USSR

UDC 539.23:678.745:537.226

AYVAZOV, V. YA., KOBKA, V. G., PEROVA, L. V.

"Obtaining Thin Polymer Films and Studying their Dielectric Properties"

Kiev, Poluprovodnikovaya tekhnika i mikroelektronika, No 5, 1971, pp 39-42

Abstract: A study was made of the process of obtaining polymer films on an insulated substrate placed in the interelectrode space, the electrophysical properties of these films and the parameters of thin-film capacitors based on them. The procedure for obtaining the thin polymer films in an AC glow discharge is described. Data are presented showing the effect of the vapor pressure of the initial monomer (hexamethyldisiloxane) and the discharge current density on the stability of the dielectric properties of the films. All the basic electric parameters of thin-film capacitors with a polymer dielectric measured in a broad temperature and frequency range are presented. A table is given with the dielectric constant ε, tg δ at a frequency of 1 kilohertz, the leakage resistance for a DC voltage of 10 volts, the breakdown voltage V for capacitors with an electrode area of 0.1 cm^2. These parameters are sufficiently high for the thin-film capacitors with a polymer dielectric to operate under the most rigid temperature conditions. The described polymer films can be used successfully in microelectronics to obtain high-frequency film capacitors and insulating layers.

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USSR UDC 621.315.592:546:539.238

AYVAZOV, V. Ya.

"Characteristics of Thin SiO_2 Films Prepared by the Electron-Beam Vaporization Method"

Kiev, Poluprovodnikovaya tekhnika i mikroelektronika, No. 5, 1971, pp 59-65

Abstract: This article investigates the effect of technological factors on the composition, structure, and dielectric characteristics of films obtained by the vaporization of quartz by means of an electron beam. The films were sputtered in the vacuum device UVN-2U with the electron vaporizer equipment IEL-2 with a distance of 24 cm between the crucible and the substrate. The initial material was SiO_2 powder, sintered at a temperature of 1200° C in nickel forms and in a hydrogen furnace. Tablets measuring 8X8X10 mm^3 and weighing 1.2-1.4 g were prepared. The procedure for the experimental work done on these specimens is described, and results are given in the form of curves and tables. The author concludes that the composition of the sputtered films is basically a function of the electron beam power and that their porosity is a function of the substrate temperature at the time of the sputtering and of the substrate material.

USSR UDC 535.853.4

KARPINOS, D. M., LISTOVNICHAYA, S. P., AYVAZOV, V. YA.

"Reflecting Attachment for an Infrared Spectrometer"

Moscow, Pribory i Tekhnika Eksperimenta, No 6, 1971, pp 190-191

Abstract: The known devices for obtaining the infrared reflection and transmission spectra of thin films are highly complex. A simple design of an attachment for studying the reflection and transmission spectra of thin films at angles of incidence close to 78° for single and double-beam devices is described. The device makes it possible to obtain spectra for films the thickness of which is much less than the wavelength. This provides information about the film structure and makes it possible to study the boundary interaction of the contacting phases of a different physical-chemical nature.

The investigated sample is attached at an angle of 75-78° to the axis of the incident radiation as the mirror closest to the entrance slit of the monochromator. The other two mirrors are aluminum plated glass plates made of KF-8 glass. All three mirrors are installed in a special mounting which is attached in a sealed tube of an illuminator. The slit is covered by a rubber plate. To increase the sensitivity of the method (isolate the radiation component parallel to the plane of incidence), a polarizer -- a diffraction

USSR

KARPINOS, D. M., et al., Pribory i Tekhnika Eksperimenta, No 6, 1971, pp 190-191

grating applied to an aluminum-coated polyethylene film -- is added to the attachment.

In the spectra of SiO_2 films, in addition to usually observed absorption band, new absorption bands were detected in the 1,300 and 500 cm^{-1} region which are absent in the spectra of films applied to monocrystalline Si. These new bands are explained by the polarizing effect of the substrate. Analogously, in the 1,000 cm^{-1} region, an absorption peak was detected for Al_2O_3 films obtained by the high frequency deposition method.

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USSR UDC 621.793.12

AYVAZOV, V. Ya., KOBKA, V. G., and PEROVA, L. V.

"Production of Thin Polymer Films and Study of Their Dielectric Properties"

Poluprovodn. tekhn. i mikroelektronika. Resp. mezhved. sb. (Semiconductor Technices and Microelectronics. Republic Interdepartmental Collection), 1971, Issue 5, pp 39-42 (from RZh-Elektronika i yeye primeneniye, No 9, September 1971, Abstract No 9A198)

Translation: A method is described for producing thin polymer films in an a-c glow discharge. The effect is studied of the pressure of vapors of an initial monomer (hexamethyldisiloksan) and the density of the current discharge on the stability of the dielectric properties of the film. All the basic electrical parameters are provided for thin film capacitors with a polymer dielectric measured in a wide range of temperatures and frequencies. 5 ref. Summary.

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USSR UDC 621.382.8--416:621.315.592

AYVAZOVA, L. S. and BOGDAN, G. I.

"Film Capacitors Using TiO_2"

Kiev, Poluprovodnikovaya tekhnika i mikroelektronika, No. 5, 1971, pp 37-39

Abstract: A description is given of a method for preparing capacitors using Ti-TiO_2-Al films and substrates of sodium and nonalkali glass. The results of experiments performed on these devices are also presented. Specimens with an oxide layer thickness of 1700 Å were found to have a specific capacitance of 0.3 $\mu F/cm^2$; the dielectric constant of the layer was 58. Frequency limits of the capacitors were a maximum of 5 MHz. Curves are plotted for the temperature and frequency dependences of the capacitance and dielectric characteristics of these devices. The authors are associated with the Kiev Polytechnical Institute.

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USSR UDC 621.396.6-181.5

AYVAZOVA, L.S., BOGDAN, G.I.

"Film Capacitors Based On TiO_2"

Poluprovodn. tekhn. i mikroelektronika. Resp. mezhved. sb. (Semiconductor Technology And Microelectronics. Interdepartmental Collection), 1971, Issue 5, pp 37-39 (from RZh--Radiotekhnika, No 9, Sept 1971, Abstract No 9V293)

Translation: Capacitors are obtained based on an electrolytically oxidized titanium film with a permittivity of 0.3 microfarad/cm^2 and tg δ = 0.01--0.05. The temperature and frequency characteristics of the specimens are shown. 3 ill. 2 ref. Summary.

1/1

USSR

GAIBOV, T. D., ROMANOVA, P. M., and AYVAZYAN, L. A.

"Biological Toxicity of Diaminoethoxy-dimethyl Sulfide"

Uch. zap. Azerb. un-t. Ser. khim. n. (Scientific Notes of Azerbaydzhan University: Chemical Sciences Series), 1970, No 2, pp 69-70 (from RZh-Biologicheskaya Khimiya, No 2, 25 Jan 71, Abstract No 2F2117 by M. Sh.)

Translation: β, β'-Diaminoethoxy-dimethyl sulfide injected subcutaneously into rabbits (0.2-1.0%) did not alter Hb concentration, erythrocyte count or indicators of erythrocyte sedimentation rate.

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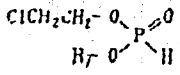
USSR UDC: 547.26'118.07

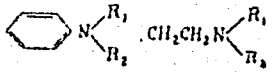
SARKISYAN, L. A., KHASKIN, A. N., ZAVLIN, P. M., AYRAPETYAN, S. G., AYVAZYAN, M. K., Leningrad Institute of Motion Picture Engineers

"A Method of Producing Acid Esters of β-Chloroethylphosphorous Acid"

Moscow, Otkrytiya, Izobreteniya, Promyshlennyye Obraztsy, Tovarnyye Znaki, No 28, 1970, Soviet Patent No 280474, filed 18 Mar 69, p 25

Abstract: This Author's Certificate introduces: 1. A method of producing acid esters of β-chloroethylphosphorous acid of the general formula



where R is naphthyl,  , R_1 is an alkyl, oxyalkyl, diphenylmethyl, aryl, R_2 is H, an alkyl, oxyalkyl. As a distinguishing feature of the patent, aminophenyl, alkanolamine or hydroxynaphthaline is interacted with ehtyleneglycolphosphorous acid chloride in the presence of hydrogen chloride with subsequent isolation of the goal product by conventional methods. 2. A modification of this method in which the process is carried out in an organic solvent such as ether. 3. A modification of the method in which the process is carried out with [illegible] ther.

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USSR

UDC: 519.2

AYVAZYAN, O. A., SHAUMYAN, G. Sh.

"Modeling the Mechanism of Formation of Family Incomes"

Moscow, Opyt primeneniya prikl. metodov mat. i vychisl. tekhn. v nar. kh-ve--sbornik (Experience in Using Applied Methods of Mathematics and Computer Technology in the National Economy--collection of works), "Statistika", 1972, pp 23-38 (from RZh--Kibernetika, No 5, May 73, abstract No 5V387 by the authors)

Translation: The paper proposes a variant of a probabilistic statistical model which describes the mechanism of formation of the law of distribution of families and family members with respect to mean per capita income. In this connection, the basic input (basis) parameters of the model are the parameters of distribution of workers, those on pension and those receiving stipends in accordance with the sizes of wages, pensions and stipends respectively, as well as certain characteristics of family structure. The initial premises used in the model rest on the results of a one-time sample examination

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USSR

AYVAZYAN, O. A., SHAUMYAN, G. Sh., Opyt primeneniya prikl. metodov mat. i vychisl. tekhn. v nar. kh-ve, "Stistika", 1972, pp 23-38

of the makeup, income and living conditions of factory and office workers for 1967. Calculations for experimental verification were done in the Computing Center of the State Planning Commission of the Armenian SSR.

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USSR

UDC 669.15'295

YAVOYSKIY, V. I., KOSTEREV, L. B., AYYUB, A. A., and RASTORGUYEV, L. N., Moscow

"Activity and Concentration of Oxygen in Fe-Ti Melts"

Moscow, IAN SSSR, Metally, No 2, Mar-Apr 71, pp 50-57

Abstract: The deoxidizing capacity of titanium was studied by the method of electromotive forces and an indirect method based on study of the interaction of a melt with the walls of a crucible. The emf method allows the activity of oxygen in the melt to be determined directly. The indirect method has an advantage in the study of the deoxidizing capacity of strong deoxidizers, since the determination of very low concentrations of oxygen in the liquid ion, which is analytically difficult, is not required. The use of the two different methods increases the reliability of the results produced. The results indicate that the composition of the reaction products from the deoxidation of ion by titanium depends on the concentration of the titanium. Individual oxides of titanium exist over broad titanium concentration intervals.
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USSR

YABOYSKIY, V. I., et al., IAN SSSR, Metally, No 2, Mar-Apr 71, pp 50-57

The thermodynamic characteristics of equilibrium of the deoxidation reaction for titanium determined by the two methods agree well. As titanium concentration rises to over 1%, the activity of oxygen in the Fe-Ti melt increases. Based on experimental data, the interaction parameter e_O^{Ti} is calculated. The high value of e_O^{Ti} (-0.65 at 1600°C) indicates the strong influence of titanium on the activity of oxygen in liquid iron.

USSR UDC 669.15'295

YAVOYSKIY, V. I., KOSTEREV, L. B., AYYUB, A. A., and RASTORGUYEV, L. N., Moscow

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Moscow, IAN SSSR, Metally, No 2, Mar-Apr 71, pp 50-57

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USSR

YABOYSKIY, V. I., et al., IAN SSSR, Metally, No 2, Mar-Apr 71, pp 50-57

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USSR

UDC 536.2

AYZEN, A. M., ZASLAVSKAYA I. G., YAMPOL'SKIY, N. G., All-Union Scientific Research and Design and Construction Institute of the Petroleum Processing and Petrochemical Industry

"Concerning the Application of Perturbation Theory in Solving Three-Dimensional Nonlinear Problems of Thermal Conductivity"

Moscow, Teplofizika Vysokikh Temperatur, No 6, Nov/Dec 70, pp 1249-1255

Abstract: The solution of three-dimensional problems and thermal conductivity in which the volumetric heat capacity and the coefficient of heat conductivity are both dependent on temperature is considered. The heat capacity and the coefficient of heat conductivity are approximated by expressions which more exactly agree with experiment: $C(t) = C_1(1 + At + Bt^2)$, $\lambda(t) = \lambda_1(1 + A_1 t + B_1 t^2)$. By making certain transformations, the nonlinear differential equation of heat conductivity is reduced to a nonlinear equation containing a single small parameter, in terms of powers of which the asymptotic solution of the equation is found with an accuracy up to terms proportional to the cube of the small

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USSR

AYZEN, A. M., et al., Teplofizika Vysokikh Temperatur, No 6, Nov/Dec 70, pp 1249-1255

parameter. The technique for selecting the small parameter depends on the region in which the solution of the nonlinear problem is examined, whether high or low temperature. In the high-temperature region the smallness of the coefficients for t and t^2 is associated with the fact that lattice fluctuations determining the first term in the expression for heat conductivity make the basic contribution to the heat conductivity of metals; if this condition is not satisfied, the region can be broken up into sufficiently small temperature changes. By a combined application of the perturbation method and the method of finite integral transformations, the three-dimensional problem is reduced to a system of ordinary linear differential equations with a solution equivalent to the solution of the initial problem.

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USSR

UDC 576.858.07

NIKOLAYEVSKAYA, Z. S., and AYZEN, M. S.

"Detection of Minimum Virus Concentrations in Large Volumes of Medium by Ultrafiltration Through Soluble Lanthanum-Aluminum-Alginate Ultrafilters"

Moscow, Voprosy Virusologii, No 6, 1972, pp 723-726

Abstract: Combination of purification methods (double filtration through bacterial asbestos filters treated with 0.05% aqueous sodium alginate solution) and concentration by ultrafiltration through soluble La-Al-alginate ultrafilters facilitates isolation of minimum amounts of viruses from large volumes of water. This was demonstrated by inoculating sterile, double-distilled water with poliomyelitis virus type I (Mahoney strain) at 10^{-3}-10^{-3} $TCID_{50}$/ml concentration. Concentration increased virus titers by 2 lg PFU/ml as compared to values prior to ultrafiltration. The methods were sensitive to 10^{-1}-10^{-2} $TCID_{50}$/ml. The concentration factor was 400-500. Absence of virus in filtrate indicates that all virus was retained. Detection of enteroviruses and other cytopathic agents was possible by this method in 37.1% of 1-liter samples of discharge from a water treatment plant and in 37.5% of 3-liter samples from the Volga River near Kalinin.

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1/2 029 UNCLASSIFIED PROCESSING DATE--16OCT70

TITLE--THE PREPARATION OF PIVOT TOOTH BY A SINGLE STAGE TECHNIQUE -U-

AUTHOR--AYZENBERG, E.M.

COUNTRY OF INFO--USSR

SOURCE--STOMATOLOGIYA, 1970, VOL 49, NR 3, PP 68

DATE PUBLISHED--------70

SUBJECT AREAS--BIOLOGICAL AND MEDICAL SCIENCES

TOPIC TAGS--TOOTH, DENTISTRY, PROSTHESIS

CONTROL MARKING--NO RESTRICTIONS

DOCUMENT CLASS--UNCLASSIFIED

PROXY REEL/FRAME--1998/0074 STEP NO--UR/0511/70/049/003/0068/0068

CIRC ACCESSION NO--AP0120774

UNCLASSIFIED

2/2 029 UNCLASSIFIED PROCESSING DATE--16OCT70

CIRC ACCESSION NO--AP0120774

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. SUMMARY. THE PAPER CARRIES A DESCRIPTION OF THE TECHNIQUE OF SINGLE STAGE PREPARATION OF PIVOT TOOTH WHICH WAS EMPLOYED IN 100 TEETH. FACILITY: KOPEYSKOYE MEDITSINSKOYE UCHILISHCHE.

UNCLASSIFIED

USSR UDC: 621.396.677(088.8)

AYZENBERG, G. Z., ZHURBENKO, E. M., KLIGER, G. A., LYALIKOV, V. V.

"A Long-Wave Impedance Antenna"

USSR Author's Certificate No 247362, filed 20 May 68, published 11 May 70 (from RZh-Radiotekhnika, No 11, Nov 70, Abstract No 11B61 P)

Translation: The proposed antenna system consists of an antenna tower, and log-periodic zig-zag arrays hung on rails which are fastened to the antenna tower. A switch is used to connect the transmitter either to the antenna tower or to one of the zig-zag elements. When the transmitter is connected to the antenna tower, the antenna system is an impedance antenna with undirected radiation pattern in the horizontal palne; in this case, the zig-zag log-periodic arrays are passive elements which act as guides. In the case where one of the log-periodic arrays is fed, the antenna system is a directional frequency-independent average-wave antenna. The direction of maximum radiation depends on which log-periodic array the transmitter is connected to. In case it is necessary to serve several sectors with maximum radiation in the direction of the vertex of the log-periodic structures, a transmitter is connected to each of them. One illustration. A. K.

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USSR UDC: 621.396.677.75

AYZENBERG, G. Z., ZHURBENKO, E. M., KLIGER, G. A., and LYALIKOV, V. V.

"Impedance Antenna With Delay Structure Consisting of Zigzag Wire Lines"

Moscow, Radiotekhnika, Vol. 25, No. 11, 1970, pp 39-48

Abstract: Impedance antennas contain two elements, exciters and directors, the latter being an impedance surface which is usually a ribbed metallic surface. The purpose of this article is to analyze antennas of this type and to show how their present form, which is complex and difficult to produce especially at increased wavelengths, can be imitated by replacing the solid metal surface with ribbons or wires bent in rectangle-toothed fashion. In their analysis, the authors limit themselves to considering an asymmetrical vibrator and impedance structure in the form of a grating of radial zigzag lines with vertical and horizontal elements of varying length. They conclude by asserting that such antennas are promising for medium and high-frequency use, and recommend that further investigations into film and wire impedance structures be made. Theoretically and experimentally determined directional diagrams in the vertical and horizontal planes are shown.

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USSR

UDC: 621.396.677.3

AYZENBERG, G. Z., ZHURBENKO, E. M., KLIGER, G. A., LYALIKOV, V. V.

"A Long-Wave Impedance Antenna"

Moscow, Otkrytiya, Izobreteniya, Promyshlennyye Obraztsy, Tovarnyye Znaki, No 4, 1970, p 193, patent No 247362, filed 20 May 68

Abstract: This Author's Certificate introduces: 1. A long-wave impedance antenna which consists of a driver (made in the form of a mast) and director elements. As a distinguishing feature of the patent, the antenna is designed for use in the middle wavelength range as a frequency-independent unit with controllable radiation pattern. The director elements are made in the form of log-periodic zigzag structures suspended on rails. 2. A modification of this antenna whose distinguishing feature is that several attended sectors are provided with maximum emission in the direction of the vertex of the log-periodic zigzag structures by connecting a transmitter to each of these structures.

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USSR

UDC: 621.396.67

AYZENBERG, G. Z. and BELOUSOV, S. P.

"Antennas for Radio Communication, Broadcasting, and Television"

Moscow, Elektrosvyaz', No. 4, 1970, pp 47-62

Abstract: A review of antennas new and old, beginning with the first antenna invented by the Russian pioneer, A. S. Popov, which consisted of a vertical, nonsymmetrical vibrator. The author discusses the history and operation of antennas both in the Soviet Union and abroad, including long- and medium-wavelength antennas for broadcasting (2000-3000 meters for the long waves and 200-2000 for the medium); anti-fading antennas, proposed in 1939 in the Soviet Union; short-wave antennas for communication and broadcasting transmitters; meter wavelength antennas for communications; television and FM transmitting antennas; antennas for space exploration. The article is liberally illustrated with line drawings as well as photographs of such installations as the pneumatic antenna mast developed by the USSR Ministry of Communications (location not given), horn antennas used in radio relay lines, a 1/2

USSR

AYZENBERG, G. Z., et al, Elektrosvyaz', No. 4, 1970, pp 47-62

transmitting antenna complex for tropospheric radio relay lines, a passive repeater antenna system for radio relay lines in the "mountains" (location not specified), and a unit of the "Orbit" communications system used in space exploration showing the large antenna dish and the building beneath. Of this last antenna, it is said that it is capable of operating under any climatic conditions.

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USSR UDC: 621.396.67

AYZENBERG, G. Z., BELOUSOV, S. P., SHAMSHIN, V. A., and SHKUD, M. A.

"Transmitting Antennas for Short-Wave Broadcasting"

Moscow, Elektrosvyaz', No 5, 1970, pp 4-13

Abstract: This article is devoted to recommendations concerning the application, correction, and precisioning of new types of antennas recently developed, tested, and distributed. These include synphase antennas with an active-range reflector and log-periodic antennas. The article discusses the basic requirements of such transmitting antennas in short-wave broadcasting, the parameters of the new antennas, and recommendations on the choice of particular types for network broadcasting depending on the distance covered. This last is given in the form of a table, which lists such types as the SGD 4/8 RA for an optimal wave of 12 meters in a range of 10.7 to 20.0 meters, complex arrangements consisting of three SGD 4/8 RN or SGD 4/8 RAD for optimal waves of 12, 26, and 40 meters, and the RGD 70/6. Physical and electrical characteristics, including schematics showing the arrangements of radiators, of these antennas are given.

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1/2 041 UNCLASSIFIED PROCESSING DATE--30OCT70

TITLE--ANTENNAS FOR RADIO COMMUNICATION, BROADCASTING, AND TELEVISION -U-

AUTHOR-(02)-AYZENBERG, G.Z., BELOUSOV, S.P.

COUNTRY OF INFO--USSR

SOURCE--MOSCOW, ELEKTROSVYAZ', NO. 4, 1970, PP 47-62

DATE PUBLISHED-------70

SUBJECT AREAS--ELECTRONICS AND ELECTRICAL ENGR., NAVIGATION

TOPIC TAGS--ANTENNA ENGINEERING, COMMUNICATION ANTENNA, PNEUMATIC DEVICE, TROPOSPHERIC RADIO WAVE, HORN ANTENNA/(U)ORBIT COMMUNICATION SYSTEM

CONTROL MARKING--NO RESTRICTIONS

DOCUMENT CLASS--UNCLASSIFIED
PROXY REEL/FRAME--3003/0254 STEP NO--UR/0106/70/000/004/0047/0062

CIRC ACCESSION NO--AP0129493

UNCLASSIFIED

2/2 041 UNCLASSIFIED PROCESSING DATE--30OCT70

CIRC ACCESSION NO--AP0129493

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. A REVIEW OF ANTENNAS NEW AND OLD, BEGINNING WITH THE FIRST ANTENNA INVENTED BY THE RUSSIAN PIONEER, A. S. POPOV, WHICH CONSISTED OF A VERTICAL, NONSYMMETRICAL VIBRATOR. THE AUTHOR DISCUSSES THE HISTORY AND OPERATION OF ANTENNAS BOTH IN THE SOVIET UNION AND ABROAD, INCLUDING LONG AND MEDIUM WAVELENGTH ANTENNAS FOR BROADCASTING (2000-3000 METERS FOR THE LONG WAVES AND 200-2000 FOR THE MEDIUM); ANTI FADING ANTENNAS, PROPOSED IN 1939 IN THE SOVIET UNION; SHORT WAVE ANTENNAS FOR COMMUNICATION AND BROADCASTING TRANSMITTERS; METER WAVELENGTH ANTENNAS FOR COMMUNICATIONS; TELEVISION AND FM TRANSMITTING ANTENNAS; ANTENNAS FOR SPACE EXPLORATION. THE ARTICLE IS LIBERALLY ILLUSTRATED WITH LINE DRAWINGS AS WELL AS PHOTOGRAPHS OF SUCH INSTALLATIONS AS THE PNEUMATIC ANTENNA MAST DEVELOPED BY THE USSR MINISTRY OF COMMUNICATIONS (LOCATION NOT GIVEN), HORN ANTENNAS USED IN RADIO RELAY LINES, A TRANSMITTING ANTENNA COMPLEX FOR TROPOSPHERIC RADIO RELAY LINES, A PASSIVE REPEATER ANTENNA SYSTEM FOR RADIO RELAY LINES IN THE "MOUNTAINS" (LOCATION NOT SPECIFIED), AND A UNIT OF THE "ORBIT" COMMUNICATIONS SYSTEM USED IN SPACE EXPLORATION SHOWING THE LARGE ANTENNA DISH AND THE BUILDING BENEATH. OF THIS LAST ANTENNA, IT IS SAID THAT IT IS CAPABLE OF OPERATING UNDER ANY CLIMATIC CONDITIONS.

UNCLASSIFIED

APPROVED FOR RELEASE: 08/09/2001 CIA-RDP86-00513R002200220016-6"

USSR

UDC: 615.832.9.07:612.563

FORTNOY, V. F., SELIVANENKO, V. T., and AYZENBERG, L. A., Laboratory of Extracorporeal Circulation, Institute of Surgery imeni A. V. Vishnevskiy, Academy of Medical Sciences USSR, Moscow

"Temperature Topography of the Body Following the Use of Two Different Methods of Artificial Hypothermia"

Moscow, Eksperimental'naya Khirurgiya i Anesteziologiya, No 6, Nov/Dec 70, pp 83-88

Abstract: Dogs were chilled by immersion in cold water or by hyperthermic perfusion. In the animals chilled by immersing the lower part of the body in cold water, the lowest temperature was recorded in the regions that came in direct contact with the water (subcutaneous tissue and muscles of the femur). The temperature of the regions not immersed in the water (chest, head) was higher and equal to that of the viscera, the difference between them not exceeding 1.5°C. External chilling thus creates a gradient between the "central" and "peripheral" temperatures and between the immersed and nonimmersed parts of the body. Perfusion of chilled blood resulted in fairly uniform cooling of the viscera, the temperature gradient not exceeding 2°C, but there was a marked difference in the temperature between the viscera and external tissues (4 to 6°C).

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USSR UDC 539.3:534.1

AYZENBERG, M. V., Novosibirsk

"The Low-Frequency Wave Process of Deformation in a Semi-Infinite Cylindrical Shell Immersed Into a Compressible Liquid"

Moscow, Izvestiya Akademii Nauk, Mekhanika Tverdogo Tela, No 3, May-Jun 72, pp 98-104

Abstract: A study was made of the results of numerical calculations of longitudinal low-frequency elastic waves in a semi-infinite cylindrical shell bounded by a rigid diaphragm and subjected to the action of an acoustic pressure wave propagating in axial direction. The development of longitudinal deformation waves was investigated for relatively great time intervals of the load action. The transient wave process, described by functions of the momentless theory, is discussed by reference to diagrams of time dependent disturbances, longitudinal speeds, and shell deformations. It was found that the front of the wave, propagating on the shell with the speed of sound in a thin membrane, flows away with time. The slope of the incident wave front is not affecting asymptotically the magnitude and the character of the long-wave impulse which increases with time. By decreasing length of the incident wave, the absolute values of the amplitudes of the front impulse and the following disturbances decrease. Six illustr., ten formulas, three biblio. refs.

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AYZENBERG, N. N.

SO:JPRS 55 252
25 FEB 72

UDC 519:35.001.57:681.3.06

SIMPLE TESTORS

[Article by N. N. Ayzenberg, A. I. Tsitkin, Vologrod State University; Moscow, Doklady Akademii Nauk SSSR, Russian, Vol 201, No 4, 1971, pp 801-802]

The concept of a test was introduced by S. V. Yablonskiy[1] to solve problems for the control of electrical circuits. The idea of a concept of a test has proven to be so fruitful that the use of a testor (a modification of the concept of a test), which has been developed in works by Yu. I. Zhuravlev, A. N. Dmitriyev, V. F. Krendelev (see, for example, [2]), has established an entire trend in the theory of model recognition.

This work introduces the concept of a simple testor which can be conveniently used in various questions of classifying objects in particular in technical diagnostics.

We use all concepts, information and notations relating to the theory of Boolean functions in accordance with,[3]

Let $E = E_{k_1} \times E_{k_2} \times \ldots \times E_{k_n}$ be a Cartesian product of the sets $E_{k_i} = \{0, 1, \ldots, k_i - 1\}$, $i = 1, 2, \ldots, n$, and $A_1, A_2, \ldots, A_s$ be a collection of the subsets of the set E, where $A_i \cap A_j = \emptyset$ for $i \neq j$. Let us call the collection $A_1', A_2', \ldots, A_s'$ the study sample of the collection $A_1, \ldots, A_s$, if $A_i' \subseteq A_i$, $i = 1, 2, \ldots, s$. The recognition problem exists in the relationship of the vector $\alpha \in \bigcup_{i=1}^{s} A_i$ to one of the classes A_i, if the collection $A_1, \ldots, A_s$ is not known, but its study sample is given.

Let us designate the functions $\pi_1, \pi_2, \ldots, \pi_n$, given in E such that $\pi_i((\alpha_1, \alpha_2, \ldots, \alpha_n)) = \alpha_i$, $(\alpha_1, \ldots, \alpha_n) \in E$, $i = 1, \ldots, n$ in the text.

USSR

AYZENBERG, N. N., SEMYON, I. V.

"Some Criteria of Representability of k-Valued Logic Functions by Modulo Polynomials"

Mnogoyustoych. Elementy i ikh Primeneniye [Multistable Elements and Their Applications -- Collection of Works], Moscow, Sov. Radio Press, 1971, pp 84-88, (Translated from Referativnyy Zhurnal, Kibernetika, No 3, 1972, Abstract No 3 V350 by G. Gavrilov).

Translation: Two simple criteria for representability of functions from P_k by mod k polynomials are presented. If $k = p_1 \cdot p_2 \cdots p_s$, where p_i are simple numbers and $(p_i, p_j) = 1$ where $i \neq j$, function $f(x_1, \ldots, x_n) \in P_k$ is realized by a mod k polynomial when and only when for any $i = 1, 2, \ldots, s$ and for any two sets $\tilde{\alpha} = (\alpha_1, \ldots, \alpha_n)$ and $\tilde{\beta} = (\beta_1, \ldots, \beta_n)$ such that $\alpha_l \equiv \beta_l \pmod{p_i}$, $l = 1, \ldots, n$ the following relationship is fulfilled, $f(\tilde{\alpha}) \equiv f(\tilde{\beta}) \pmod{p_i}$.

The second criterion is related to functions of one argument: if $k = p^m$, function $f(x)$ P_k can be represented by a mod k polynomial when and only when $f(\alpha_0 + \alpha_1 p + \ldots + \alpha_{n-1} p^{n-1}) = \beta_0(\alpha_0) + \beta_1(\alpha_0) \cdot \Delta + \ldots + \beta_{n-1}(\alpha_0) \Delta^{n-1}$, где $0 \leq \alpha_i < p$, $0 \leq \beta_i < p^n$, $i = 0, 1, \ldots, n-1$; $\Delta = \alpha_1 p + \ldots + \alpha_{n-1} p^{n-1}$; p is a prime.

USSR

AYZENBERG, N. N., SEMYON, I. V., TSITKIN, A. I.

"Magnitude of the Class of Functions of k-Valued Logic of n Variables, Represented by Modulo k Polynomials"

Mnogoyustoych. Elementy i ikh Primeneniye [Multistable Elements and Their Applications -- Collection of Works], Moscow, Sov. Radio Press, 1971, pp 78-83, (Translated from Referativnyy Zhurnal, Kibernetika, No 3, 1972, Abstract No 3 V349 by G. Gavrilov).

Translation: It is known (RZhMat, 1959, 9704) that the system of mod k polynomials is full in P_k when and only when k is a simple number. With composite k, it is interesting to estimate the number of functions of n variables $x_1, \ldots, x_n$, represented by mod k polynomials. In this work, a formula is produced allowing determination of the number of functions of P_k dependent on the n variables $x_1, \ldots, x_n$ and represented by polynomials in mod. k for any $k \geq 2$ and any $n \geq 1$. The author's represent the set of all such functions as $R(k, n)$, and their number (the magnitude of set $R(k, n)$) as $|R(k, n)|$. If p is a simple number and $\alpha \geq 1$, then

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AYZENBERG, N. N., SEMYON, I. V., TSITKIN, A. I., Mnogoyustoych. Elementy i ikh Primeneniye, Moscow, Sov. Radio Press, 1971, pp 78-83.

$$|R(p^{\alpha}, 1)| = p^{\sum_{l=1}^{\alpha} l|m(p^{\alpha-l+1})-m(p^{\alpha-l})|}$$

where $m(p^0)=-1$, $m(p^{\beta})=\gamma\cdot p-1$, $\beta \geq 1$ and γ satisfies the inequalities:

$$\gamma+\left[\frac{\gamma}{p}\right]+\left[\frac{\gamma}{p^2}\right]+\ldots \geq \beta$$

and

$$\gamma-1+\left[\frac{\gamma-1}{p}\right]+\left[\frac{\gamma-1}{p^2}\right]+\ldots < \beta.$$

Where $n \geq 2$, the following relationship is correct: $|R(p^{\alpha}, n)| = \prod_{l=1}^{\alpha} |R(p^l, n-1)|^{m(p^{\alpha-l+1})-m(p^{\alpha-l})}$. Finally, if $k=p_1^{\alpha_1}\cdot p_2^{\alpha_2}\ldots p_s^{\alpha_s}$, where p_1, p_2, ..., p_S are simple divisors of number k, then $|R(k, n)| = \prod_{i=1}^{s} |R(p_i^{\alpha_i}, n)|$.

Abstractors Note. There are many misprints in this work. The most important one is in formula (3): there should be a minus sign before the

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AYZENBERG, N. N., SEMYON, I. V., TSITKIN, A. I., Mnogoyustoych. Elementy i ikh Primeneniye, Moscow, Sov. Radio Press, 1971, pp 78-83.

$m(p^{\alpha-1})$ in the exponent.

USSR UDC 51:155.001.57:681.3.06

AYZENBERG, N. N., FRANTSUZ, A. G.

"Pattern Recognition in a Finite Set of Descriptions"

Probl. Bioniki. Resp. Mezhved. Nauchno-tekhn. Sb. [Problems of Bionics, Republic Interdepartmental Scientific and Technical Collection], No 4, 1970, pp 70-74, (Translated from Referativnyy Zhurnal, Kibernetika, No 6, 1971, Abstract No 6 V645 by the authors).

Translation: Problems are studied related to teaching of automata to recognize objects and situations described by a set of discrete characteristics. A class of canonical decision rules (CDR) is introduced, including a decision rule realizing error-free recognition in formation of a set of CDR on the basis of a representative learning sample. The basic theorems determining the properties of the CDR are formulated. Algorithms for the formulation of the CDR set and selection of the optimal CDR are presented.

USSR

UDC: 539.4:624.011

AYZENBERG Ya. M.

"Analysis of the Seismic Reaction of Nonlinear Systems With Parameters Which Vary in the Process of Destruction"

Tr. TsNII stroit. konstruktsiy (Works of the Central Scientific Research Institute of Structural Elements), 1970, vyp. 14, pp 59-72 (from RZh-Mekhanika, No 7, Jul 71, Abstract No 7V867)

Translation: The author considers nonstationary nonlinear systems whose parameters change irreversibly in the process of perception of seismic effects. The results of some model and full-scale studies are presented where the frequency drop of the fundamental mode of free oscillations due to the accumulation of cracks and other local weakening was recorded. The ratio of the period of oscillations of the limiting system to the initial period reaches a value of 3-4. The author presents a qualitative analysis of the process of destruction of internal connections of a structural element and adaptation of the structure to seismic action, as well as giving recommendations on selection of "restoring force — displacement" relations. In studying seismic reaction, the computational model for the action was taken in the form of "any of a set of earthquakes which cause oscillations

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AYZENBERG, Ya. M., Tr. TsNII stroit. konstruktsiy, 1970, vyp. 14, pp 59-72

of the ground which are representable by a segment of a Gaussian amplitude--nonstationary process". Results are given from computer analysis of the seismic reaction of a nonlinear elastic system whose rigidity changes irreversibly as a function of its loading history. It is shown that the rated seismic load and the corresponding required carrying capacity of buildings studied drops appreciably when the change in rigidity of systems is taken into account. L. Sh. Kilimnik.

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USSR

UDC: 624.042.7.04

AYZENBERG, YA.M., Moscow

"Adaptation of Systems with Disconnecting Links to Seismic Action and Calculation of such Systems with Incomplete Seismic Information"

Moscow, Stroitel'naya Mekhanika i Raschet Sooruzheniy, No 2, 1971, pp 35-40.

Abstract: The subject systems consist of structures provided with members which are designed to fail when the seismic load exceed a certain amount. These members should be easily restored after the earthquake. Guy ropes on a water tower, or panels taking the horizontal shear in a building, are given as examples of such members. These members function as the disconnecting links of the system. The analysis of such system is presented.

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AYZENBERG, YA. M., Stroitel'naya Mekhanika i Raschet Sooruzheniy, No 2, 1971, pp 35-40

When a link disconnects the natural period of oscillation of the system increases. In the given numerical example the period of the initial system is 0.4 second, period of the final system 2 seconds. Most seismic actions are in this range. Standard spectrums of accelerations versus periods of oscillations are available. It is claimed that the optimum system should be based on a spectrum which has equal accelerations at the natural periods of the initial and final systems. The prevailing period of this spectrum is 0.8 second. The load causing the link to disconnect can be calculated from the above periods. The design seismic loads of this system are 2.9 times lower than they would be if the links did not disconnect.

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USSR

UDC 624.041:699.841

AYZENBERG, Ya. M., KILIMNIK, L. Sh., Moscow

"Concerning the Criteria of Optimal Planning and the Limit-State Parameters of Buildings in Calculations for Seismic Effects"

Moscow, Stroitel'naya Mekhanika i Raschet Sooruzheniy, No 6, 1970, pp 29-34

Abstract: The article deals with the calculation criteria of optimal structures in the case of seismic effects with account taken of their recurrence and intensity. An analysis is made of various relationships of the "restoring force - movement" type for elastoplastic systems and systems with brittle local failures. A study is made of the conditions of the stability of forced oscillations of systems with nonlinear restoring relationships. 9 figures, 9 bibliographic entries.

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USSR

UDC: None

POLYAKOV, S. V., AYZENBERG, Ya. M., and PAPELISHVILI, V. K.

"Multi-Story Earthquake-Proof Building"

Moscow, Otkrytiya, izobreteniya, promyshlennyye obraztsy, tovarnyye znaki, No 12, 1973, p 95, No 371335

Abstract: The unusual feature of this building is a set of panels fixed to the base supporting columns and detachable in seismic activity. These columns are horizontally flexible. An illustration is supplied.

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1/2 010 UNCLASSIFIED PROCESSING DATE--27NOV70

TITLE--DETERMINATION OF THE LOCATION OF A SHORT CIRCUIT ON LINES WORKING WITH TRANSFORMERS AND AUTO TRANSFORMERS -U-

AUTHOR-(02)-AYZENFELD, A.I., ROZENKNOP, M.P.

COUNTRY OF INFO--USSR

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CONTROL MARKING--NO RESTRICTIONS

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UNCLASSIFIED

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CIRC ACCESSION NO--AP0135967

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. EXISTING METHODS OF DETERMINATION OF THE POSITION OF A SHORT CIRCUIT USING LOCATING APPARATUS IS NOT APPLICABLE TO LINES WORKING WITH POWER TRANSFORMERS (AND AUTO TRANSFORMERS). THIS IS BECAUSE THERE ARE NOT VOLTAGE TRANSFORMERS ON THE H. V. SIDE OF THE POWER TRANSFORMER AND ALSO BECAUSE IT IS IMPOSSIBLE, IN SOME CASES, TO USE CURRENT TRANSFORMERS ON THE OVERHEAD LINES FOR SUPPLYING THE LOCATING APPARATUS. A METHOD IS DESCRIBED TOGETHER WITH FORMULAE, FOR THE DETERMINATION OF THE POSITION OF A SHORT CIRCUIT ON LINES WITH VARIOUS CIRCUIT ARRANGEMENTS.

UNCLASSIFIED

USSR UDC 517.948

AYZENGENDLER, P. G.

"Newton's Method in the Theory of Implicit Functions"

Kazan', Izvestiya Vysshikh Uchebnykh Zavedeniy, Matematika, No 7, Jul 71, pp 3-8

Abstract: The author is concerned with the numerous questions involved in the theory of branching in the solutions to nonlinear equations with analytical operators and the necessity of finding all continuous solutions.

Section 2 of the article is devoted to a description of Newton's method, wherein the author proposes the lemma: If η is the root of the determinant equation, then $\eta\varepsilon$, where ε is any value of the root of the s-th degree of 1, is also the root of this same equation. The author then proceeds to prove this lemma.

Based on the theory of analytical functions it is obvious that the author's problem has p local solutions and Newton's diagram method can be used to plot them; however, in the case of multiple roots the method requires further justification; it is precisely this problem that is involved in section 3 of the present article.

Section 4 is devoted to finding the real solutions to the problems posed in Section 1. The author cites examples to illustrate his propositions.

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AYZENGENDLER, P. G., Izvestiya Vysshikh Uchebnykh Zavedeniy, Matematika, No 7, Jul 71, pp 3-8

Section 5, the last section in the article, is concerned with expanding Newton's method to a wider class of equations. For proof of the author's propositions he uses the theorem of implicity functions. The author employs 20 equations to explain and prove his problem. Bibliography of 5 titles.

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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 NERUBAY, 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

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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 577.1:615.7/9

AYZENSHTADT, V. S., and PERKHUROV, V. P.

"Toxicological Characteristics of Dimethyldithiophosphoric Acid"

Sb. nauch. tr. Kuybyshev. NII gigiyeny (Collection of Scientific Works of Kuybyshev Scientific Research Institute of Hygiene), 1971, vyp. 6, pp 90-94 (from RZh-Biologicheskaya Khimiya, No 19, 10 Oct 71, Abstract No 19F2127 by D. G.)

Translation: Experiments on mice, rats and rabbits established that dimethyldithiophosphoric acid, when administered for a long time (up to five months) via the stomach, causes a lowering of blood cholinesterase activity, a lowering of the total SH-group content of the blood serum, a disturbance of cerebral hemodynamics, and dystrophic lesions in the liver (protein dystrophy) and epithelial cells of the convoluted renal tubules. The extent of the lesions depends on dose and length of intoxication, which in severe cases results in death. Foci of fine-drop adipose dystrophy of the parenchymatous cells were also noted in the liver, and focal necrotic lesions of the mucosa in the stomach.

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AYZENSHTAT, B.A.

Phys. & Math. Sciences

UDC 551.5 + 551.48:9:17.084(575)(04

DEVELOPMENT OF HYDROMETEOROLOGICAL SCIENCE IN CENTRAL ASIA

[Article by Candidate of Geographic Sciences B. A. Ayzenshtat, Candidate of Physical and Mathematical Sciences V. D. Dobrusskiy, Central Asian Regional Scientific Research Hydrometeorological Institute, Moscow, Meteorologiya i Gidrologiya, Number 12, 1972, submitted 21 August 1972, pp 85-93]

A survey is given of the development of hydrometeorological science in Central Asia. The prospects for further studies in the field of regional meteorology and hydrology are discussed.

The beginning of hydrometeorological work in Central Asia belongs to the 1870's when the first meteorological stations were founded in this territory. After V. I. Lenin signed the decree to organize the meteorological service in Central Asia on 21 June 1921, the meteorological network began to develop quickly, and a great deal of attention has been given to scientific research in various fields of hydrometeorology.

At the present time the scientific and procedural work with respect to hydrometeorology in Central Asia is led and coordinated by the Central Asian Regional Scientific Research Hydrometeorological Institute which in simultaneously the regional center entering into the system of the World Weather Service.

Below, a brief survey is presented of the most important results obtained in the field of hydrometeorology in Uzbekistan, and with respect to its divisions, in all of Central Asia.

Weather Forecasting

After the Tashkent Weather Office was created in 1932, work began on the study of synoptic processes in Central Asia.

The successful development of research in the field of regional synoptics is connected to a great extent with the names of V. A. Dugayev and V. A. Dobrokhlo, who for many years headed this area in Central Asia. Under the

JPRS 58133
2 Jul 73

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UDC 621.314.57

SOKOLOV, S.D., SEY, YU.M., DOBROVOL'SKIS, T.P., LUPYAN, A.G., FIRSOVA, L.D., AYZENSHTEYN, L.S., GURAL'NIK, YA. D.

"Systeom Of Control Of Thyristorized Inverter"

Tr. VNII Zh.-d. transp. (Works Of The All-Union Scientific-Research Institute Of Railroad Transportation), 1970, Issue 420, pp 69-85 (from RZh--Elektronika i yeye primeneniye, No 4, April 1971, Abstract No 43665)

Translation: The paper describes a system of control of thyristorized converters [sic] arranged according to the circuit "two reverse stars with an equalizing reactor" or according to a 3-phase bridge scheme which assures turn-on of a large number of series-parallel connected thyristors. In the control circuit, individual (for each thyristor) output current transformers are used. This assures high efficiency and makes it possible to obtain identical currents through the thyristor gates with a considerable dispersion of their input characteristics. The circuit for pulse shaping consists of two 3-loop networks and a discharge thyristor. The first loop produces a steep initial burst, and the remainder the necessary duration of the control pulse. The experimental characteristics are considered of the pulse shapers with various parameters of the current of the output transformers, parameters of the thyristors, and length of the connecting conductors. A block diagram is presented of the modeling on an analog computer of the system for control of thyristors. Il. 11, 2 tab. 4 ref. L.R.

USSR

UDC: 621.78:534-8

AIZENTSON, YE. G., VINOGRADOV, V. V., GREVNOV, L. M., and SYCHEV, YE. N., Perm State University

"The Effect of Ultrasound on the High-Temperature Aging of EI69 Grade Steel"

Moscow, Izvestiya Vysshikh Uchebnykh Zavedeniy, Chernaya Metallurgiya, No 4, 1973, pp 142-145

Abstract: The authors study the effect of ultrasound on the carbide formation and state of the EI69 grade austenite steel (0.48 percent C, 0.27 percent Si, 0.42 percent Mn, 0.015 percent P, 0.020 percent S, 13.23 percent Cr, 13.30 percent Ni, 0.39 percent Mo, and 2.27 percent W) during its high-temperature aging process. Billets from this grade of steel were held at 1215°C in a salt bath for one hour and cooled in water. Specimens were turned from these billets 10 mm in diameter and 210 mm long. These were subjected to ultrasound with an amplitude within an antinode shift of 15 microns at 700 and 750°C for 15, 30, 60, 90, and 120 minutes with subsequent cooling in water. Control specimens were subjected to the same heat treatment but without ultrasound. Maximal stress cross sections of control and specimens subjected to ultrasound were subjected to x-ray and electron microscope studies. The results show that processing EI69 grade steel with ultrasound during its high-temperature aging leads to the development of a dislocation type structure in the matrix. To this is related the more intense granulation of the

USSR

AYZENTSON, YE. G. et al., Izvestiya Vysshikh Uchebnykh Zavedeniy, Chernaya Metallurgiya, No 4, 1973, pp 142-145

austenite blocks in the [111] and [200] orientations in the specimens subjected to ultrasound. An increase in the dispersion of the substructure under the effect of ultrasound results in higher steel hardness. It is shown that subjecting steel to ultrasound increases the rate of carbide particle growth and raises the parameter of the crystal lattice of the carbide phase. This could be related to the intensification of the diffusion processes.

AYZENTSON, Ye. G.

UDC 669.017

EFFECT OF ULTRASONIC VIBRATIONS ON THE BLOCK STRUCTURE OF COPPER

[Article by Ye. G. Ayzentson, L. K. Urrobina, Perm State University, Metal Physics Department; Moscow, Izvestiya Vysshikh Uchebnykh Zavedeniy, Tsvetnaya Metallurgiya, Russian, No 1, 1972, submitted 20 October 1970, pp 122-124]

It has been established [1] that in some polycrystalline samples, including copper, on treatment with ultrasonic sound, new dislocations are generated, and their density increases with an increase in the amplitude of the ultrasonic vibrations. The threshold amplitude beginning with which new dislocations are generated decreases with an increase in the experimental temperature. A significant increase in the dislocation density can lead to the formation of new interblock boundaries during alignment of the dislocations in the walls. The correctness of this proposition is seen in the results of reference [2]. It is demonstrated that in 1Kh18N9T austenitic steel formed by ultrasound at [illegible] degrees, the dislocation density increases, and the size and shape of the blocks vary. Local heating of the metals in an ultrasonic field, on the contrary, can lead to consolidation of the blocks.

In order to investigate the effect of ultrasound on the block structure of metals, we performed an x-ray study of the dimensions of the regions of coherent dispersion of technical copper subjected to ultrasonic vibrations in different temperature ranges. The copper samples of wavelength and 10 mm in diameter annealed at 460 degrees for 2 hours were subjected to ultrasound by the procedure described in reference [3] with amplitudes of 3, 6, 10 and 15 microns for 10, 15, 30, 60 and 120 minutes in pools with temperatures of 20, 150 and 300 degrees.

A study was made of the cross sections of the samples corresponding to the locations of maximum ultrasonic stresses. These cross sections were polished and electrolytically pickled in concentrated H_3PO_4 to a depth of 0.3 mm in order to remove the surface work-hardened layer occurring during polishing.

X-rays were taken on the URS-50I diffractometer in copper emission. The x-ray of the stationary samples on film showed that the interference lines are nonuniformly darkened. This indicates the presence in the samples of regions

Transformation and Structure

USSR UDC 669.14.018.8:621.789.2

AYZENTSON, YE. G., GREVNOV, L. M., and UTROBINA, I. K., Perm' State University

"Effect of Ultrasonic Machining at 1000° C on the Fine Structure of iKhk8N9T Austenite Steel"

Moscow, Izvestiya Vysshikh Uchebenykh Zavedeniy -- Chernaya Metallurgiya, No 2, 1970, pp 114-117

Abstract: An investigation was made of specimens of 1Kh18N9T austenite steel ultrasonically machines at 1000° C for 20 min. In the process of sonication standing waves with amplitude of 3, 5, 10, and 15 mkm were produced in specimens at the place of maximum migration. In sections of specimens corresponding to areas of maximum ultrasonic stresses, the following were observed: a) under the effect of ultrasound, equiaxial mosaic structures were produced, whose dimensions (in comparison with control specimens) were larger in the direction [111] and smaller in the direction [200]; b) characteristic temperature did not change; c) static distortions with tendency to increased; saturation; d) the austenite lattice constant decreased. The 1/2

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AYZENTSON, YE. G., et al., Izvestiya Vysshikh Uchevenykh Zavedeniy -- Chernaya Metallurgiya, No 2, 1970, pp 114-117

observed effects are exaplained by the development of a dislocation structure in steel under the effect of ultrasound.

2/2

USSR

UDC 8.74

AYZERMAN, M. A., ANDREYEVA, YE. A.

"Simplest Search Mechanism for Controlling Muscular Activity"

V sb. Avtomaty, gibridn. i upravlyayushch. mashiny (Automata, Hybrid and Control Machines, collection of works) Moscow, Nauka Press, 1972, pp 128-136 (from RZh-Kibernetika, No 7, Jul 7 , Abstract No 7V657)

Translation: A survey is presented for experimental papers aimed at discovering the general principles and laws used by the brain when controlling the muscles. The study was made on rats, rabbits and people. The special procedure for which the animate organism was included in the circuit encompassed by external feedback permitted creation of artificial conditions under which the brain was forced to solve the search problem imposed from the outside, using only one or two muscles. The control process with search for the minimum pain stimulation by means of one muscle or two muscles not connected to each other and the operation of a pair of antagonistic muscles was studied. On the basis of these experiments, model representations of the control laws implemented for the above-indicated search activity were developed.

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UDC 51.155.001.57.681.3.06

USSR

AYZERMAN, M.A., BRAVERMAN, E. M., ROZONOER, L.I.

"Method of Potential Functions in the Theory of Machine Learning"

Metod. Potentsial'nykh Funktsiy v Teorii Obucheniya Mashin [English Version Above] Moscow, Nauka Press, 1970, 384 pages (Translated from Referativnyy Zhurnal Kibernetika, No. 4, April, 1971, Abstract No. 4 V702K).

Translation: This monograph sums up the work of authors on development of the method of potential functions and its use in problems of pattern recognition, identification and automatic classification. Particular attention is given to mathematical problems related to the convergence of random processes, arising when the method is used, and its relationship to other methods of learning theory (in particular, methods of stochastic approximation). The reader must know mathematics as taught in a technical university; all other necessary information is provided by the authors. The book is designed for engineers and mathematicians working in the area of cybernetics, and also for students and graduate students specializing in this area.

The chapters are: Chapter I. Problem of Teaching Machines to Recognize Patterns (Statement of the Problem); Chapter II. Method of Potential Functions; Chapter III. Selection of a System of Functions $\psi_i(x)$ and Potential Function $K(x, y)$. IV. Convergence of Primary Procedure of Potential Functions Method;

USSR UDC 51.155.001.57.681.3.06

AYZERMAN, M. A., BRAVERMAN, E. E., ROZONOER, L. I., Metod. Potentsial'nykh Funktsiy v Teorii Obucheniya Mashin, Moscow, Nauka Press, 1970, 384 pages.

Chapter V. Application of Method of Potential Functions to Problem of Teaching Machines to Recognize Patterns (Deterministic Statement of Problem); Chapter VI. Application of Method of Potential Functions to Problem of Approximation of Functions on the Basis of Values at Points Selected at Random; Chapter VII. Probabilistic Problem of Teaching Machines to Recognize Patterns; Chapter VIII. Teaching Without a Teacher.

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AYZIKOV, G. S.

SO: JPRS 53301
18 Aug 71

UDC 612.833-06:612.858.014.47:531.113

SPINAL CORD REFLEX ACTIVITY IN NORMAL AND LABYRINTHECTOMIZED ANIMALS UNDER THE INFLUENCE OF RADIAL ACCELERATIONS

[Article by G. S. Ayzikov, M. D. Yemel'yanov, V. G. Ovechkin and G. V. Tumanov, Moscow, Kosmicheskaya biologiya i meditsina, Russian, Vol 5, No 3, 1971, pp 23-27, submitted 2 June 1969]

Abstract: A study was made of spinal cord induced potentials (H-reflex) in intact and labyrinthectomized rats at accelerations of 0.5-8 g in a "head-pelvis" direction. The combined effect of accelerations in the range from 0.5 to 8 g considerably changed spinal cord reflex activity. At 0.5 g the H-reflex increased in amplitude and returned to the background values after rotation ceased. At 2, 4 and 8 g the reflex was suppressed in direct proportion to the acceleration. The time for reflex restoration also increased with an increase in acceleration. During accelerations the functional state and activity of the motor analyzer were determined by a combination of factors: reflex changes in motor neuron activity, associated with muscular reception, and vestibular stimuli. In labyrinthectomized animals the depression of spinal activity manifested a muscle dependence of the exposure.

It is known that accelerations in a definite range of intensities considerably change the nature of motor activity. The percentage of operator errors increases, the time required for performing a stipulated task lengthens, and inhibited mobility is observed (L. V. Chkhaidze, A. E. Kotovskaya, et al.; V. I. Yazdovskiy, et al.; Code, et al.).

The complexity in performing voluntary movements during acceleration involves an increase in body weight, impaired reflex regulation from the proprioceptors, and changes in conditioned reflex activity as a result of a predominance of inhibitional cortical processes (M. A. Card and N. N. Gurovskiy; A. S. Burer; S. I. Nudman; Wells and Morehouse).

USSR

UDC 621.396.677.45

AYZIN, F. L.

"Distortions of the Radiation Characteristics of a Spiral Antenna"

Tr. Mosk. aviats. in-ta (Works of Moscow Aviation Institute), 1970, vyp. 215, pp 254-265 (from RZh-Radiotekhnika, No 4, Apr 71, Abstract No 4B68)

Translation: A study is made of the effect of such factors as wave reflection from the ends of the spiral, wave damping along the spiral, and the presence of a cophasal component during excitation of a double spiral.
There are 9 illustrations and a 5-entry bibliography.

1/1

USSR UDC 576.858.75.095.6.098.31

AZADOVA, N. B., KUPRADZE, S. A., and ZHDANOV, V. M., Institute of Virology, ~~Imeni~~ D. I. Ivanovskiy, Academy of Medical Sciences USSR, Moscow

"The Effect of Antineuraminidase Serum on Replication of Sendai Virus"

Moscow, Voprosy Virusologii, No 6, Nov. Dec 71, pp 665-670

Abstract: Addition of antineuraminidase serum (1:50) to fetal pig kidney cell cultures infected with Sendai virus inhibited the release of hemagglutinin, neuraminidase, and the virus into the liquid phase of the cultures, and reduced by a factor of three the intracellular hemagglutinin titer and the intracellular virus concentration. Since these differences were observed even in the initial hours of the infectious process, it was concluded that antineuraminidase serum exerts an effect not only on the final reproduction phase of the virus (as generally believed) but on all phases, probably by penetrating the cell membrane and blocking the synthesis of hemagglutinin and neuraminidase, (which takes place in the cytoplasm), but without affecting the synthesis of riboneucleoproteins (S-antigen), (which takes place in the nucleus).

1/1

USSR UDC 576.858.75.083.35

ZUYEV, V. A., PETERS, V. V., and AZADOVA, N. B., Institute of Epidemiology and Microbiology imeni N. F. Gamaleya, Academy of Medical Sciences USSR, and Enstitute of Virology imeni D. I. Ivanovskiy, Academy of Medical Sciences USSR, Moscow

"Latent Infection of Cell Cultures Resistant to Viral Cytopathic Effects. II. Isolation of Influenza Virus From Latently Infected Cells"

Moscow, Voprosy Virusologii, No 6, Nov/Dec 71, pp 713-718

Abstract: No cytopathology and no virus replication was observed in L cells inoculated with the WSN strain of A0 influenza virus. During further cultivation of these L_{WSN} cells, no signs of virus-specific degeneration could be detected. However, immunofluorescent analyses revealed that most of cells contained virus-specific antigen. Infectious viruses were regularly isolated from L_{WSN} cultures by means of successive passages of the medium in chick embryo fibroblasts, though not in chick embryos (which proved unsuitable for this purpose). These viruses were identified as A0 influenza, WSN strain. It was concluded that the L_{WSN} system represents a new form of latent influenza infection of virus-resistant cell colonies, in which the virus survives in most if not all cells.

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USSR

UDC 576.858.75.098.396.332

ZHDANOV, V. M., and AZADOVA, N. B., Institute of Virology imeni D. I. Ivanovskiy, Academy of Medical Sciences USSR

"Intranuclear Precursors of Sendai Virus Ribonucleoprotein"

Moscow, Voprosy Virusologii, No 5, 1971, pp 606-608

Abstract: The biophysical properties of viral ribonucleoprotein (RNP) were studied in experiments with Sendai virus strain 960 grown in a monolayer culture of fetal pig kidney cells. Infection of cells with the virus resulted in intense synthesis of RNA and protein and in the formation of RNP complexes that were not destroyed by treatment with 0.02 M EDTA. These complexes had a buoyant density of 1.38 and 1.35 g/ml in the nuclei and 1.31 and 1.24 g/ml in the cytoplasm, where they became helical and formed part of the virus particles.

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USSR UDC 616.988.25-092.4-085.373.3

AZADOVA, N. B., ZHDANOV, V. M., KOPEL'MAN, R. N., and GAVRILOV, V. I., Institute of Virology imeni D. I. Ivanovskiy, Academy of Medical Sciences USSR, Moscow

"Virological Characteristics of Infection in the L Cell-Sindbis Virus System in the Presence of Antiviral Serum"

Moscow, Voprosy Virusologii, No 5, Sep/Oct 72, pp 520-523

Abstract: Persistent infection in the L-SV system (multiplicity of infection 0.01 PFU/cell) in the presence of 0.5% of specific antivirus serum was characterized by alternating phases of degeneration and proliferation during the first three passages, with virus and hemagglutinin present in the culture medium. During the remainder of the 90-day long period of observation, proliferation predominated, the hemagglutinin titer fell to a low level, and the virus was frequently absent. This suggested marked inhibition of virus synthesis. However, immunomorphological investigations revealed active synthesis of two structural proteins of Sindbis virus -- ribonucleoprotein and lipoprotein membrane antigen -- in 70% of the cells. It is concluded that a persistent infection which causes cellular exhaustion does not arrest synthesis of virus proteins but only prevents the viruses from aggregating and leaving the cells. The infection is transmitted from one passage to another by daughter cells

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which acquire the virus during cell division. It is possible that defective viruses develop during the process, which are able to survive in the cells but unable to leave them.

1/2 022 UNCLASSIFIED PROCESSING DATE--13NOV7C

TITLE--SPECTRAL PROPERTIES OF DYSPROSIUM ION (DY PRIME3POSITIVE) IN A YTTRIUM ALUMINUM GARNET LATTICE -U-

AUTHOR-(04)-AZANATOV, Z.T., ARSENYEV, P.A., BINERT, K.E., CHUKICHEV, M.V.

COUNTRY OF INFO--USSR

SOURCE--IZV. VYSSH. UCHEB. ZAVED., FIZ. 1970, 13(2), 76-80

DATE PUBLISHED-------70

SUBJECT AREAS--EARTH SCIENCES AND OCEANOGRAPHY

TOPIC TAGS--SPECTROSCOPY, DYSPROSIUM, YTTRIUM COMPOUND, ALUMINUM COMPOUND, CRYSTAL LATTICE STRUCTURE, LUMINESCENCE, GARNET

CONTROL MARKING--NO RESTRICTIONS

DOCUMENT CLASS--UNCLASSIFIED

PROXY REEL/FRAME--1988/0958 STEP NO--UR/0139/70/013/002/0076/0080

CIRC ACCESSION NO--AT0105827

UNCLASSIFIED

2/2 022 UNCLASSIFIED PROCESSING DATE--13NOV70

CIRC ACCESSION NO--AT0105827

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. THE ABSORPTION AND LUMINESCENCE SPECTRA OF DY PRIME3POSITIVE IN A Y-AL GARNET IN LIQ. N WERE DETD. FROM THE DATA THE DIAGRAM OF THE ENERGY LEVELS PRIME4 F SUB9HALVES, PRIME6 F SUBONEHALVE PRIME6 F SUB3HALVES, PRIME6 F SUBSEVENHALVES, AND PRIME6 F SUBFIFTEENHALVES WAS DERIVED.

UNCLASSIFIED

1/2 042 UNCLASSIFIED PROCESSING DATE--18SEP70

TITLE--GADOLINIUM SPECTRA IN ALUMINUM AND YTTRIUM GARNET SINGLE CRYSTALS -U-

AUTHOR-(03)-AZAMATOV, Z.T., ARSENYEV, P.A., CHUKICHEV, M.V.

COUNTRY OF INFO--USSR

SOURCE--OPT. SPEKTROSK. 1970, 28(2), 289-91

DATE PUBLISHED--------70

TOPIC TAGS--GARNET, ALUMINUM COMPOUND, YTTRIUM COMPOUND, GADOLINIUM, EMISSION SPECTRUM, SPECTROSCOPIC ANALYSIS, LUMINESCENCE, SINGLE CRYSTAL

CONTROL MARKING--NO RESTRICTIONS

DOCUMENT CLASS--UNCLASSIFIED

PROXY REEL/FRAME--1984/0088 STEP NO--UR/0051/70/028/002/0289/0291

CIRC ACCESSION NO--AP0054885

UNCLASSIFIED

STATES TO THE PRIME8 S SUBSEVEN-HALVES GROUND STATE WERE OBSD. THE IR EXCITED STATES ARE SPLIT INTO 4, 3, AND 4 DOUBLETS, RESP. THE LUMINESCENCE SPECTRUM CORRESPONDED TO THE PRIME6 P SUBSEVEN-HALVES YIELDS PRIME8 S SUBSEVEN-HALVES TRANSITION. THE EMISSION SPECTRUM OF GD, INDUCED BY A 200 KEV ELECTRON BEAM, WAS OBTD. AT ROOM AND LIQ. N TEMPS. THE RESULTING LUMINESCENCE CONSISTED OF WIDE, POORLY RESOLVED BANDS, INTERPRETED AS THE TRANSITIONS TO THE GROUND STATE FROM THE LEVELS: PRIME6 P SUBSEVEN-HALVES, PRIME6 P SUBFIVE-HALVES, PRIME6 P SUBTHREE-HALVES, PRIME6 I SUBSEVEN-HALVES, PRIME6 D SUBNINE-HALVES, AND PRIME6 D SUBSEVEN-HALVES. INCREASING THE ENERGY OF THE EXCITING ELECTRONS INCREASED THE INTENSITY OF THE PRIME6 P SUBSEVEN-HALVES YIELDS PRIME8 S SUBSEVEN-HALVES TRANSITION. THE LIFETIME OF THE PRIME6 P SUBSEVEN-HALVES LEVEL, 8 MUSEC, WAS REDUCED TO 3 MUSEC IN THE PRESENCE OF 0.15PERCENT TB TOGETHER WITH GD IN THE GARNET.

UNCLASSIFIED

TECHNICAL-ECONOMIC COMPARISON OF THE METHODS OF SOLIDIFICATION AND TANK STORAGE FOR HIGHLY ACTIVE LIQUID WASTES FROM THE PROCESSING OF SPENT FUEL ELEMENTS OF WATER-COOLED WATER-MODERATED POWER REACTORS

/Paper by L. G. Azamayeva, Z. G. Il'ina, A. N. Kolesov, A. N. Kondrat'yev, M. A. Krizhov, and A. A. Khonikevich, State Committee for the Use of Atomic Energy of the USSR (Radium Institute imeni V. G. Khlopin), Russian, IAEA publication SM-136/31, Moscow, 1972/

The development of atomic power engineering imposes on the specialists of all countries engaged in this problem a great responsibility to future generations with respect to reliability of rendering radioactive wastes from a complex of enterprises serving this branch of industry harmless.

Naturally, the greatest difficulties arise in handling wastes of a high level of activity, the quantity of which is continuously increasing /1/.

For each million kilowatts of installed electric power of atomic reactors, in the processing of TVEL (fuel elements) of the VVER (water-cooled water-moderated power reactor) type approximately 40 cubic meters per year of such wastes are formed.

For rendering wastes of a high level of activity harmless by radioactive decay, storage for several hundred years is required. Aside from this it is known that the storage of wastes of a high level of activity in the form of solutions is costly, complicated, and unreliable, since it is necessary to cool them for a long time to remove the heat liberated in the decay of the radioactive elements, and also to ventilate the tanks with air for dilution of the hydrogen formed due to radiolysis of the solution. In connection with the fact that the service life of the storage spaces amounts to 20--25 years, the construction of additional tanks is required, to replace those which have broken down. Concern about the construction and operation of storage spaces

APPROVED FOR RELEASE: 08/09/2001 CIA-RDP86-00513R002200220016-6"

In this case are transferred to following generations. It is natural that idea of enclosing radioactive wastes in glasses and bitumens that are only slightly soluble in water is entirely logical, as these substances may be reliably buried for a prolonged period without great expenditures on the tion of storage spaces. However, the majority of scientists consider th closure in bitumen is permissible only for wastes with a specific activit less than 10 curies per liter. At a greater specific activity swelling an ure of the bitumen is observed, because of the liberation of gases form a result of radiolysis. The storage spaces for bitumen must be made w explosive-proof design, since one of the basic gases liberated is hydro [2, 3]. For more active solutions (> 10 curies per liter) obtained in processing of TVEL from atomic reactors with a high burnup of fuel, v cation is more reliable method.

In this work a technical and economic comparison of two method handling highly active wastes is performed: storage in tanks and vitrifi with subsequent storage of the glass blocks. (A comparison with the m of pumping wastes into deep formations of the earth's crust is perform a work by V. I Spitsin and others.)

In the Soviet Union and in other countries several methods of vi cation of liquid wastes with a high level of activity are being developed, differ in technology and design of the apparatuses, but all of them may conditionally divided into two groups: single-stage and two-stage proce

Single-stage processes are simpler with respect to formulation apparatus, but, however, their operation is very complicated, the ser life of the apparatuses is insignificant, in connection with the fact that process of digesting glass at a temperature of 600--1000 degrees C a c of the nitric-acid solutions and the nitrogen oxides in the water vapors the walls of the apparatuses occurs.

It appears more feasible to conduct the process of vitrification stages: to perform dehydration and calcination at comparatively low te tures (350--400° C), and to form the glass at high temperatures (900-- C). One of such methods is the method being developed in the Soviet U [6], with respect to which the process of drying and calcination is perf in an apparatus with a boiling layer, and the process of vitrification in ceramic (concrete) crucible by means of an induction current.

A technical-economic analysis of the method of storing solution considered in detail in a paper by V. I. Spitsin and others. In this pap analysis is made of only the method of vitrification and a comparison o with the storage of solutions.

Heat Treatment

USSR UDC 621.791.856.3:620.193.41

YURCHENKO, YU. F., SOTNICHENKO, A. L., AZAPOV, G. I., KOMISSAROV, V. G., and SHURAKOV, S. A.

"Effect of Heat Treatment on the Structure and Corrosion Resistance of the Metal In the Heat-Affected Zone of Joints of Kh18N10T Steel"

Kiev, Avtomaticheskaya Svarka, No 6, Jun 71, pp 8-11

Abstract: Studies were made on joints of 1Kh18N10T pipe 57 mm in diameter with a wall thickness of 3 mm produced by argon-arc welding. After welding, a portion of the joints were tempered at 700°C for 2,10, 100, and 1000 hours: the other portion was quenched in water after heating for different times at 1000-1250°C. Heat treatment of 1Kh18N10T weld joints increases the rate of knife corrosion and expands the front of its development. This was caused by precipitation, at this temperature, of chronium carbides of the type $Me_{23}C_6$ along the grain boundaries of the heat-affected zone. Holding at 700°C for 10-100 hours leads to coalescence and dissolution of these carbides and to the appearance of the sigma-phase at the grain boundaries. In this case the carbon, being freed in the dissolution of metastable chromium carbides, is bonded in carbides of titanium which are basically distributed in the body of austenite grains. However this process dimenishes the rate of knife corrosion. Quenching joints from 1000-1150°C lowers (by 1.5-5 times) the rate of knife

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APPROVED FOR RELEASE: 08/09/2001 CIA-RDP86-00513R002200220016-6"

USSR

YURCHENKO, YU. F., etal, Kiev, Avtomaticheskaya Svarka, No 6, Jun 71, pp 8-11

corrosion. This has been associated with a change in the type of carbides of titanium in the heat-affected zone, by redistribution and removal of internal stresses, as well as with the elimination of concentration heterogeneity of austenite in grain bodies and in their boundaries. Increasing quenching temperature (1150-1250°C) leads to homogenization of all zones of the weld joint and prevents knife corrosion; Reheating joints for quenching above 1250°C increases the rate of knife corrosion. 7 figures, 2 bibliographical references.

2/2

USSR UDC 612.821.2

CHERKASHIN, A. N., and AZARASHVILI, A. A., Laboratory of the Physiological and Physico-Chemical Basis of Memory, Institute of Biophysics, Academy of Sciences USSR, Pushchino-na-Oke

"Pharmacological Investigation of Memory"

Moscow, Zhurnal Vysshey Nervnoy Deyatel'nosti imeni I. N. Pavlova, Vol 22, No 3, May/Jun 72, pp 504-509

Abstract: Administration of RNA-ase into the cerebral ventricles of rats induces a dissociated state during which a previously learned conditioned reflex is absent but spontaneously reappears on the next day, even when an opposite conditioned reflex is developed during the action of the RNA-ase. This is the nonspecific effect of RNA-ase which is also exerted by a large number of other drugs. A new conditioned reflex can be developed during the action of RNA-ase. However, this reflex is no longer manifested on the next day either in the normal state or after repeated injections of RNA-ase: each time it must be learned anew. This is the specific effect of RNA-ase, which prevents consolidation of the memory trace or the transformation of short-term memory into long-term. During evaluation of the specific effect of any agent, it is necessary to consider the mechanism of "dissociated learning."
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USSR UDC 616.981.553-07:616.15-098]-078

AZARENOK, K. S., Vitebsk Medical Institute

"Possibility of Using the Passive Hemagglutination Test to Detect Toxin in the Blood of a Patient Suffering from Botulism"

Moscow, Zhurnal Mikrobiologii, Epidemiologii i Immunobiologii, No 7, Jul 70, pp 112-114

Abstract: It was found that the passive hemagglutination test (Rytsa's method as modified by Sinitsyn) quickly reveals the presence and type of toxin in the blood of a patient suffering from botulism, even when a bioassay in mice is negative. The test was positive with erythrocytes sensitized solely with type A antitoxic serum in a 1:320 dilution, with blood taken from the patient before he was given therapeutic serum. It was negative with washings, urine, and blood taken after administration of therapeutic serum. The test was particularly pronounced 3 days after a blood sample was taken and stored at room temperature. Hemagglutination was also positive with erythrocytes sensitized only to type A toxin, but its titer fell to 1:160.

1/1

USSR

UDC: 539.4.015

AZAREVICH, G. M., BERNSHTEYN, M. L., FRIDMAN, V. B., and SHUL'GIN, V. V.

"Thermomechanical Hardening of 4Kh10S2M Steel"

Moscow, Fizika i Khimiya Obrabotki Materialov, no. 6, Nov-Dec 70, pp 133-136

Abstract: A study has been made of the effect of various systems and parameters of thermomechanical treatment on the hardening of 4Kh10S2M steel designed for valves of tractor engines. It was found that upon high-temperature thermomechanical surface treatment (HTTST) of the working bevel of the valve, its hardness in the high-tempered state increases as compared to ordinary quenching and the same tempering. The obtained results make it possible to uniquely select optimum specifications for HTTST, including surface rolling using rolls 15 mm in diameter with a force of 250 - 400 kg per roll for 10-15 seconds, the degree of strain being about 40%. The recommended degree of strain with HTTST is consistent with the data in the literature. The suggested specifications insure maximum preservation of the hardness of 4Kh10S2M steel on tempering and high hardness immediately after treatment.

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USSR UDC 620.17

AZARKEVICH, L. B., BLAYKHHAN, YE. M., MAKOVETSKIY, V. A., and MIL'KOV, V. G.

"A Rubber-Like Optically Sensistive Material on the Basis of Oligodiene Epoxy PDI-3A"

Tallin, VII Vses. Konf. po Plyarizats.-Optich. Metodu Issled. Napryazh., 1971 -- Sbornik (Seventh All-Union Conference on the Polarization-Optical Method of Stress Research -- Collection of Works), Vol 2, 1971, pp 106-109 (from Referativnyy Zhurnal, Mekhanika, No 2, Feb 72, Abstract No 2V1656)

Translation: A report is given on the composition and opticomechanical properties of optically sensitive materials made of the oligodiene epoxy PDI-3A in combination with epoxy resins. When applied as photoelastic coatings such materials make possible the measurement of plastic deformations from 2 to 30%. A calibration diagram is presented for one of the materials. Samples from the obtained materials were subjected to repeated loadings (stretching or pure fracture), and on the basis of 1.5 -- 2.0 thousand cycles the stability of the opticomechanical properties of the photoelastic coating was shown. In addition, these materials possessed low optical sensitivity. The last two properties are particularly useful in the measurement of accumulated deformations during repeated loadings. 1/2

USSR

UDC: 533.99

AZARKEVICH, Ye. I., Tomsk Polytechnical Institute

"Using the Similarity Theory for Computing Some Characteristics of Electrical Wire Explosions"

Leningrad, Zhurnal tekhnicheskoy fiziki, No 1, 1973, pp 141-145

Abstract: Electrically exploding wires are now being used for switching a current from an inductive storage unit to the load, but there is as yet no simple and precise method for computing the tuned circuit for the exploding wire. The author of this paper shows that the similarity theory can be used to reduce the multiplicity of factors on which this computation depends -- the circuit inductance and capacitance, the charging voltage, the length and cross section of the wire -- to just two, and can thus be made to yield simple empirical formulas for the design computations. The application of similarity criteria to the processing of the experimental data, obtained at various times in the Scientific Research Institute of High Voltages of the Tomsk Polytechnical Institute, is explained. The author expresses his gratitude to Yu. A. Kotov for his comments, and to V. S. Sedom and V. S. Alenichev for their assistance in making the experimental data available to him. 1/1

1/2 026 UNCLASSIFIED PROCESSING DATE--16OCT70

TITLE--STRUCTURAL CHANGES IN TITANIUM HYDRIDE AT HIGH HYDROGEN CONCENTRATIONS -U-

AUTHOR-(02)-AZARKH, Z.M., GAYRILOV, P.I.

COUNTRY OF INFO--USSR

SOURCE--KRISTALLOGRAFIYA 1970, 15(2), 275-9

DATE PUBLISHED-------70

SUBJECT AREAS--MATERIALS, CHEMISTRY

TOPIC TAGS--TITANIUM COMPOUND, HYDRIDE, HYDROGEN, GAS CONTAINING METAL, METAL CONTAINING GAS, SOLID SOLUTION, BETA PHASE

CONTROL MARKING--NO RESTRICTIONS

DOCUMENT CLASS--UNCLASSIFIED

PROXY REEL/FRAME--1995/0909 STEP NO--UR/0070/70/015/002/0275/0279

CIRC ACCESSION NO--AP0116419

UNCLASSIFIED

2/2 026 UNCLASSIFIED PROCESSING DATE--16OCT70

CIRC ACCESSION NO--AP0116419

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. THE TI-H SYSTEM WAS STUDIED TO REFINE THE PHASE BOUNDARIES AND THE CUBIC AND TETRAGONAL LATTICE PARAMETERS AS A FUNCTION OF THE H CONCN. AND TEMP. IN THE 2 PHASE REGION (TIH SUB0.15-TIH SUB1.7) A HYDRIDE WITH THE COMPN. TIH SUB1.5 WITH A DEFECTIVE FCC. LATTICE (BETA PHASE) AND A SOLID SOLN. OF H IN METALLIC TI (ALPHA PHASE) EXIST. THE LATTICE PERIOD OF THE FORMER REMAINS CONST. IN THIS REGION, A EQUALS 4.404 ANGSTROM. IN THE HOMOGENEOUS CUBIC BETA PHASE (TIH SUB1.5-TIH SUB1.7), A SOLID SOLN. OF H IN THE DEFECTIVE HYDRIDE IS FORMED. IN THIS CASE A STATISTICAL FILLING OF THE TETRAHEDRAL SEGMENTS BY H ATOMS IS ASSUMED. THE LATTICE PERIOD INCREASES TO A EQUALS 4.425 ANGSTROM FOR TIH SUB1.7. BEGINNING WITH THIS COMPN. AN ORDERED FILLING OF THE TETRAHEDRAL SEGMENTS SETS IN, WHICH RESULTS IN THE TETRAGONAL DISTORTION OF THE CUBIC LATTICE. THE NEW STRUCTURE IS TETRAGONAL, FACE CENTERED, OR BODY CENTERED STRUCTURE. THE REGIONS ARE DEFINED FOR THE EXISTENCE OF THE CUBIC AND TETRAGONAL BETA PHASE, AND THE DEGREE OF TETRAGONAL DISTORTION WAS DETD. IN RELATION TO THE H CONCN. AND TEMP. THE PURITY OF THE STARTING MATERIALS AND THE TECHNOL. ASPECTS OF THE SAMPLE PREPN. AFFECT THE PHASE LIMITS.

UNCLASSIFIED

USSR UDC 539.3

ABOVSKIY, N. P., AZARKHIN, A. M., YENDZHIYEVSKIY, L. V., PAS'KO, D. A., SHOYEVA, Ye. T.

"On the Calculation of Convex Polyhedra With Plane and Curved Ribbed Panels"

V sb. Prostranstv. konstruktsii v Krasnoyarsk. kraye (Three-Dimensional Structures in the Krasnoyarsk Region -- Collection of Works), Krasnoyarsk, 1972, pp 20-27 (from RZh-Mekhanika, No 3, Mar 73, Abstract No 3V116)

Translation: Variational formulations of the problem in displacements and in mixed form using stress and bending functions are discussed for convex multisided surfaces considering discrete displacement of the ribs. Each ribbed panel of the system is represented as a variety of a shell of variable thickness. Authors' abstract.

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USSR

UDC 539.3

AZARKHIN, A. M., PAS'KO, D. A.

"Machine Solution of the Mixed Method of Calculating Ribbed Shells"

V sb. Prostranstv. konstruktsii v Krasnoyarsk. kraye (Three-Dimensional Structures in the Krasnoyarsk Region -- Collection of Works), Krasnoyarsk, 1972, pp 60-66 (from RZh-Mekhanika, No 3, Mar 73, Abstract No 3V119)

Translation: A program is described by calculating ribbed shells by a mixed method using finite-difference equations obtained by the authors. An outstanding feature of the given version of the mixed method is the use of continuous stress functions. Authors' abstract.

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USSR

UDC 621.373:536.531.08(088.8)

AZARKIN, V. A., KOVAL'KOV, V. I.

"Frequency Sensor of Small Deviations of Active Resistances"

Priborostroyenive. Resp. mezhved. nauch.-tekhn. sb. (Instrument Making. Republic Interdepartmental Scienctific and Technical Collection), 1971, No 10, pp 63-68 (from RZh-Metrologiya i Izmeritel'naya Tekhnika, No 10, Oct 71, Abstract No 10.32.1470)

Translation: A study was made of a method of converting small deviations of active resistances consisting in controlling the frequency of a generator with a frequency dependent RC-circuit by a variable voltage input to the phasing circuit in series with the active resistance and capacitance. This voltage is proportional to the output voltage of the generator and depends on the increment of the measured resistance. A frequency sensor of small deviations of active resistances with linear transformation characteristics was developed and investigated on the basis of this procedure. Expressions are presented for the frequency of the sensor and the conditions of linearity of the conversion functions. The errors of the frequency instability of the sensor are analyzed. An experimental dependence of the conversion functions is presented. The developed sensor is designed for measurement and remote measurement of small

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USSR

AZARKIN, V. A., et al., Priborostroyeniye, Resp. mezhved. nauch.-tekhn. sb., 1971, No 10, pp 63-68

deviations of the active resistances and can also be used for conversion of the nonelectric variables to frequencies which can in one way or another affect the magnitude of the active resistance. There are 2 illustrations and a 7-entry bibliography.

2/2

USSR

UDC 621.372.061:538.56

AZARKIN, V. A., YAKOVLEV, D. P.

"Frequency Generators with an Odd Number of Elements in a Selective Four-Terminal Network"

Akust. i ultrazvukovaya tekhn. Resp. mezhved. nauchno-tekhn. sb. (Sonic and Ultrasonic Engineering. Republic Interdepartmental Scientific and Engineering Collection), 1970, vyp. 5, pp 73-83 (from RZh-Radiotekhnika, No 9, Sep 70, Abstract No 9A61)

Translation: This article contains a study of a converter which converts small deviations of resistances, capacitances and inductances into frequency based on RC (RL)-generators with an odd number of elements in selective four-terminal networks. Various versions of modified L-type and double L-type selective RC and RL four-terminal networks with an odd number of elements are presented. There quasiresonance frequencies are determined. Practical recommendations are made with respect to the converters. Converter errors caused by the appearance of additional phase shifts in the amplifier are analyzed. The results of an experimental study are presented. A relative frequency variation on the order of 20-50 percent is achieved in the model converters with variation of the measured variable by one percent. There are four illustrations, five tables and a six-entry bibliography.

1/1

USSR

UDC 627.8.05:622.235

AZARKOVICH, A. YE., FESHCHENKO, A. A.

"Selecting Explosives for Special Forms of Explosive Operations in Hydro-engineering Construction"

Energ. str-vo -- V Sb. (Power Engineering Construction -- Collection of Works), No 10 (112), Moscow, 1970, pp 53-56 (from RZh-Elektrotekhnika i Energetika, No 2, Feb 71, Abstract No 2 D197)

Translation: The effect of the type of explosives on preservation of the rock surfaces of excavations is investigated. The selection of the explosives is based both on technical and economic factors. There are 2 tables and a 4-entry bibliography.

1/1

USSR

AZAROV, M. I., DUBILOVICH, V. M.

"Interpretation of a Relative 'Black Box'"

Vychisl. Tekhn. v Mashinostr., Nauch.-Tekhn. Sb. [Computer Technology and Machine Building, Scientific and Technical Collection], December 1971, pp 17-21 (Translated from Referativnyy Zhurnal Kibernetika, No 4, 1973, Abstract No 4V711, by the authors).

Translation: The determination of properties of a control object is studied. The object is described by a diagram of states, satisfying certain conditions which allow a simple, conditional interpretation algorithm to be defined and the length of the corresponding experiment to be estimated. Examples of interpretation of such objects are presented.

1/1

USSR

UDC 629.78:525.2+525.7

AZAROV, V. L., NOVOZHILOV, V. I., TAVRIZOV, G. A.

"The Possibility of a Unique Determination of the Electron Concentration on the Basis of Base Measurements"

V sb. Mat. metody modelir. v. kosmich. issled. (Mathematical Methods of Modeling in Space Research -- Collection of Works), Moscow, "Nauka", 1971, pp 66-72 (from RZh-62. Issledovaniye kosmicheskogo prostranstva, No. 4, Apr 72, Abstract No. 4.62.258)

Translation: The problem of determining the local electron concentration N_e in the solar corona with the aid of phase measurements is investigated. The following simplifying assumptions are introduced: (1) the distribution N_e is assumed to be spherically symmetrical, i.e., $N_e = N_e(r)$; (2) the orbits of the emitter and receiver lie in the same plane; (3) the approximation of geometrical optics is carried out for any trajectories of the probing beams (the fraction is assumed to be negligibly small); (4) the regular ionosphere contribution to the magnitude of the phase shift is evaluated integrally. It is shown that in this case the problem of determining $N_e(r)$ is single-valued and reduces to an inverse problem in potential theory. 8 ref. L. D.

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USSR UDC 621.357.7:669.248:669.295

VOLYNSKIY, V. V. (Candidate of Technical Sciences), ZAKHAROVA, L. V., and AZAROVA, A. P.

"Titanium in Nickel Plating"

Moscow, Mashinostroitel', No 2, Feb 72, p 31

Abstract: Titanium is known to hold much promise for increased reliability and service life of plating equipment as well as to offer high anticorrosion and mechanical properties, making it possible to reduce the plating thickness to more than one half. The cost of titanium and steel vessels lined with polychlorovinyl is about the same but the service life of the former is 5-6 times greater. Cited are two cases involving the use of anodium titanium alloy baskets for nickel plating which resulted in savings of 17,600 and 22,000 rubles, respectively. Other cited cases involve titanium heaters for more accurate electrolyte temperature control, titanium heating coils, pumps and pipes in the chemical industry. The rate of recovery of capital investments for new titanium equipment was found to be high in all instances. (4 illustrations).

1/1

USSR

UDC 621.396.677.001.24

AZAROV, Yu. Ye., KUZNETSOV, Yu. A., and PATEYUK, G. M.

"Synthesis of an Impedance Realizing a Specified Directional Diagram"

Dnepropetrovsk, V sb. Vopr. teorii i tekhn. avtomat. sistem (Problems in the Theory and Technology of Automatic Systems--collection of works) 1971, pp 97-105 (from RZh--Radiotekhnika, No 10, 1972, Abstract No 10B6)

Translation: The plane problem is considered of synthesizing an impedance which, for a known directional diagram of a primary radiator, permits obtaining the specified diagram in the presence of a metal body. An expression is obtained for the distribution of the impedance along the antenna. Results are given of the computation of the impedance distribution. Two illustrations, bibliography of three. V. S.

1/2 009 UNCLASSIFIED PROCESSING DATE--20NOV70

TITLE--CHARACTERISTICS OF DI,SEC,BETA,GLYCOLS -U-

AUTHOR-(02)-YESAFOV, V.I., AZAROVA, V.I.

COUNTRY OF INFO--USSR

SOURCE--ZH. ORG. KHIM. 1970, 6(4), 678-80

DATE PUBLISHED-------70

SUBJECT AREAS--CHEMISTRY

TOPIC TAGS--GLYCOL, GRIGNARD REAGENT, ORGANIC SYNTHESIS, CHEMICAL STABILITY

CONTROL MARKING--NO RESTRICTIONS

DOCUMENT CLASS--UNCLASSIFIED

PROXY REEL/FRAME--2000/2046 STEP NO--UR/0366/70/006/004/0678/0680

CIRC ACCESSION NO--AP0125634

UNCLASSIFIED

2/2 CC9 UNCLASSIFIED PROCESSING DATE--20NOV70
CIRC ACCESSION NO--AP0125634
ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. THE ACTION OF GRIGNARD REAGENTS ON THE ALDOLS OF BUTYRALDEHYDE OR ISOBUTYRALDEHYDE GAVE (SHOWN ON MICROFICHE) IN ACIDS AND ALKALIES. FACILITY: URAL. GOS. UNIV. IM. GOR'KOGO, SVERDLOVSK, USSR.

UNCLASSIFIED

1/2 020 UNCLASSIFIED PROCESSING DATE--20NOV70
TITLE--COLORING OF MOLTEN GLASS -U-

AUTHOR-(05)-SEMENOV, N.N., AZAROVA, YE.M., PLAKSINA, A.M., TIMOSHENKO, I.V., GORODKHOVSKIY, V.A.

COUNTRY OF INFO--USSR

SOURCE--U.S.S.R. 267,025
REFERENCE--OTKRYTIYA, IZOBRET., PROM. OBRAZTSY, TOVARNYE ZNAKI 1970,
DATE PUBLISHED--01APR70

SUBJECT AREAS--MATERIALS

TOPIC TAGS--CHEMICAL PATENT, OPTIC PROPERTY, GLASS PROPERTY

CONTROL MARKING--NO RESTRICTIONS

DOCUMENT CLASS--UNCLASSIFIED
PROXY REEL/FRAME--3004/1802 STEP NO--UR/0482/70/000/000/0000/0000

CIRC ACCESSION NO--AA0132068

UNCLASSIFIED

2/2 020 UNCLASSIFIED PROCESSING DATE--20NOV70

CIRC ACCESSION NO--AA0132068

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. MOLTEN GLASS WAS MIXED WITH A METAL OR ALLOY MELT (INERT IN RELATION TO THE GLASS) HAVING A DIFFERENT D., AND CONTG. AN ADDITIVE OF METALS, THE IONS OF WHICH COLOR THE GLASS.

FACILITY: SARATOV STATE SCIENTIFIC RESEARCH INSTITUTE OF GLASS.

UNCLASSIFIED

USSR

UDC 576.851.45.077.3:576.8.073.4

URALEVA, V. S., FETSAYLOVA, O. P., MYASNIKOVA, G. S., DASHKEVICH, L. V., and AZARTSEV, A. N., Rostov-na-Donu Scientific Research Antiplague Institute and Poltavskaya, Yaroslavskaya, and Orlovskaya Oblast Sanitary Epidemiological Stations

"Results Obtained by Means of Fluorescent Antibodies During Investigation of Natural Foci of Tularemia"

Moscow, Laboratornoye Delo, No 1, 1973, pp 57-58

Abstract: Spleen, blood, lymph node, liver, and lung smear prints of 13 infected laboratory mice were treated with luminescent tularemia serum. A large number of brightly luminescent microbes were found in the samples of seven animals. Bacteriological investigations yielded tularemia pathogen from all 13 animals. Luminescent bodies resembling tularemia microbes were also observed in two additional mice infected with Dermacentor pictus ticks. However, no tularemia bacteria were isolated from these animals. It was established that smear prints of internal organs remain suitable for treatment with luminescent serum for up to 6 months if kept in a refrigerator and for up to 3 months if kept at room temperature. The method of contrasting specific luminescence yields good results only if bovine albumin tagged with fluorothiocyanate is used. Albumin tagged with isothiocyanate is ineffective.

1/1

USSR UDC 595.7:591.542

TYSHCHENKO, V. P., GORYSHIN, N. I., and AZARYAN, A. G., Department of Entomology, Leningrad State University, and Department of Zoology, Yerevan State University

"Role of Circadian Processes in Insect Photoperiodism"

Moscow, Zhurnal Obshchey Biologii, No 1, 1972, pp 21-31

Abstract: Light and dark circadian processes participate in the photoperiodic reactions of insects. Their absolute durations are specific for each species and geographic population. The length of day and night is measured by mutual phasing of these processes under the influence of the photoperiod. This system permits only a qualitative estimate (shorter or longer than the inborn standard) and thus operates on the principle of a binary code. The photoperiodic measurement of time is attuned ecologically. Temperature and other environmental factors may exert a corrective influence on the operation of the system by adapting the mechanism of the photoperiodic reaction to the different seasons. The transmission of information from the oscillatory apparatus that judges the length of day and night to the endocrine system that controls insect development and diapause is apparently mediated by a photoperiodic counter that sums the number of short and long days throughout the period of larval development.
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USSR

TYSHCHENKO, V. P., et al., Zhurnal Obshchey Biologii, No 1, 1972, pp 21-31

This counter, which plays an important role in the regulation of insect growth, cannot as yet be associated with any morphological structure.

2/2

Entomology

USSR UDC 595.729:577.49

AZARYAN, A. G., amd TYSHCHENKO, V. P., Leningrad State University

"Nervous Regulation of the Circadian Rhythm of Motor Activity in the Cricket Gryllus domesticus L. (Orthoptera, Gryllidae)"

Leningrad, Entomologicheskoye Obozreniye, No 1, 1970, pp 72-82

Abstract: The house cricket is most active at night. The circadian rhythm of its activity is approximately 26 hours with continuous light and 22 hours with constant darkness. Electrothermocautery of portions of the brain showed that the circadian rhythm disappeared only when one of the points of two definite zones in the protocerebrum (situated symmetrically to the right and left of the median line of the brain) was cauterized. A ligature applied between the head and thorax of the insect prevented the passage of hormones from the neurosecretory cells to the body, indicating that the circadian rhythm is regulated by neurons rather than hormones. The mechanism of synchronization of the cricket's behavioral rhythms seems to be the following. The rhythms are controlled by brain neurons attuned to the photoperiod. The light conditions synchronize these neurons. The circadian rhythms of the brain neurons are synchronite, in turn, the neurons of the thoracic

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APPROVED FOR RELEASE: 08/09/2001 CIA-RDP86-00513R002200220016-6"

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AZARYAN, A. G., et al., Leningrad, Entomologicheskoye Obozreniye, No 1, 1970, pp 72-82

ganglia, which control the insect's leg movements but are not directly sensitive to the photoperiod.