Feynberg and L. M. Brekhovskiy and involves the Huygens theory. This mechanism specifies that the receiver antenna be shallowly placed under the surface of the ground. The second mechanism, like the first, uses the side wave; it, however, requires that the antenna be buried to a depth of several hundred meters in the crystalline layer. In the third mechanism, the antenna is several kilometers below the surface. An advantage of the underground communication method is that the upper or sedimentary layer shields the communication channel from atmospheric noise. It is asserted that the foreign press has speculated on the possibility of using underground propagation for communications between submarines lying on the ocean's floor.

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DOLUKHANOV, M.

USSR UDC: None

DOLUKHANOV, M., Doctor, Engineering Sciences

"Radio Communication on the Moon"

Moscow, Radio, No. 12, 1970, pp 2-3

Abstract: This short popular science article deals with the relative advantages and disadvantages of radio communication on the earth's surface as compared to communication on the earth. Lunar communication is much more complex because the moon has neither an ionosphere nor troposphere; consequently the long-distance reception provided by these factors on earth is unavailable. Also, the roughness of the moon's surface is such as to have low conductivity and high absorption to radio waves. Additional factors contributing to difficulties of lunar communication are the greater curvature of the moon's surface and the height of its mountain ranges, which exceeds that of the earth's mountains. Scientists have decided that wave lengths of the order of 1000 meters, depending on the range of coverage desired, are optimal. There are factors, however, in favor of radio reception on the moon. Atmospheric noise is absent, and long distance communication for narrow-band signals is thus possible -- i.e., over several hundred kilometers. The 4-item process for communication over the moon's mountains is also explained.

USSR UDC: 621.391.8

ZHUK, V. Ye. and MIKHAYLENKO, V. S.

"Estimating the Effectiveness of Preemphasis for Improving the Noise Immunity of FM Graphic Information Transmission"

Kiev, Izvestiya VUZ — Radioelektronika, Vol. 13, No. 9, 1970, pp 1107-1112

Abstract: The system envisaged in this article is one of facsimile transmission to an electronic computer, a process which demands high receiver noise immunity to maintain the clarity of the transmitted line drawings. Since preemphasis has been considered in connection with improving the noise immunity of AM signals, this article is devoted to the possible role of preemphasis in noise-immunizing FM signals, particularly in connection with facsimile transmission. Expressions are obtained for the signal voltage at the receiver input with preemphasis, and the effectiveness of the preemphasis system is estimated from the signal/noise ratio at the receiver input for a constant average signal power at the input to the communication channel of the receiver. The voltage of the response to pulse noise at the output of the demphasis circuit is determined under the assumption that the noise can be described by the Dirac function. The authors conclude that the use of preemphasis does improve the noise immunity of facsimile images and that the method they describe can be used in projected as well as existing facsimile equipment.

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1/2 028 UNCLASSIFIED PROCESSING DATE--11SEP70
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AUTHOR--DOLUKHANOV, M.P.

COUNTRY OF INFO--USSR

SOURCE--FROM MILLIHERTZ TO TERAHERTZ. RADIO WAVES IN SEA COMMUNICATION AND NAVIGATION (OT MILLIGERTZ TO TERAGERTZ. RADIOVOLNY V MORSKOY SVYAZI I
DATE PUBLISHED-------70

SUBJECT AREAS--NAVIGATION, PHYSICS

TOPIC TAGS--RADIO WAVE PROPAGATION, MARINE NAVIGATION, MARITIME RADIO, ATMOSPHERIC ELECTRIC PHENOMENON

CONTROL MARKING--NO RESTRICTIONS

DOCUMENT CLASS--UNCLASSIFIED
PROXY REEL/FRAME--1988/0492 STEP NO--UR/0000/70/000/000/0001/0102

CIRC ACCESSION NO--AM0105477
UNCLASSIFIED

2/2 028 UNCLASSIFIED PROCESSING DATE--11SEP70

CIRC ACCESSION NO--AM0105477

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. TABLE OF CONTENTS: PREFACE 3. CHAPTER I. GENERAL PROBLEMS IN RADIO WAVE PROPAGATION 5. II. ELECTRICAL CHARACTERISTICS OF EARTH SURFACE AND STRUCTURE OF ATMOSPHERE 26. III. PROPAGATION OF RADIO WAVES OF VARIOUS BANDS 53. IV. PROPAGATION OF ULTRASHORT WAVES 81. V. PROPAGATION OF MILLIMETER WAVES AND OPTICAL BAND WAVES 99. THE AUTHOR PRESENTS IN AN EASY FORM THE CONTEMPORARY CONCEPTS ON THE MECHANISMS AND CHARACTERISTICS OF PROPAGATION OF RADIO WAVES OF VARIOUS BANDS. THE BOOK WAS WRITTEN FOR PEOPLE INTERESTED IN SHIP RADIO COMMUNICATION, MARINE AND GROUND RADIO NAVIGATION EQUIPMENT. IT WILL BE VERY USEFUL TO RADIO AMATEURS.

UNCLASSIFIED

1/2 027 UNCLASSIFIED PROCESSING DATE--16OCT70

TITLE--ELECTRONIC APPARATUS FOR THE RAPID IDENTIFICATION OF CHARGED PARTICLES -U-

AUTHOR-(02)-DOLVA, G.P., TUTUBALIN, A.I.

COUNTRY OF INFO--USSR

SOURCE--PRIB. TEKH. EKSP. 1970, 1, 112-15

DATE PUBLISHED-------70

SUBJECT AREAS--PHYSICS, NUCLEAR SCIENCE AND TECHNOLOGY

TOPIC TAGS--CHARGED PARTICLE, KINETIC ENERGY, SCINTILLATION COUNTER, PROPORTIONAL COUNTER, PULSE HEIGHT ANALYZER, COUNTING CIRCUIT

CONTROL MARKING--NO RESTRICTIONS

DOCUMENT CLASS--UNCLASSIFIED

PROXY REEL/FRAME--1994/1245 STEP NO--UR/0120/70/001/000/0112/0115

CIRC ACCESSION NO--AP0115262

UNCLASSIFIED

2/2 027 UNCLASSIFIED PROCESSING DATE--16OCT70
CIRC ACCESSION NO--AP0115262
ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. THE PRINCIPAL SCHEME IS GIVEN OF AN ELECTRONIC DEVICE WHICH FORMS THE FUNCTION F IS SIMILAR TO LOG 1.5((E PLUS E SUBO PLUS K(DELTAE-DELTAX)) DELTAE-DELTAX) WHERE E IS THE RESIDUAL ENERGY OF THE PARTICLE AFTER ITS PASSAGE THROUGH THE DETECTOR WITH A THICKNESS DELTAE-DELTAX, AND E SUBO AND K ARE VARYING CONTS. THE ENERGY PROFILE OF FUNCTION F WAS DETED. FOR ALPHA PARTICLES IN THE RANGE 5-24 MEV AND FOR P AT 1-14.7 MEV. THE PARTICLES WERE REGISTERED BY A TELESCOPE OF 2 PROPORTIONAL AND 1 SCINTILLATION COUNTERS. THE USE OF THE TELESCOPE IN CONJENCTION WITH THE ELECTRONIC DEVICE ALLOWS DISCRIMINATION OF ALPHA PARTICLES FROM THE NOISE OF OTHER CHARGED PARTICLES. FACILITY: FIZ. TEKH. INST., KHARKOV, USSR.

UNCLASSIFIED

APPROVED FOR RELEASE: 07/19/2001 CIA-RDP86-00513R002200710004-5"

USSR UDC: 543.51

SHKURDODA, V. F., Candidate of Technical Sciences; SAMOBROD, V. V., ANDRUSENKO, A. A., and DOLYA, V. N., Engineers

"A Manufactured Monopolar Type MKh-7301 Spectrometer"

Moscow, Pribory i sistemy upravleniya, No 6, 1972, pp 42-43

Abstract: The Sumy Plant for Electronic Microscopes has designed a monopolar mass spectrometer, type MKh-7301, for mass production. N. N. Bagrov, A. A. Guslyakov, and A. G. Furmanskiy were the men primarily responsible for the design of the industrial version of this instrument, which was constructed for dealing with problems involving the analysis of residual gases in vacuum systems, gas separation and the determination of leakages in high vacuum, the efficiency of evacuation in systems, the control of residual gases in technical procedures such as vacuum sputtering of thin films, vacuum alloying, and the like. A block diagram and a photograph of the instrument are presented together with a list of its technical characteristics and a sample mass spectrograph of residual gases. The instrument itself is discussed and its theory explained. The device has both automatic and manual scanning, and its resolving power and mass range can be varied within certain limits.

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USSR

UDC 8.74

DOLYATOVSKIY, V., POBUKOVSKIY, M., VILLYAR, ZH.

"Automated Transmission Program in COBOL"

V sb. Teoriya i praktika mash. obrabotki inform. (Theory and Practice of Machine Data Processing — collection of works), Rostov-na-Donu, 1971, pp 6-15 (from RZh-Kibernetika, No 7, Jul 72, Abstract No 7V637)

No abstract

1/1

UDC 577.4

USSR

DOLYATOVSKIY, V. A.

"Statements of Two Problems of Optimization of Pattern Layout"

V sb. Teoriya i praktika mash. obrabotki inform. (Theory and Practice of Machine Data Processing -- collection of works), Rostov-na-Donu, 1971, pp 70-74 (from RZh-Kibernetika, No 7, Jul 72, Abstract No 7V478)

Translation: Linear programming models are described for two versions of the roll layout problem.

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USSR UDC 8.74

DOLYATOVSKIY, V. A.

"Training of Specialists in Informatics in France"

V sb. Teoriya i praktika mash. obrabotki inform. (Theory and Practice of Machine Data Processing -- collection of works), Rostov-na-Donu, 1971, pp 98-110 (from RZh-Kibernetika, No 7, Jul 72, Abstract No 7V551)

No abstract

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USSR

UDC 8.74

DOLYATOVSKIY, V. A.

"Program for Automatic Thesaurus Construction"

V sb. Teoriya i praktika mash. obrabotki inform. (Theory and Practice of Machine Data Processing -- collection of works), Rostov-na-Donu, 1971, pp 24-29 (from RZh-Kibernetika, No 7, Jul 72, Abstract No 7V587)

No abstract

1/1

USSR UDC: 8.74

DOLYATOVSKIY, V. A.

"Concerning an Algorithm and a Device for Recognizing Sound Patterns"

V sb. Teoriya i praktika mash. obrabotki inform. (Theory and Practice in Computer Processing of Information--collection of works), Rostov-na-Donu, 1971, pp 74-89 (from RZh-Kibernetika, No 6, Jun 72, abstract No 6V576)

[No abstract]

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DOLYATOVSKIY, V. A.

COLEEN

UDC 612.84/.88 : 519.92-612.815

112. USSR

DOLYATOVSKIY, V. A., PONOMAREVA, I. D., and TSEPKOV, G. V.

SB: FOREIGN PRESS DIGEST 26 OCT 1971

"An Analysis of the Structural and Functional Organization of Sensory Systems"

Kibernetycheskiye Aspekty v Izuchenii Raboty Mozga (Cybernetic Aspects of the Study of the Brain's Functioning), Moscow, Nauka Publishing House, 1970, pp 145-158

Abstract: The basic principles of modeling sensory systems are considered. Quantitative appraisals of the organization and information capabilities of sections of the analysers are proposed. The basic information characteristics of sections of the visual and auditory analysers are calculated. The changes that occur in the structure of the synaptic connections of neurons in various sections of an analyser, the quantitative elements in the sections, and the changes that occur in the frequency of the rhythm of neurons in proportion to ascending analysis are all analyzed. A method of calculating the number of layers of neuron structures and the degree of contraction of the receptive zones of neurons is suggested. The appraisals suggested may be applied to the study of the characteristics of sensory systems.

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UDC 611.85 : 62--501.2

110. USSR

DOLYATOVSKIY, V. A.

"Primary Transformation of a Signal in the Auditory System"

Kiberneticheskiye Aspekty v Izuchenii Raboty Mozga (Cybernetic Aspects of the Study of the Brain's Functioning), Moscow, Nauka Publishing House, 1970, pp 92-109

Abstract: A model of the transverse deformations of the membranes and hair cells of the cochlea of the inner ear is examined. The model represents a mechanical system. It is assumed that the forces of the weight of the tectorial and basilar membranes are compressed because of their structure and the filling of the cochlear passage with endolymph. The stereocilia of the external and internal hair cells are not attached to the tectorial membrane. The Reisner membrane has an unequal depression as a result of the unequal distribution of pressure in the vestibular passage.

The static deformations of the basilar membrane are designed for half-cycles of oscillations. The tensile strengths of the tectorial membrane are found and the deflection angles of the stereocilia are computed for different amplitudes of sound pressure on the tympanum. It is found that the basilar membrane has an optimal distribution of load. Equations for its depression are found. The intensity of the elastic deformations of the hair cells and the elastic forces of the pressure of the tectorial membrane on the hair cells (during maximal magnitude of the sound pressure) are found.

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

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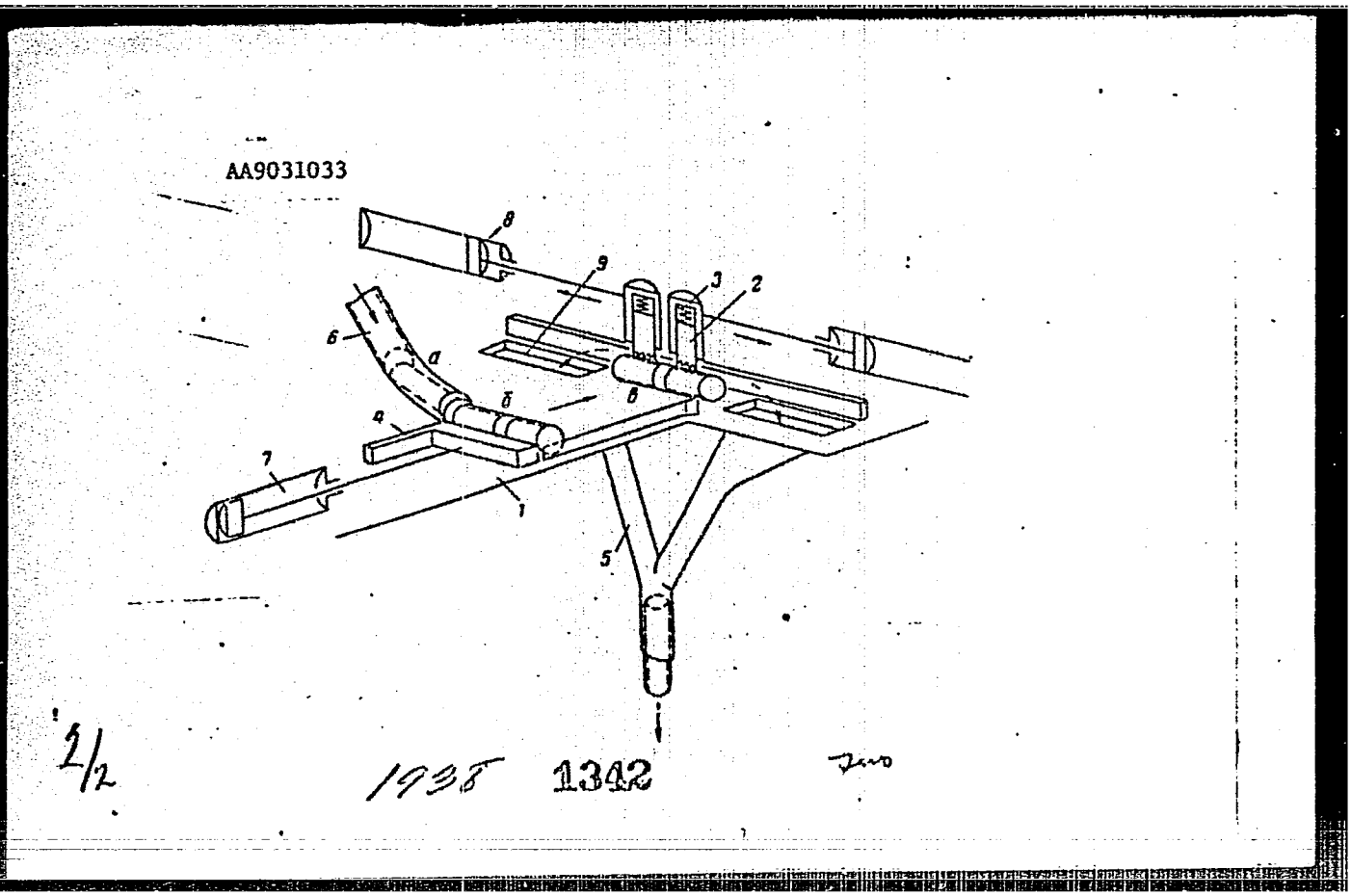
222131 THREADED STUD POSITIONER feeds them from the vibro-bin to the channel (6) and so to the table (1) ahead of the feeder (4) moved by a ram (7). The feeder moves the stud beneath the spring combs or rakes (position B) which are then moved opposite ways (ram 8). One of the combs moves the stud along its own axis and ejects it to the window (9) and so the offtaker (5). Combs and feeder re-set etc. Limit switches control the ram movement.

9.11.65. as 1037173/25-8, DOLZHANOV, O.P. and ELISEEV, K.I. Car Ind. Tech. Res. Inst. (2.10.68) Bul. 22/17.7.68. Class 49c, Int. Cl. B 23d.

1/2 1938 1341 15



2/2 1935 1342

USSR

UDC 669.245.018.44

ADLER, YU. P., DOLZHANSKIY, YU. M., MOLOSTOVA, I. I., and SIVILEVA, L. I., Institute for Improving the Qualifications of the Ministry of the Chemical Industry USSR, All-Union Institute of Aviation Materials

"Statistical Study of the Mechanical Properties in the Al-Zn-Mg-Cu System Using Projected-Experiment Methods"

Ordzhonikidze, IVUZ, Tsvetnaya Metallurgiya, No 5, 1973, pp 135-139

Abstract: The study related the mechanical properties of the Al-Zn-Mg-Cu system to the composition of the melt, containing the following weight % of metals: Zn, 7.5 and 8.5; Mg, 2.5 and 3.5; Cu, 1.5 and 2.3 and Zr, 0.13%. This resulted in 8 alloys for the first stage. The alloys prepared during the second stage had the following compositions: Zn, 8.0 and 9.5%; Mg, 1.5 and 2.5%; Cu, 1.0 and 2.0%; Zr, 0 and 0.13%; Co, 0 and 0.2%; Mm, 0. and 0.3%; Fe, 0.1 and 0.2%. The mechanical properties measured were the strength (σ_B in kg/mm^2) and the relative extension at the rupture point (δ, in %). Sets of equations of the form δ or $\sigma_B = A \pm BX_b \pm CX_c \ldots NX_n$ were set up and the coefficients A - N analyzed in matrix form. The X_n is the concentration

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USSR

ADLER, YU. P., et al.. Tsvetnaya Metallurgiya, No 5, 1973, pp 135-139

of component N. The additions of Zn, Mn, Co resulted in an increase in the strength. The decrease of Mg from 3.5 to 2.5 increased the relative extension from 8.3 to 11.7%.

2/2

USSR

UDC 669.245.018.44

DOLZHANSKIY, YU. M., MOISEYEV, V. N., SIBILEVA, L. I., and TERENT'YEV, L. N., All-Union Scientific Research Institute of Aviation Materials

"Investigation of the Statistical Principles of the Effect of Alloying Elements on the Mechanical Properties of Alloys in the Ti-Al-Mo-V System (Type VT16)"

Ordzhonikidze, Izvestiya Vysshikh Uchebnykh Zavedeniy--Chernaya Metallurgiya, No 4, 1973, pp 132-137

Abstract: Studies were made to find the statistical principles for the relationship of the mechanical properties of type VT16 alloys in the annealed and thermally strengthened states to alloy content of Al, Mo, V for three basic forms of heat treatment: annealed, quenched and aged to a tensile strength (TS) greater than or equal to 105 kg/mm^2, and quenched and aged to a TS greater than or equal to 125 kg/mm^2. As the experiment plan, matrix PFE 23 was selected for the following levels of alloying element concentration changes: Al-1.0 and 3.0%, Mo-2.0 and 6.0%, and V-2.0 and 6.0%. Analysis of models for strength and ductility led to the following conclusions. For the manufacture of fasteners, operating under shear, it is recommended to use alloys of average composition: Al $\approx$ 2.0%, Mo $\approx$ 6.5%, and V $\approx$ 4.0% or Al $\approx$ 3.5%, Mo $\approx$ 5.0% and V $\approx$ 4.0%. It was established that these alloys, made from titanium sponge TG-100, ensure a shear strength $\approx$ 64 kg/mm^2 at a level of reduction in area greater than or 1/2

USSR

DOLZHANSKIY, YU. M., et al., Izvestiya Vysshikh Uchebnykh Zavedeniy--Chernaya Metallurgiya, No 4, 1973, pp 132-137

equal to 60%. For fasteners, operating in tension, it is recommended to employ alloys of an average composition: Al $\approx$ 2.5%, Mo $\approx$ 4.5%, and V $\approx$ 4.5%. An alloy with this composition will have a TS equal to or above 110 kg/mm^2 with a reduction in area value of $\approx$ 60% when heat treated as follows: annealed at 780°C for two hours + quenched from 820°C in water for two hours + aged at 570°C for eight hours. For force parts with mechanical properties at a level of TS $\geq$ 125 kg/mm^2 and reduction in area $\approx$ 55-58%, it is recommended to heat treat this alloy by quenching from 780°C for one hour in water + aging at 500°C for 16 hours. 3 figures, 2 tables.

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UDC 669.245.001.5

USSR

ZIMINA, L. N., and DOLZHENKO, D. I.

"Influence of Iron on Properties of Type KhN67VMTYu Nickel Alloys"

Spetsial'nyye Stali i Splavy (Special Steels and Alloys -- Collection of Works), No 77, Metallurgiya Press, 1970, pp 32-42

Translation: Results are presented from a study of the influence of iron on the structure and mechanical properties of alloys in the system Ni-Cr--Mo-W-Ti-Al.

The properties of alloys were studied after hardening and aging from various temperatures, an optimal heat treatment mode was selected, and the properties in the temperature interval from -253 to +1200°C are presented. A new heat-resistant alloy, type EP677, is presented, with 7.5-10.5% Fe, for welded products, designed for brief operation at temperatures up to 800°C. 7 figures; 2 tables; 9 refs.

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Materials

USSR

UDC 549.283:553.55(575.23)

DOLZHENKO, V. N., Institute of Geology, Kirgizskaya SSR

"Distribution of Gold in Siliceous-Carbonate Deposits of the Akshiyryak Ridge (Central Tyan'-Shan')

Frunze, Izvestiya Akademii Nauk Kirgizskoy SSR, No 2, 1973, pp 33-36

Abstract: In a study undertaken in 1970, it was found that carbonate deposits of the western part of the Akshiyryak ridge are characterized by elevated Clark contents of gold, which is concentrated mainly in siliceous and argillo-carbonaceous silfidized intercalations. In the process of silica redeposition due to siliceous limestone excretions, with the formation of residua at their site, gold migration likewise occurs. Gold is evacuated during the marmorization of limestone. In the carbonate formations of Central Tyan'-Shan- gold accumulates, in addition to nonferrous metals; this is very significant for an understanding of the process of residual and endogenic ore formation.
12 references.

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USSR

UDC 669-419:669.14

NAVROTSKIY, I. V., TOMENKO, YU. S., and DOLZHENKOV, F. YE., Khar'kov

"Rupture of Multilayered Steel During Dynamic and Static Application of Loads"

Moscow, Izvestiya Akademii Nauk SSSR -- Metally, No 5, 1970, pp 132-136

Abstract: This article contains a study of the relation of the number and arrangement of layers of multilayered steel to its ductile properties. The basic factor here is not only the ductility level at room temperature but also the nature of its variation at lower temperatures. It is important that the types of steel selected as the component metal differ essentially with respect to their resistance to cold. Samples of 3-, 5-, and 7-layer material made of St.2kp and 1Kh18N10T steels were tested to study this problem. The test were performed in the temperature range from +20°C to -100°C. The impact toughness was also determined at the boiling point of liquid nitrogen. By comparing the temperature discontinuity of the impact toughness, it is clear that the amount of ductile steel 1Kh18N10T in the multilayered sample is not the defining factor for cold resistance. The number of layers in the strip has a much greater effect. Within the limits of each group, with an increase in the number of layers, the temperature discontinuity of the impact toughness drops noticeably, i.e.,

APPROVED FOR RELEASE: 07/19/2001 CIA-RDP86-00513R002200710004-5"

NAVROTSKIY, I. V., et al, Izvestiya Akademii Nauk SSSR -- Metally, No 5, 1970, pp 132-136

the cold resistance of the material increases. High values of impact toughness are noted for very low temperatures.

When testing layered materials using samples with a notch through the outside layer, the crack intersects each layer on being propagated. With a certain combination of metal component properties, the propagation of the crack can take place discontinuously, stopping at the boundary of the ductile layer with generation of a new crack. This nature of rupture requires additional energy absorption, which explains the very high absolute values of the impact toughness obtained when testing such samples. It is pointed out that the more frequently the layers of the tested types of 1Kh18N10T and St2kp steels are alternated and the more layers there are in the sample, the more uniformly the St2kp steel is strained in the multilayer object. The surface of the notch in a 7-layer sample is coated with a network of fine cracks which go from one steel to another. Against the background of this grid, several well-developed cracks are to be seen, and the opening of the cut is appreciably greater than in samples made of 3-layer steel.

USSR

NAVROTSKIY, I. V., et al, Izvestiya Akademii Nauk SSSR -- Metally, No 5, 1970, pp 132-136

Thus, by creating multilayer compositions it is possible to lower, appreciably, the threshold temperature of cold brittleness of brittle steel. The resistance to brittle fracture of the multilayered sample depends to a significantly greater extent on the number of layers and their arrangement than on the total content of ductile steel. This is connected with variation of the kinetics of formation of the main crack and an increase in the plasticity of the brittle component. Significant savings of nickel steel (up to 50-60%) are possible as a result of formation of interstitial layers in them of ferrite class steel while retaining sufficiently large energy capacity of the metal at low temperatures.

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UDC 621.785.797

USSR

BABICH, V. K., GUL', Yu. P., and DOLZHENKOV, I. Ye.

Deformatsionnoye Stareniye Stali (Strain Aging of Steel), Moscow, Metallurgiya, 1972, 320 pp

Translation of Annotation: The features of strain aging of steel and thermally hardened rolled products of different designation are presented which in many cases predetermine the quality and reliability of such materials in operation. At the present time strain aging is used as a hardening thermomechanical treatment method for improving mechanical properties. Available information on aging and the latest achievements in this field are reported.

This book is intended for personnel of scientific research institutes and plant laboratories, technicians working in the fields of heat treatment and plastic deformation, and specialists in physical metallurgy. It may also be useful to teachers, undergraduates, and graduate students at metallurgical, machinebuilding, and polytechnical schools of higher education. 114 illustrations, 9 tables, 536 bibliographic references.

Table of Contents:

USSR

BABICH, V. K., et al., Deformatsionnoye Stareniye Stali (Strain Aging of Steel), Moscow, Metallurgiya, 1972, 320 pp

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UDC: 669.011

USSR

DOLZHENKOV, I. YE., Dneprcpetrovsk Metallurgical Institute

"Dynamic Strain Aging (Blue Brittleness) of Steel"

Kiev, Metallofizika, No 39, 1972, pp 16-26

Abstract: On the basis of our investigations and literature data, the differences and commonality of static and dynamic strain aging of steel were analyzed and the effect of the method of production, chemical composition (content of carbon and alloying elements), heat treatment, and deformation rate on the effect of dynamic strain aging was examined. The mechanism and kinetics of blue brittleness in steel was discussed. It was shown that dynamic strain aging in a number of cases can be used in engineering as a method of strengthening and rapid stabilizing treatment of alloys. 5 figures, 36 bibliographic references.

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USSR

UDC 621.15:541.66

DOLZHENKOV, I. Ye., KLIMENKO, G. P., VERBOLOZ, V. D., RUBAN, A. A., KOVALYUK, V. V., and PROKOPENKO, V. Ye.

"Effect of Tempering and Self-Tempering on the Mechanical Properties of Thermally Hardened Carbon Filaments from Low-Carbon Steel"

Metallurgicheskaya i Gornorudnaya Promyshlennost', No 2, 1971, pp 26-27

Abstract: Carbon filaments 75 x 75 x 8 mm from open-hearth steel were hardened by tempering and self-tempering (i.e. a last discontinuous cooling) using electro-contact heating. Completely hardened filaments were tempered in an electrical shaft furnace from 100 to 650°C at 50° intervals for periods of 0.5 to 1.5 hours and cooled after treatment in air. The results of stability and microstructure studies confirmed previous results and indicated no change in properties after hardening by tempering or self-tempering at the same temperature and times. Changing the length of the processing time from 0.5 to 1.5 hours did not appear to affect the mechanical properties. Thermally processed filaments have a lower cold brittleness temperature. Even at -60°C the impact strength of improved steel was at the level of 15-20 kg/cm^2. The most stable values of impact strength at test temperatures from +20 to -60°C were obtained after hardening and tempering at 400-500°C.

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1/2 029 UNCLASSIFIED PROCESSING DATE--11DEC70

TITLE--NATURE OF WORK HARDENING AND DECREASES IN PLASTICITY AND VISCOSITY OF CARBON STEELS AFTER DEFORMATION AT 290-970DEGREESK -U-

AUTHOR--DOLZHENKOV, I.YE.

COUNTRY OF INFO--USSR

SOURCE--FIZ.-KHIM. MEKH. MATER. 1970, 6(1), 114-16

DATE PUBLISHED-------70

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

TOPIC TAGS--PLASTICITY, CARBON STEEL, METALLURGIC RESEARCH FACILITY, METAL DEFORMATION, WORK HARDENING, IMPACT STRENGTH, ALLOY DESIGNATION, MECHANICAL PROPERTY/(U)10 LOW CARBON STEEL, (U)40 MEDIUM CARBON STEEL, (U)U8 CARBON TOOL STEEL

CONTROL MARKING--NO RESTRICTIONS

DOCUMENT CLASS--UNCLASSIFIED

PROXY REEL/FRAME--3001/0329 STEP NO--UR/0369/70/006/001/0114/0116

CIRC ACCESSION NO--AP0126085

UNCLASSIFIED

2/2 029 UNCLASSIFIED PROCESSING DATE--11DEC70

CIRC ACCESSION NO--AP0126085

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. A STUDY WAS MADE ON THE EFFECT OF ROLLING (AT 290-970DEGREESK WITH REDN. DEGREE 15PERCENT) OF STEELS 10, 40, AND U8, ON THE AMT. OF MICRODISTORTIONS AND SIZE OF BLOCKS AS WELL AS MECH. PROPERTIES. EMPLOYED METHODS ARE DESCRIBED BY D. (1968). AT DEFORMATION DEGREES 14-16PERCENT MECH. PROPERTIES CORRELATED BETTER WITH SIZE OF BLOCKS, WHILE AT HIGHER DEFORMATION DEGREES (WHEN THE FRAGMENTATION OF BLOCKS IS STOPPED) MECH. PROPERTIES CORRELATED BETTER WITH THE AMT. OF MICRODISTORTIONS. THE WORK HARDENING OF TESTED STEEL AT TESTED CONDITIONS DEPENDED ALSO ON THE C CONCN. IN THE STEEL. THE RESULTS INDICATE HOW TO AVOID BRITTLE DISINTEGRATION BY DETG. THE RESERVE OF PLASTICITY AND IMPACT STRENGTH IN STEEL. FACILITY: DNEPROPETROVSK. MET. INST., DNEPROPETROVSK, USSR.

UNCLASSIFIED

USSR

UDC: 621.396.96:621.391.837.1

DOLZHENKOV, V. A., editorial staff of "Radiotekhnika i elektronika" AS USSR

"Analysis of Distortions in Compression of Linear Frequency-Modulated Pulse Signals in the Case of Slight Mismatches Between Signal and Filter"

Analiz iskazheniy pri kompressii lineyno-chastotno-modulirovannykh impul'snykh signalov pri nebol'shykh rassoglasovaniyakh signala i fil'tra (cf. English above), Moscow, 1971, 16 pp, ill. bibliography of 3 titles, No 2639-71 Dep. (from RZh-Radiotekhnika, No 6, Jun 71, Abstract No 6G23)

Translation: A quantitative estimate is given of the effect which mismatch between the characteristics of a linear FM pulse signal and filter has on the shape of the envelope of the compressed signal. Consideration is given to the case of slight mismatches, which is typical for most practical compression systems. Bibliography of three titles. Author's abstract.

1/1

1/2 026 UNCLASSIFIED PROCESSING DATE--04DEC70

TITLE--BIOCHEMICAL STUDIES IN PATIENTS WITH UVEOPATHY -U-

AUTHOR--DOLZHICH, G.I.

COUNTRY OF INFO--USSR

SOURCE--KAZAN MED ZH 1. 57-58. 1970

DATE PUBLISHED--------70

SUBJECT AREAS--BIOLOGICAL AND MEDICAL SCIENCES

TOPIC TAGS--EYE DISEASE, BLOOD CHEMISTRY, ALPHA GLOBULIN, GAMMA GLOBULIN, PROTEIN, ALLERGIC DISEASE

CONTROL MARKING--NO RESTRICTIONS

DOCUMENT CLASS--UNCLASSIFIED
PROXY FICHE NO----FD70/605008/E12 STEP NO--UR/0392/70/001/000/0057/0058

CIRC ACCESSION NO--AP0140011

UNCLASSIFIED

2/2 026 UNCLASSIFIED PROCESSING DATE--04DEC70

CIRC ACCESSION NO--AP0140011

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. STUDIES DONE ON PATIENTS WITH FUCHS'S SYNDROME, CHRONIC DYSFUNCTION OF THE CILIARY BODY, MESODERMAL DYSTROPHY OF THE IRIS AND POZNER-SCHLOSSMANN SYNDROME REVEALED 3 TYPES OF GLYCEMIC CURVES: TYPE I WITH NORMAL LEVEL OF SUGAR OF THE BLOOD AND A HIGH CURVE; TYPE II WITH NORMAL, PRIMARY SUGAR CONTENT OF THE BLOOD AND A HIGH CURVE WITH A SLOW DROP; TYPE III WITH THE GLYCEMIC CURVE RESEMBLING DIABETIC TYPE. CHANGES OF THE GLYCEMIC CURVES ACCORDING TO TYPE II ARE CHARACTERISTIC OF FUCHS'S SYNDROME AND CHRONIC DYSFUNCTIONS OF THE CILIARY BODY. HYPERGLYCEMIA WAS HIGHER THAN NORMAL IN PATIENTS WITH FUCHS'S SYNDROME AND CHRONIC DYSFUNCTIONS OF THE CILIARY BODY. TYPE I WAS PROMINANT IN PATIENTS WITH MESODERMAL DYSTROPHY OF THE IRIS. HYPERCHOLINESTEREMIA WAS NOTED IN ALL PATIENTS WITH MESODERMAL DYSTROPHY OF THE IRIS. HYPERCHOLINESTEREMIA WAS NOTED IN ALL PATIENTS WITH FUCHS'S SYNDROME AND CHRONIC DYSFUNCTIONS OF THE CILIARY BODY AND MESODERMAL DYSTROPHY OF THE IRIS. AN INCREASE IN ALPHA GLOBULINS AND A DECREASE OF GAMMA GLOBULIN FRACTIONS WERE NOTED IN FUCHS'S SYNDROME AND CHRONIC DYSFUNCTION OF THE CILIARY BODY. AN INCREASE OF GAMMA GLOBULINS WAS NOTED IN PATIENTS WITH GLAUCOMOCYLIC CRISES. THE CHANGES OF PROTEIN FRACTIONS OF FUCHS'S SYNDROME SPEAK OF THE DYSTROPHIC NATURE OF THE PATHOLOGICAL PROCESS. AN INSIGNIFICANT INCREASE OF GAMMA GLOBULIN FRACTIONS IN POZNER SCHLOSSMANN SYNDROME CAN BE CONSIDERED AS ALLERGIC CONDITION. FACILITY: ROSTOV MED. INST., ROSTOV-ON-DON, USSR.

UNCLASSIFIED

1/2 034 UNCLASSIFIED PROCESSING DATE--30OCT70

TITLE--LOCAL AND GENERAL DISEASES WITH FUCHS SYNDROME -U-

AUTHOR-(02)-BOCHKAREVA, A.A., DOLZHICH, G.I.

D

COUNTRY OF INFO--USSR

SOURCE--VESTNIK OFTAL'MOLOGII, 1970, NR 3, PP 52-56

DATE PUBLISHED--------70

SUBJECT AREAS--BIOLOGICAL AND MEDICAL SCIENCES

TOPIC TAGS--EYE DISEASE, HYPERTENSION, NERVOUS SYSTEM, THYROID GLAND, PANCREAS, HORMONE, METABOLISM

CONTROL MARKING--NO RESTRICTIONS

DOCUMENT CLASS--UNCLASSIFIED

PROXY REEL/FRAME--3003/0116 STEP NO--UR/0357/70/000/003/0052/0056

CIRC ACCESSION NO--AP0129372

UNCLASSIFIED

2/2 034 UNCLASSIFIED PROCESSING DATE--30OCT70

CIRC ACCESSION NO--AP0129372

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. A TOTAL OF 31 PATIENTS WITH FUCHS SYNDROME WERE EXAMINED. FOUR STAGES IN THE DEVELOPMENT OF THIS MORBID CONDITION CHARACTERIZED BY PROGRESSIVELY GROWING DYSTROPHIC CHANGES IN THE IRIS, CRYSTALLINE LENS AND IN THE REGION OF CORNEOSCLERAL TRABECULES WERE ESTABLISHED. IN THE MECHANISM UNDERLYING THE DEVELOPMENT OF GLAUCOMA IN PATIENTS WITH FUCHS SYNDROME THE MOST IMPORTANT PART PLAY DYSTROPHIC CHANGES OF THE CORNEOSCLERAL TRABECULES AND THE IRIS, WHICH TEND TO HAMPER THE OUTFLOW OF THE INTRAOCULAR FLUID. CONSIDERABLE CHANGES OF GLYCERIC CURVES, HYPERCHOLISTEOLEMIA, DYSFUNCITON OF THE VEGETAIVE NERVOUS SYSTEM AND OF SOME ENDOCRINE GLANDS (THYROID AND PANCREATIC) SUGGEST VEGETOHORMONAL DISORDERS TO PLAY A DEFINITE ROLE IN THE PATHOGENESIS OF THE FUCHS SYNDROME. HENCE, IT IS EXPEDIENT TO PRACTICE TREATMENT AIMED AT NORMALIZATION OF THE ACTIVITY OF THE VEGETATIVE NERVOUS SYSTEM, ENDOCRINE GLANDS AND METABOLIC PROCESSES.

FACILITY: KAFEDRA GLAZNYKH BOLEZNEY ROSTOVSKOGO MEDITSINSKOGO INSTITUTA.

UNCLASSIFIED

USSR

UDC 541.144.7

DOMAN, N. G. and MUKHIN, Ye. N.

"Some Urgent Aspects of Photosynthesis: All Union Symposium on the Biochemistry and Biophysics of Photosynthesis, Irkutsk, 1970"

Moscow, Prikladnaya Biokhimiya i Mikrobiologiya, No 5, 1971, pp 609-611

Abstract: Some 50 papers were presented at the conference by scientists representing every research organization concerned with photosynthesis in the Soviet Union, including those newly established in the eastern part of the country, and several socialist countries. Among the topics discussed were electron transfer in the photosynthesis of bacteria and higher plants; interaction of pigments in plastids of Chlorella mutants; spectral properties of chloroplast fragments treated with galactolipase; degradation and regeneration of plastids and pigments in plants exposed to adverse environmental factors such as absence of light and low temperatures; relationships between chloroplasts and mitochondria; carbon metabolism during photosynthesis; capacity of photosynthesizing bacteria for autotrophic and heterotrophic development; metabolism of several exogenous labeled organic acids in plants; postphotosynthetic transformations of carbon in soy after exposure to various favorable and unfavorable factors; regulation of photosynthesis at different levels; biochemical regulation and genetic controlling

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APPROVED FOR RELEASE: 07/19/2001 CIA-RDP86-00513R002200710004-5"

USSR

DOMAN, N. G. and MUKHIN, Ye. N., Prikladnaya Biokhimiya i Mikrobiologiya, No 5, 1971, pp 609-611

systems of photosynthesis; glutamine synthesis in wheat leaves; physiologic aspects of photosynthesis and methods of increasing plant productivity; and physiologic and genetic factors optimizing photosynthesis.

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1/2 007 UNCLASSIFIED PROCESSING DATE--02OCT70
TITLE--ASSIMILATION OF ACETATE BY RHODOPSEUDOMONAS PALUSTRIS -U-

AUTHOR-(03)-CHERNYADYEV, I.I., KONDRATYEVA, YE.N., DOMAN, N.G.

COUNTRY OF INFO--USSR

SOURCE--MIKROBIOLOGIYA, 1970, VOL 39, NR 1, PP 24-29

DATE PUBLISHED--------70

SUBJECT AREAS--BIOLOGICAL AND MEDICAL SCIENCES

TOPIC TAGS--PSEUDOMONAS, CARBON ISOTOPE, PHOTOSYNTHESIS, ACETATE, BACTERIA MUTATION

CONTROL MARKING--NO RESTRICTIONS

DOCUMENT CLASS--UNCLASSIFIED
PROXY REEL/FRAME--1990/1456 STEP NO--UR/0220/70/039/001/0024/0029

CIRC ACCESSION NO--AP0109516

UNCLASSIFIED

2/2 007 UNCLASSIFIED PROCESSING DATE--020CT70
CIRC ACCESSION NO--AP0109516
ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. RHODOPSEUDOMONAS PALUSTRIS ASSIMILATES 2-C PRIME14 NEGATIVE ACETATE BOTH UNDER ANAEROBIC AND AEROBIC CONDITIONS ON LIGHT AND UNDER AEROBIC CONDITIONS IN DARKNESS. THE GREEN MUTANT OF RH. PALUSTRIS, UNCAPABLE FOR PHOTOSYNTHESIS, INCORPORATES 2-C PRIME14 NEGATIVE ACETATE UNDER AEROBIC CONDITIONS BOTH ON LIGHT AND IN DARKNESS. THE CHARACTER OF THE PRODUCTS FORMED, C PRIME14 DISTRIBUTION DURING ASSIMILATION OF LABELED ACETATE BY THE PARENT STRAIN OF RH. PALUSTRIS AND ITS MUTANT AS WELL AS ALMOST COMPLETE INHIBITION OF C PRIME14 NEGATIVE ACETATE INCORPORATION IN THE CELLS IN THE PRESENCE OF FLUOROACETATE AND PARTIAL INHIBITION IN THE PRESENCE OF MALONATE SUGGEST FUNCTIONING OF THE REACTIONS OF THE TRICARBOXYLIC ACID CYCLE AND OF THE GLYOXYLATE CYCLE IN THESE BACTERIA BOTH ON LIGHT AND IN DARKNESS.

UNCLASSIFIED

APPROVED FOR RELEASE: 07/19/2001 CIA-RDP86-00513R002200710004-5"

1/2 012 UNCLASSIFIED PROCESSING DATE--20NOV70
TITLE--ASSIMILATION PRODUCTS OF CO SUB2 AND SOME ORGANIC COMPOUNDS BY CHLOROPSEUDOMONAS -U-
AUTHOR-(04)-TROTSENKO, YU.A., SIMISKER, YA.A., KONDRATYEVA, YE.N., DOMAN, N.G.
COUNTRY OF INFO--USSR

SOURCE--IZVESTIYA AKADEMII NAUK SSSR, SERIYA BIOLOGICHESKAYA, 1970, NR 3, PP 415-422
DATE PUBLISHED--------70

SUBJECT AREAS--BIOLOGICAL AND MEDICAL SCIENCES

TOPIC TAGS--PSEUDOMONAS, PHOTOSYNTHESIS, CARBON ISOTOPE, CHEMICAL LABELLING, CARBON DIOXIDE, BICARBONATE, AMINO ACID

CONTROL MARKING--NO RESTRICTIONS

DOCUMENT CLASS--UNCLASSIFIED
PROXY REEL/FRAME--3001/0493 STEP NO--UR/0216/70/000/003/0415/0422

CIRC ACCESSION NO--AP0126243
UNCLASSIFIED

2/2 012 UNCLASSIFIED PROCESSING DATE--20NOV70

CIRC ACCESSION NO--AP0126243

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. DURING SHORT TIME (10-30 SEC.) FIXATION OF C PRIME14 BICARBONATE BY THE GREEN PHOTOSYNTHETIC BACTERIA, CHLOROPSEUDOMONAS UNDER AUTOTROPHIC CONDITIONS AND IN THE PRESENCE OF SULFIDE AS WELL AS FORMATE OR PROPANOL THE FIRST TO BE DETECTED ARE LABELLED SUCINATE, GLUTAMATE ASPARTATE AND THEN FUMARATE, AND SERINE GLYCINE. MOST OF C PRIME14 IS PRESENT IN GLUTAMATE. THE LABEL APPEARS IN PHOSPHATE ESTERS NOT EARLIER THAN UPON 5 MINUTES LONG EXPOSURE OF THE CELLS WITH C PRIME14 BICARBONATE. PROPANOL MAINLY PLAYS THE ROLE OF THE ELECTRON DONOR AND BECOMES OXIDIZED FORMING PROPIONIC ACID. INSIGNIFICANT C PRIME14 INCORPORATION FROM PROPANOL INTO THE CELLS EVIDENTLY OCCURS THROUGH THE FORMATION FROM PROPIONATE OF SUCCINATE AND THEN GLUTAMATE AS THE LABEL APPEARS THE FIRST PLACE IN THESE COMPOUNDS. UTILIZATION BY CHLOROPSEUDOMONAS OF C PRIME14 FORMIATE SHOWS THAT AFTER 10-30 SECONDS THE FIRST TO BECOME LABELLED ARE SERINE GLYCIN AND GLUTAMATE AND THEN ASPARTATE AND OTHER PRODUCTS. C PRIME14 FIXATION BY THE CELLS FROM FORMATE AND C PRIME14 O SUB2 IN PRESENCE FORMATE IS CONSIDERABLE SUPPRESSED BY HYPOFOSFATE (5 TIMES 10 PRIME NEGATIVE3 M), INHIBITOR OF FORMATE DEHYDORGENASE. SULFIDE ADDITION DOES NOT REDUCE THE INHIBITING ACTION OF HYPOFOSFTE ON THE FIXATION BY THE BACTERIA OF C PRIME14 FROM FORMIATE. THESE DATA SUGGEST THAT INCORPORATION IN THE CELLS OF FORMATE CARBON BASICALLY TAKES PLACE AFTER IT BECOMES OXIDIZED TO CARBON DIOXIDE. FACILITY: M. V. LOMONOSOV STATE UNIVERSITY, MOSCOW AND A. N. BAUCH INSTITUTE OF BIOCHEMISTRY, ACADEMY OF SCIENCES, USSR.

UNCLASSIFIED

USSR UDC 621.315.592

ALEKSANDROVA, G. A., VIL'KOTSKIY, V. A., DONAHEVSKIY, D. S., TKACHEV, V. D.

"Cathode Luminescence of Epitaxial Gallium Arsenide"

Leningrad, Fizika i Tekhnika Poluprovodnikov, Vol 6, No 2, 1972, pp 311-315

Abstract: The edge and impurity (1.5-0.35 electron volts) cathode luminescence spectra of gas epitaxial layers of gallium arsenide of different degrees of perfection were investigated. The variations in the spectral distribution of the cathode luminescence and the relative intensity of the individual emission bands were analyzed as functions of the current carrier mobility. With a decrease in mobility the intensity of the edge cathode luminescence decreases. Redistribution of the intensity between the radiation peaks at 0.8 and 0.56 electron volts accompanied by a shift of the 0.56 electron volt band to the 0.63 electron volt region is observed. The causes of the observed variations are discussed.

The properties of epitaxial GaAs are determined only by the concentration of the oxygen participating in the formation of the crystal defects. One of the factors determining the concentration of this "structurally active" oxygen can be total perfection of the substrate material. Good correlation is always observed between the cathode luminescence spectra of the films and the substrate.

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USSR

UDC 621.382.2

DOMANEVSKIY, D.S., LIBOV, L.D., LITVINOV, V.L., LOMAKO, V.M., NOVOSELOV, A.M., RAVICH, V.N., TKACHEV, V.D., UKHIN, N.A.

"Effect Of Radiation On Gallium Phosphide P-N Junctions"

V sb. Radiats. fiz. nemet. kristallov. T.3. Ch.2. (Radiation Physics Of Nonmetallic Cryetals. Vol. 3, Part 2--Collection Of Works), Kiev, "Nauk.dumka," 1971, pp 50-53 (from RZh--Elektronika i yeye primeneniye, No 12, Dec 1971, Abstract No 12B534)

Translation: The p-n junctions were obtained by the method of liquid epitaxy with n-GaP. The epitaxial p-region was doped with O_2 and Zn. Irradiation was done with reactor neutrons and also electrons with 28 Mev energy at temperatures above 50° C. The current-voltage characteristics and the electroluminescent spectra were investigated at room and nitrogen temperatures. After irradiation, the forward branch of the current-voltage characteristics is shifted to the region of smaller voltages (the lifetime of minority carriers is decreased) and subsequently with an increase of the flux -- to the side of the larger voltages (increase of the resistivity of the initial material). After irradiation the intensity of all the spectral bands of electroluminescence are decreased. The

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DOMANEVSKIY, D. S., et al., Radiats. fiz. nemet. kristallov, T.3. Ch.2. (Radiation Physics Of Nonmetallic Crystals. Vol. 3, Part 2--Collection Of Works), Kiev, "Nauk. dumka," 1971, pp 50-53 (from RZh--Elektronika i yeye primeneniye, No 12, Dec 1971, Abstract No 12B534)

intensity of the red band with a flux decreased approximately 1.5 times more slowly that the green. The spectral composition of the radiation changed after irradiation. The results presented indicate that the change of the electrical and optical characteristics of GaP p-n junctions after irradiation have the same character as in the case of GaAs p-n junctions. 3 ill. 1 tab. 4 ref. I.M.

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USSR UDC 621.382.2.002:535.376

VIL'KOTSKIY, V.A., DOMANEVSKIY, D.S., LITVINOV, V.L., LOMAKO, V.M., NOVOSELOV, A.M., TKACHEV, V.D., UKHIN, N.A.

"Optical And Electrical Properties Of Irradiated GaAs Diodes (Annealing)"

V sb. Radiats. fiz. nemet. kristallov (Radiation Physics Of Nonmetallic Crystals--Collection Of Works), Vol 5, Part 2, Kiev, "Nauk.dumka," 1971, pp 44-49 (from RZh--Elektronika i yeye primeneniye, No 10, October 1971, Abstract No 10E285)

Translation: The effect was investigated of isochronous annealing on the spectra of radiative recombination of n-GaAs p-n junctions irradiated by fast reactor neutrons. An analysis of the results obtained makes it possible to conclude that during neutron irradiation, the decrease of lifetime is determined by the regions of disorder which are effective centers of nonradiative recombination. 3 ill. 6 ref. N.S.

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USSR

UDC 537.311.3:548.19'681

VIL'KOTSKIY, V.A., DOLGINOVSKIY, Ye.Ye., LOMAKO, V.M.

"Effect Of Irradiation By Neutrons And γ-Quanta On The Spectra Of Cathodoluminescence Of GaAs"

V sb. Radiats. fiz. nemet. kristallov (Radiation Physics Of Nonmetallic Crystals-Collection Of Works), Vol 3, Part 2, Kiev, "Naukova dumka," 1971, pp 10-16 (from RZh--Elektronika i yeye primeneniye, No 10, October 1971, abstract No 10B30)

Translation: The effect was studied of penetrating radiation on the luminescence spectra of n- and p-type GaAs with concentrations of majority carriers of $10^{14} - 10^{16}$ cm^{-3} at 300° K with the object of clarifying the nature and processes of formation of majority luminescence centers in these crystals. Irradiation by γ-quanta of Co^{60} was conducted at a temperature of 20° C and by fast neutrons at 70° C. The integral flow of γ irradiation amounted to $3.6 \cdot 10^{15} - 5 \cdot 10^{17}$ cm^{-2} and by neutrons $10^{13} - 10^{17}$ cm^{-2}. For excitation of nonequilibrium carriers a beam of fast electrons with an energy of 50 kev was used. The spectra were plotted at an 80° K temperature. In the luminescence spectra of the irradiated specimens, the formation was observed of a new band with a maximum in the region of 1.35 ev which was accompanied by a shift of the maximum of edge radiation into the 1.495 ev region and also a shift of the 0.96 ev band into the 1.01 ev region. I.I.

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