USSR

KONDRATENYA, S. G.; YABLONSKIY, A. I. (Institute of Mathematics, Belorussian Academy of Sciences)

"Singular Points in Solutions of Systems of Second-Order Differential Equations"

Minsk, Differentsial'nyye Uravneniya; November, 1970; pp 1970-5

ABSTRACT: In the system of differential equations $\frac{dx}{dz} = \frac{P(x, y, z)}{R(x, y, z)}$, $\frac{dy}{dz} = \frac{Q(x, y, z)}{S(x, y, z)}$ -- where P, Q, R, and S are polynomials in x and y with coefficients which are holomorphic functions of z in the region D -- sufficient and (in isolated cases) necessary and sufficient conditions are found for the existence of algebraic and certain nonalgebraic solutions [x(z), y(z)] with the property $x(z) \to \infty$, $y(z) \to \infty$ for $z \to z_0 \in D$. The conclusions drawn are a generalization of the results of an article by the authors

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USSR

KONDRATENYA, S. G. and YABLONSKIY, A. I., Differentsial'nyye Uravneniya, November 1970, pp 1970-5.

appearing in a previous issue of the same journal (Vol 4, No 6, 1968; pp 983-90) in which similar questions were considered for normal systems of second-order differential equations with polynomials in x and y and having the right sides holomorphic with respect to z. A theorem is presented.

The article includes 23 equations. There are two references.

USSR

UDC 612.014.42

BOGACH, P. G., KONDRAT'EVA, L. D., and MIRUTENKO, V. I., Institute of Physiology and Chair of Biophysics, Kiev University

"Effect of a Constant Magnetic Field on the Membrane Potential of Neural Cells in Ganglia Isolated From the Mollusk Planorbis corneus"

Kiev, Fiziologichnyy Zhurnal, Vol 17, No 6, Nov/Dec 71, pp 760-764

Abstract: Results of experiments conducted to determine the effect of constant magnetic fields (CMF) with intensities of 130, 600, 1,300, and 1,800 H on the membrane potential (MP) of neural cells in ganglia isolated from the mollusk Planorbis corneus are presented in the article. The CMF were formed by passing a direct current through an electromagnet. The ring-shaped isolated ganglion consisting of six pairs of symmetric and one pair of nonsymmetric ganglia was suspended between the two poles of the electromagnet in a special chamber through which a solution standard for this type of mollusks was flowing. Microelectrodes filled with a 3 M solution of KCl were used to record the MP of the cells. The data obtained revealed that 6-hour exposure of the cells to the action of the the CMF with intensities of 130, 600, 1,300 and 1,800 H reduces the MP of the cells respectively by 45, 40, 47 and 40.7% as compared with controls. The changes in the MP values, however, are not related to the

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USSR

BOGACH, P. G., et al., Fiziologichnyy Zhurnal, Vol 17, No 6, Nov/Dec 71, pp 760-764

intensities of the CMF, or duration of their action, for the higher the intensity of the CMF the greater the reduction rate of the MP even following exposure for only a period of 4 hours to the action of the CMF. This is manifested also by the deep irreversible changes in the nerve cells when the CMF action is suspended for 3 hours. The assumption is that the biological effect of CMF on the MP is due to the action of the fields on the free radicals of the active metabolite cells with the subsequent effect on the permeability of the cellular membrane to the ions responsible for the generation of the MP.

2/2

USSR

KONDRATOV, A., Correspondent for Meditsinskaya Gazeta

"The Wonder Filter"

Moscow, Meditsinskaya Gazeta, 28 Apr 72, p 2

Translation: At the Chimkent automated press plant, a review of working conditions in industry was successfully conducted in honor of 50 years of the development of the USSR. Here, an original compact unit for filtering metal and emery dust was constructed. Simple in design, it can be installed behind a lathe and operates on its motor by the principle of individual suction of impure air.

Industry's path to improvement of conditions has also begun at other enterprises in Southern Kazakhstan. The Chimkent lead plant successfully completed the industrial testing of a high-speed filtration unit which was constructed here. Its special feature is that it is capable of catching very fine dust particles. The filter medium is composed of special heavy fabric the thorough cleaning of which is accomplished by a strong jet of compressed

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USSR

KONDRATOV, A., Meditsinskaya Gazeta, 28 Apr 72, p 2

air without stopping the unit. It is entirely automated.

The wonder filter, the working model of which was given a silver medal at VDNKh SSSR (Vystavka Dostizheniy Narodnogo Khozyaystva SSSR -- Exhibition of Achievements of the National Economy of the USSR), is compact, efficient, and dependable in operation.

2/2

UDC 621.374.5(088.8)

USSR

TYUSHEV, V. S., KONDRATOV, A. V., TIMOFEYEV, Yu. V., SHELUD'KO, O. V.,
Northwest Polytechnical Correspondence Institute

"A Wide-Band Ultrasonic Delay Line"

USSR Author's Certificate No 287101, filed 27 Apr 67, published 7 Apr 71
(from RZh-Radiotekhnika, No 11, Nov 71, Abstract No 11G335 P)

Translation: This Author's Certificate introduces a wide-band ultrasonic delay line whose ultrasonic channel is made in the form of a piezoelectric plate with damper devices on the ends of the plate and with metallic input and output electrodes vaporized on the plate. Connected between the input and output electrodes is a feedback circuit which contains a wide-band pulse generator. To extend the range of the delay time, a slave pulse generator is connected in the feedback circuit. This pulse generator is controlled through a switching device from a coincidence gate. The outputs of a time delay pickup and a pulse counter are connected to the input of the coincidence gate. One input of the pulse counter is connected to the output electrodes of the ultrasonic channel, while the other is connected to the coincidence gate. The delayed signal is taken off from the output of the coincidence gate. Resumé.

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UDC 539.192

USSR

DEMENT'YEV, V. A., KONDRATOV, O. I., GRIBOV, L. A., (Dept, of Physics) KASHKAN, L. I., (Belorussian State University)

"Program for Solving the Problems of Multiatomic Molecule Oscillation Modes on 'Minsk-22' Computer"

Moscow, Izvestiya Timirayzevskoy Sel'skohozyaystvennoy Akademii, No 2, 1970, pp 203-214

Abstract: The algorithm and the program for solving the direct spectral problem of the theory of oscillatory spectra of multiatomic molecules (up to 27 atoms) on the "Minsk-22" electronic computer are described in detail. The program consists of four logically independent sections; 1) the formation of matrices (up to 81st order) of molecule kinetci T_p and potential U_q energy in the natural and symmetry coordinates; 2) the determination of oscillation frequencies and modes in natural and symmetry coordinates with automatic search and elimination of dependent coordinates; 3) the reduction of the oscillatory mode in natural coordinates to zero amplitudes of normal oscillatory modes; 4) determination of atoms displacement corresponding to zero amplitudes of normal

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USSR

DEMENT'YEV, V. A., et al., Moscow, Izvestiya Timiryazevskoy Sel'-skokozyaystvennoy Akademii, No 2, 1970, pp 203-214

oscillatory modes. An example of the preparation and recording of the initial data for determining the oscillatory mode of a multiatomic molecule of ethane (C_2H_6) is presented. Original article has two figures, ten formulas and three tables.

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K

UDC 681.327.12

USSR

KONDRATOV, P. A., SOGOLOVSKIY, YE. P. TARASOV, V. P., L'vov "Order of Lenin Polytechnical Institute

"A Method of Searching for a Graphic Image"

Moscow, Otkrytiya, Izobretneiya, Promyshlennyye Obraztsy, Tovarnyye Znaki, No 9, 1970, p 138, Patentn no 264819, filed 30 Sep 68

Abstract: This Author's Certificate introduces a method of searching for a graphic image. The procedure is based on readout by a reflected CRT beam moving horizontally along the line with vertical scanning and following the contour of the image with the use of a scanning circle. As a distinguishing feature of the patent, the speed and reliability of the search are increased by activating the scanning circle when the number of intersections of the vertical scanning beam with the outline of the symbol exceeds a threshold value.

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1/2 022 UNCLASSIFIED PROCESSING DATE--30OCT70

TITLE--PROPERTIES OF PYRIDINECARBOXYLIC ACIDS HAVING CARBOXYL AND CARBONYL GROUPS IN POSITIONS 2 AND 3 -U-

AUTHOR-(04)-YURKINA, L.P., RUSYANOVA, N.D., LIPATOVA, L.F., KONDRATOV, V.K.

COUNTRY OF INFO--USSR

SOURCE--KHIM. GETEROTSIKL. SOEDIN. 1970, (3), 390-3

DATE PUBLISHED--------70

SUBJECT AREAS--CHEMISTRY

TOPIC TAGS--PYRIDINE, CARBOXYLIC ACID, TITRATION, MOLECULAR STRUCTURE, IR SPECTRUM, UV SPECTRUM, CARBOXYL RADICAL, CARBONYL RADICAL

CONTROL MARKING--NO RESTRICTIONS

DOCUMENT CLASS--UNCLASSIFIED
PROXY REEL/FRAME--2000/0684 STEP NO--UR/0409/70/000/003/0390/0393

CIRC ACCESSION NO--AP0124356
UNCLASSIFIED

UNCLASSIFIED PROCESSING DATE--30OCT70

2/2 022

CIRC ACCESSION NO--AP0124356

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. THE TITRN. OF THE TITLE COMPD. IN ANHYD. SOLVENTS GAVE 1 OR 2 MAX. AT MINUS 100 TO MINUS 250 MV AND MINUS 300 TO MINUS 400 MV, WHICH ARE CHARACTERISTIC OF THE MOL. STRUCTURE. THE CHARACTERISTICS OF THE IR AND UV SPECTRA OF THE TITLE COMPDS. ARE DISCUSSED. FACILITY: VOST. NAUCH. ISSLED. UGLEKHIM. INST., SVERDLOVSK, USSR.

UNCLASSIFIED

USSR

UDC 669.15:24:28:295-194

KONDRATOV, V. M., (Kirov)

"Internal Friction in Martensite-Aged Fe-Cr-Ni Steels"

Kiev, Problemy Prochnosti, No 5, May, 1971, pp 18-22.

Abstract: Results are presented from the study of 3 chrome-nickel martensite-aged steels. Measurements of the amplitude dependence of internal friction are used to show the change in the crystalline structure during aging of the martensite. The dependence of damping ability of these steels on aging processes is determined.

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UDC 546.26:542.915:536.495

USSR

KONDRATOVA, L. S., PERVINA, N. V., and SYSKOV, K. I.

"Investigation of Pyrolytic Carbon at 2200-2600°C"

Moscow, Neorganicheskiye Materialy, Vol 10, No 1, Jan 74, pp 40-43

Abstract: The effect of heat treatment on the structure and properties of carbon-bonded materials was studied by using samples of filamented carbonized fibers bonded with pyrolytic carbon, crushed pyrolized petroleum coke, and graphitized rubble. The test materials were made into samples with a density of 1.6 g/cm^3 for the fibrous material and 1.85-1.90 g/cm^3 for the coke- and graphite-base materials. Microhardness tests of the samples after heat treating-heating at the rate of 800°/hr with a one-hour soak at maximum temperature (2800° C) -- revealed that the highest hardness was produced in the fibers with pyrolytic carbon with hardness decreasing with increased temperature. The coke with pyrolytic carbon had a microhardness slightly under that of the pyrolytic fibers but this hardness dropped rapidly and above 2000° C had the lowest hardness of the five materials tested. It was hypothesized that the microhardness drop of pyrolytic carbon is caused to a considerable degree by the breakdown of its concial structure. It is recommended that in the production of thermally stable pyrolytic carbon-bonded materials an attempt should be made to create a

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USSR

KONDRATOVA, L. S., et al., Neorganicheskiye Materialy, Vol 10, No 1, Jan 74, pp 40-43

skeleton structure in which the bonding chains have the smallest possible dimensions. Four figures, three bibliographic references.

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UDC 612.824-06:612.592

USSR

KONDRATOVICH, M. A., Laboratory of Circulatory Pathophysiology, Institute of Clinical Medicine imeni N. D. Strazhesko, Kiev

"Effects of Hypothermia on the Resistance to Blood Circulation in Cerebral Vessels and Their Reaction to Neurohumoral Stimuli"

Moscow, Byulleten' Eksperimental'noy Biologii i Meditsiny, Vol 72, No 8, 1971, pp 15-17

Abstract: Measurements of cranial vascular resistance (by the resistographic method, with perfusion of the carotid arteries) performed on cats anesthetized with chloralose urethane and cooled to 26-25°C yielded different results depending on whether or not the extracerebral branches of the carotid arteries and the vertebral arteries were ligated. When these vessels are left intact, the total cranial vascular resistance decreases during hypothermia. However, when they are ligated and thus only the resistance of cerebral vessels is measured, it is found that this resistance increases during hypothermia due to vasoconstriction (which persists for a certain period after body temperature is raised to normal). Reactivity of the cerebral blood vessels to stimulation of afferent vagal fibers and to noradrenaline (1-5 micrograms/kg body weight, injected into systemic blood vessels) is significantly reduced during hypothermia.

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USSR

UDC: 616.831-005-02:616-001.8 - 615.232

KONDRATOVICH, M.A., Laboratory of Circulatory Biophysics, Institute of Physiology imeni A.A. Bogomolets, Academy of Sciences Ukrainian SSR, Kiev

"The Effect of Asphyxia and Inhalation of Carbon Dioxide on the Cerebral Vascular Tone"

Moscow, Kardiologiya, No 3, 1970, pp 77-83

Abstract: It was demonstrated that during constant-volume autoperfusion of cerebral vessels in dogs, hyperkapnia and hypoxemia cause an insignificant initial constriction of cerebral vessels, followed by distinct dilatation. This is particularly pronounced with cerebral perfusion under constant pressure In experiments with complete disruption of the cerebral humoral relationship with the body, it was shown that hyperkapnia causes dilatation of the cerebral vessels by direct action, and constriction of the vessels via a reflex effect. The rise of cerebral circulation during hyperkapnia and hypoxemia is associated with the hydrodynamic action of augmented intravascular pressure, and with the direct effect of altered gaseous composition of the blood on cerebral vessels.

ELECTRONICS

Amplifiers

UDC 621.385.6

USSR

LEBEDEV, I. V., KONDRATOVSKIY, I. S.

"M-Type Amplifier with a Staggered Negative Electrode"

Kiev, Izvestiya vysshikh uchebnykh zavedeniy--Radiotekhnika, Vol XIV, No 9, 1971, pp 1062-1066

Abstract: A study was made of two-cascade M-type amplifiers with two electron fluxes and a staggered cathode structure. With an increase in the output power in such amplifiers, a variance appears to a lesser degree between the efficiencies and the amplification factor characteristic of other types of magnetron amplifiers. The amplification factor of the investigated devices is estimated in the linear approximation. Amplifiers are discussed which can be considered as a further development of the "bidematron principle [Hull, "Recent Advances in Non-re-entrant Crossed-Field Forward-Wave Amplifiers," Proceedings of the Fourth International Congress in Microwave Crossed-Field Devices, 133, 1962]. The basic difference from the bidematron is the staggered interaction space of the investigated device. The height of the interaction space and also the constant potentials on each of the sections with respect to the delay systems drops from the output cascade to the input cascade. These differences are exhibited especially sharply in amplifiers with an "active" gun. The

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USSR

LEBEDEV, I. V., et al., Izvestiya vysshikh uchebnykh zavedeniy--Radiotekhnika, Vol XIV, No 4, 1971, pp 1062-1066

dependence of the amplification factor of the devices on the total electric length of the amplifiers is presented for two cases of the given device.

USSR

UDC: 621.375.4

KONDRATSKIY, B. A. and SONIN, M. S.

"Integrated Amplifier Stage With Thin-Film Transistors"

Kiev, Izvestiya VUZ--Radioelektronika, Vol. 13, No. 10, pp 1261-1262

Abstract: Asserting that although thin-film transistors are frequently used in digital integrated circuits, they are also applicable to linear analog circuits, the authors proceed to show how this can be done in this brief communication. The integrated circuit, a schematic of which is shown, has no resistors; one of the transistors is active while the other is the load device. The original material of which the circuit was made was n-type silicon with a resistivity of 7 ohm·cm. The topology of an integrated circuit designed to investigate the characteristics of the amplifier stages is also shown, and the parameters of the four transistors it contains are given in tabular form. A third illustration gives the gain of the stages as a function of the supply voltage.

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1/2 012 UNCLASSIFIED PROCESSING DATE--30OCT70

TITLE--DETERMINATION OF THE INTRINSIC VISCOSITY OF POLYETHYLENE SOLUTIONS -U-

AUTHOR-(05)-RYAZANTSEV, V.I., KONDRATYEV, A.A., SISIN, M.F., NASYROVA, Z.M., BOGATYKH, K.F.

COUNTRY OF INFO--USSR

SOURCE--VYSOKOMOL. SOEDIN., SER. A 1970, 12(4), 954-6

DATE PUBLISHED--------70

SUBJECT AREAS--CHEMISTRY, MATERIALS

TOPIC TAGS--INTRINSIC VISCOSITY, POLYETHYLENE

CONTROL MARKING--NO RESTRICTIONS

DOCUMENT CLASS--UNCLASSIFIED

PROXY REEL/FRAME--2000/0663 STEP NO--UR/0459/70/012/004/0954/0956

CIRC ACCESSION NO--AP0124335

UNCLASSIFIED

UNCLASSIFIED PROCESSING DATE--30OCT7(

2/2 012
CIRC ACCESSION NO--AP0124335
ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. IN THE 0.4-2.3 DL-G RANGE THE REDUCED VISCOSITY (N-C) OF POLYETHYLENE (I) SOLNS. IN P EXLENE CHANGES LINERALY WITH I CONCN. (C); THE HUGGINS CONSTS WAS 0.62.
FACILITY: UFIM. NEFT. INST., UFA, USSR.

UNCLASSIFIED

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Acc. Nr.: AP0041156 Ref. Code: UR0121

UDC 621.914.22.025.7

USSR

KONDRAT'YEV, A. B., DUBROVIN, I. F.

"The Machining of Titanium Alloys with Hard-Alloy End Milling Cutters"

Moscow, Stanki i Instrument, No 1, 1970, pp 35-36

Abstract: An account is given of the research carried out by the Voronezh Polytechnical Institute jointly with the All-Union Scientific Research Institute of Hard Alloys on the possibility of using one-piece hard-alloy end milling cutters with a diameter of 6.12 mm in the machining of titanium alloys.

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19750939

USSR UDC: 621.397

KONDRAT'YEV, A. G., KONOV, K. I., Leningrad Electrical Engineering Institute of Communications

"A Device for Electronic Formation of a Vertical Gray Scale for a Television Test Chart"

USSR Author's Certificate No 284069, filed 11 Jun 69, published 24 Dec 70 (from RZh-Radiotekhnika, No 6, Jun 71, Abstract No 6G118 P)

Translation: A device is proposed for electronic formation of a vertical gray scale for a TV test pattern. The device contains a controlling step voltage shaper, an impact excitation oscillator, a mixer, a coincidence circuit and a frequency mark generator. In order to produce radially converging vertical wedge-shaped lines with sinusoidal brightness distribution, line and frame synchropulses are sent to the input of the impact excitation oscillator through a shaping flip-flop and delay elements such as slave multivibrators, and the output of the impact excitation oscillator is connected to the input of an electronic counter which produces a pulse to cut off the signal from the impact excitation oscillator.

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UDC 621.397:621.396.4

USSR

KONDRATYEV, A. G., KONOV, K. I., SHUTOVICH, Yu. A.

"System of Allowable Control of Television Signal Parameters"

Materialy nauchno-tekhn. konferentsii. Leningr. elektrotekhn. in-t svyazi. Vyp. 3 (Materials of the Scientific and Technical Conference. Leningrad Electrotechnical Communications Institute. Vyp. 3), Leningrad, 1970, pp 11-16 (from RZh-Radiotekhnika, No 8, Aug 70, Abstract No 8G224)

Translation: This article contains an investigation of the necessity of introducing variable values of the tolerances on individual parameters of a complete TV signal as a function of the quality class of TV transmission. It also contains descriptions of devices for signal coding and decoding of the transmission class and automatic setting of current allowable values of the controllable parameters of the complete TV signal.

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USSR

UDC 669.15'786-194-3

TOMILIN, I. A., KONDRAT'YEV, A. I., and IVANOV, B. S., Moscow

"Calculation of the Solubility of Nitrogen in Alloyed Iron Melts Taking Into Account the Deviation From the Ideal"

Moscow, Izvestiya Akademii Nauk USSR, Metally, No 5, Sep-Oct 72, pp 33-37

Abstract: The calculation of the solubility of nitrogen in alloyed iron melts is based on previous investigations by one of the authors (Tomilin, I. A., Ibid., No 2, 1969, p 44, & Chernaya Metallurgiya, No 3, 1968, p 56) which showed a systematic deviation between calculated and experimentally derived concentrations of nitrogen in steel at N contents over 0.3 wt%. This deviation, rising with increasing N concentration, was found to be independent of the type and quantity of alloying elements and the temperature. From the analysis of thermodynamic properties of carbon and nitrogen in iron base melts, an equation is derived which characterizes the nitrogen activity coefficient dependence on its concentration. The correlation of experimental and calculated data confirmed the possibility and expediency of using the concepts developed for calculating the limiting concentration of nitrogen in the melt. Two figures, twelve formulas, eight bibliographic references.

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- END -

CSO: 1842-W

UDC 669.15.018.8

USSR

LEVIN, F. L., KONDRAT'YEV, A. I., BABAKOV, A. A., GOLOVIN, A. I., and KLIMOV, S. V.

"Effect of Alloying Elements on Structure and Properties of Chromium-Manganese Steel"

Sb. tr. TsNII chern. metallurgii (Collection of Works of Central Scientific Research Institute of Ferrous Metallurgy), 1970, vyp. 77, pp 119-124 (from RZh-Metallurgiya, No 3, Mar 71, Abstract No 3I609 by authors)

Translation: During the start-up of the industrial production of N-containing stainless steel Kh17AG14 (EP213) it was found that the steel is susceptible to the formation of porosity caused by the evolution of N_2 during the crystallization of ingots. Peculiarities of the effect of Ti, C, Ni, and N on the Steel's structure and properties were studied and rational alloying limits assuring the complete elimination of ingot porosity were established. The quality of the metal was improved without any impairment of its physico-mechanical properties. One illustration. One table. Bibliography with two titles.

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UDC 669.14'786:541.123.28

USSR

IVANOV, B. S., KONDRAT'YEV, A. I., TOMILIN, I. A., LEVIN, F. L., and MEL'KUMOV, I. N., Moscow

"Causes of Formation of Gas Blowholes in Nitrogen-Containing Steel Ingots"

Moscow, Akademiya Nauk SSSR. Izvestiya. Metally, No 6, Nov-Dec 72, pp 108-113

Abstract: A study was made of the effect of weight and ingot quenching conditions on the quality of the macrostructure, solubility of nitrogen in solid and molten steels near the point of crystallization, and structural state of the metal at high temperatures. The mass of the ingot and the quenching regime exerted a weak effect on the reduction in the development of gas porosity in nitrogen-containing steel ingots. The drastic reduction of the solubility of nitrogen during the crystallization of the metal, owing to the formation of the ferrite component, was the principal cause of the origin of gas blowholes in high-alloy nitrogen-containing steel ingots. The formation of gas blowholes is possible with a nitrogen content in the molten metal surpassing its solubility in the crystallizing austenitic component.

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UDC 669.14.018.584.001.6

USSR

BABAKOV, A. A., LEVIN, F. L., KONDRAT'YEV, A. I., GOLOVIN, A. I., KUL'KOVA, M. N., DANILYUK, YE. B., PEVZNER, A. YE., OPANEVICH, G. A., and KRAVCHENKO, I. D.

"Experience in Production of Sheet From 25Kh17N4G15AF2 Steel"

Spetsial'nyye Stali i Splavy [Special Steels and Alloys--Collection of Works], No 77, Metallurgiya Press, 1970, pp 124-131

Translation: The first experimental group of 40-mm sheets of type 25Kh17N4G15AF2 high-strength nonmagnetic steel has been manufactured. Based on studies of the specifics of the production of the steel during various stages of the technological process and study of the properties of the metal produced, practical recommendations are given for the production of sheet. 3 figures; 3 tables.

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USSR

UDC 669.017.1:669.14.018.8

LEVIN, F. L., KONDRAT'YEV, A. I., BABAKOV, A. A., GOLOVIN, A. I., and KLIMOV, S. V.

"Influence of Alloying Elements on Structure and Properties of Chrome-Manganese Steel"

Spetsial'nyye Stali i Splavy (Special Steels and Alloys -- Collection of Works), No 77, Metallurgiya Press, 1970, pp 119-124

Translation: During the process of industrial production of nitrogen-containing Kh17AG14 (EP213) stainless steel, a tendency of the steel to formation of pores resulting from separation of nitrogen during crystallization of ingots, was noted.

The specifics of the influence of titanium, carbon, nickel, and nitrogen on the structure and properties of the steel are studied and effective limits of alloying are determined, providing for complete elimination of porosity of ingots. The quality of the metal was increased without decreasing the physical and mechanical properties of the steel. 1 figures; 1 table; 2 biblio. refs.

1/1

USSR

UDC 678.762.2-134.622:678.074:620.193.64

TUTORSKIY, I. A., SHATALOV, V. P., KONDRAT'EV, A. N., and FINKEL', E. E., Voronezh branch of the USSR Scientific Research Institute of Synthetic Rubber imeni S. V. Lebedev, Moscow Institute of Chemical Technology imeni M. V. Lomonosov

"The Effects of Gamma-Radiation on the Solubility and Mechanical Properties of Butadiene-styrene Block-copolymers"

Moscow, Kauchuk i Rezina, No 11, 1973, pp 21-23

Abstract: The effects of doses for 0-800megarad units of gamma radiation were observed in poly-styrene-polybutadiene block copolymers containing 30%, 50%, and 85% styrene. It was found that the solubility in benzene and the viscosity of polystyrene are unaffected by the radiation at these levels, while solubilities of the block-copolymers decrease with increasing doses of radiation, and viscosities show a slight decrease, then increase. The dose of gamma radiation at which gelation begins rises as the amount of styrene increases, relative elongation of the block-copolymers decreases as dosage increases, while shear strength at 50% elongation increases. The fact that polybutadiene both in the homopolymer and the copolymer undergoes radiation-induced cross-linking, while polystyrene does not is used to

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APPROVED FOR RELEASE: 09/17/2001 CIA-RDP86-00513R001401420017-1"

USSR

TUTORSKII, I. A., et al., Kauchuk i Rezina, No 11, 1973, pp 21-23

explain these effects. It was also found that G values are independent of the amount of styrene in the copolymer, indicating that styrene does not protect polybutadiene from radiation effects.

2/2

KONDRAT'YEV, N.N.

JPRS 58764

17 April 1973

DISPOSAL OF RADIOACTIVE WASTES

Collection of Papers sponsored by the State Committee for the Use of Atomic Energy of the USSR, 1972, Moscow

CONTENTS

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. Kolosov, A. N. Kondrat'yev, M. A. Khodos, 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

in this case are transferred to following generations. It is natural that the 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 operation of storage spaces. However, the majority of scientists consider that enclosure in bitumen is permissible only for wastes with a specific activity of less than 10 curies per liter. At a greater specific activity swelling and failure of the bitumen is observed, because of the liberation of gases formed as a result of radiolysis. The storage spaces for bitumen must be made with an explosive-proof design, since one of the basic gases liberated is hydrogen [2, 3]. For more active solutions (> 10 curies per liter) obtained in the processing of TVEL from atomic reactors with a high burnup of fuel, vitrification is a more reliable method.

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

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

Single-stage processes are simpler with respect to formulation of the apparatus, but, however, their operation is very complicated, the service life of the apparatuses is insignificant, in connection with the fact that in the process of digesting glass at a temperature of 900--1000 degrees C a contact of the nitric-acid solutions and the nitrogen oxides in the water vapors with the walls of the apparatuses occurs.

It appears more feasible to conduct the process of vitrification in two stages: to perform dehydration and calcination at comparatively low temperatures (350--400° C), and to form the glass at high temperatures (900--1000° C). One of such methods is the method being developed in the Soviet Union [6], with respect to which the process of drying and calcination is performed in an apparatus with a boiling layer, and the process of vitrification in a ceramic (concrete) crucible by means of an induction current.

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

UDC: 681.327

USSR

ASTSATUROV, R. M., KONDRAT'YEV, A. P., MAL'TSEV, N. A., PASHKOVSKAYA, R. B.

"A Device for Checking an Operational Memory"

USSR Author's Certificate No 333559, filed 9 Jul 70, published 7 Jun 72 (from RZh-Avtomatika, Telemekhanika i Vychislitel'naya Tekhnika, No 1, Jan 73, abstract No 1B378 P)

Translation: The proposed device pertains to the field of computer technology. It can be used for checking an immediate-access memory. Devices for checking an immediate-access memory are known which can be used to monitor mod-2 readout data. The known devices for monitoring an immediate--access memory do not provide for checking the correctness of operation of the address decoding channel through which data reading takes place (access to the memory).

The proposed device uses an additional shaping circuit for forming a mod-g control code. This circuit simultaneously "displaces" the data and memory address registers. Also incorporated in the proposed device is a control code conversion unit. These modifications not only provide a more effective check on data readout. but also verify correspondence between the

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USSR

ASTSATUROV, R. M. et al., USSR Author's Certificate No 333559

readout data and the address with respect to which the reading has occurred; i. e., the operation of the address decoder can be monitored. Besides this, the device provides further monitoring of readout data with respect to a modulus of two, in order not to violate the principle of "continuous" monitoring.

Since increasing the effectiveness of monitoring requires using an additional shaping modulus greater than two (usually $g \geq 3$), the memory word must have at least two control digits for storing a mod-g control code. In modern computers, several data units are stored simultaneously in a memory (with their own control digits), so there is no need to add memory digits to realize the proposed monitoring device.

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UDC: 681.325.5

USSR

KONDRAT'YEV, A. P., ASTSATUROV, R. M., MAL'TSEV, N. A., TIKHOVICH, Yu. V.

"Tabular Adder-Multiplier"

USSR Authors' Certificate No 253442, Filed 11 January 1968, Published 25 February 1970 (Translated from Referativnyy Zhurnal Avtomatika, Telemekhanika i Vychislitel'naya Tekhnika, No 10, 1970, Abstract No 10B224P, by V. M.)

Translation: The tabular adder-multiplier (TAM) suggested, consisting of a memory unit, tabular address forming circuit, registers (R), first (1) and second (2) operands (0), and control device is simplified and the time required to perform operations is reduced by the use of result output and analysis units. The inputs of the analysis units are connected to the outputs of the R of the first and second 0, while the outputs are connected through AND circuits to the inputs of the first and second OR circuits of the result output unit. The output of the first OR circuit of the result output unit is connected to the input of the interrogation circuit of the R of the second 0, the output of which is connected to the flip-flops of the R of the second 0. The output of the second OR circuit in the result output unit is connected to the input of the interrogation circuit of the R of the first 0, the input of which is connected to the flip-flops of the R of the first 0. One illustration.

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UDC 669.017:539.216.2:535.338.41

USSR

BUTIKOV, YE. I., KONDRAT'YEV, A. S., and KUCHMA, A. YE., Leningrad State University imeni A. A. Zhdanov

"Collective Excitations in Thin Metallic Films"

Sverdlovsk, Fizika Metallov i Metallovedeniye, Vol 36, No 3, 1973, pp 485-492

Abstract: The spectrum of collective excitations of electrons in thin metallic films was investigated where there was a substantially different quantization of carrier movement. It was shown that the diagonal for the indices of the electron states in a film is only a equilibrium function of electron distribution and as such single-electron wave functions, corresponding to the movement of electrons in a self-congruent field, were selected as a basis for determining the dispersion law for collective excitations associated with spin function excitations and distribution. Starting with equations for Green functions, the authors develop and use mathematical expressions to arrive at a final expression for the dispersion law. Ten bibliographic references.

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UDC: None

USSR

BUTIKOV, Ye. I., KONDRAT'YEV, A. S., and KUCHMA, A. Ye.

"Thermodynamics of an Electronic Gas in Crossed Fields"

Leningrad, Fizika Tverdogo Tela, Vol. 13, No 10, October 1971, pp 3094-3095

Abstract: This article presents the results of a computation of the thermodynamic characteristics of an electron gas in semiconductors in crossed constant and uniform electric and magnetic fields. The problem discussed here concerns thin-film semiconductor specimens and is similar to an earlier article dealing with massive specimens, published in the same journal (A. G. Aronov and G. Ye. Pikus, 6, 1964, p 506). In a thin film of this type, whose thickness does not exceed the Debye screening radius, an electric field can penetrate even in the absence of a current, whereas the presence of such a current is required in the massive specimen for penetration of the field into the specimen volume to occur. For the sake of simplicity, a single-component system whose electrical neutrality is insured is considered. The analysis shows that the electric field reduces the magnitudes of the oscillation peaks and shifts them in the direction of the lesser magnetic field values. The formulas derived are valid for strong fields. The authors are connected with the Leningrad State University imeni A. A. Zhdanov.

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- END -

UNCLASSIFIED PROCESSING DATE--30OCT70

1/2 033

TITLE--EFFECT OF ANODE TEMPERATURE ON THE OPERATION OF A CESIUM THERMIONIC ENERGY CONVERTER IN AN ARC SYSTEM -U-

AUTHOR-(02)-KONDRATYEV, F.V., SINYUTIN, G.V.

COUNTRY OF INFO--USSR

SOURCE--ZH. TEKH. FIZ. 1970, 40(4), 839-42

DATE PUBLISHED----------70

SUBJECT AREAS--PHYSICS

TOPIC TAGS--THERMIONIC ENERGY CONVERSION, CESIUM, VOLT AMPERE CHARACTERISTIC, ELECTRODE PROPERTY, TEMPERATURE DEPENDENCE, ELECTRIC ARC

CONTROL MARKING--NO RESTRICTIONS

DOCUMENT CLASS--UNCLASSIFIED

PROXY REEL/FRAME--2000/1197 STEP NO--UR/0057/70/040/004/0839/0842

CIRC ACCESSION NO--AP0124851

UNCLASSIFIED

2/2 033

CIRC ACCESSION NO--AP0124851

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. ON THE BASIS OF EXPTL. DATA INCLUDING THOSE OF THE AUTHORS (1967), THE PROBLEM OF THE EXISTENCE OF L MAX. IN THE CURVES OF THE CURRENT AND POWER DEPENDENCES ON ANODE TEMP. WAS STUDIED WITH THE USE OF THE PHENOMENOL. THEORY OF N. S. RASOR (1965) FOR THE ANAL. OF THE EXPTL. CURRENT VOLTAGE CHARACTERISTICS OF A CS THERMIONIC ENERGY CONVERTER OPERATING IN THE ARC MODE. FROM THE CURVES TAKEN FOR VARIOUS ANODE TEMPS., A RELATION BETWEEN THE NEAR ANODE POTENTIAL FALL AND ELECTRON TEMP. NEAR THE ANODE WAS CALCD. A MIN. WAS FOUND FOR THIS QUANTITY. THIS SUGGESTS THAT, BESIDES OTHERS, THE NEAR ANODE POTENTIAL BARRIER IS RESPONSIBLE FOR THE MAX. ON THE POWER VS. TEMP. CURVES.

APPROVED FOR RELEASE: 09/17/2001 CIA-RDP86-00513R001401420017-1"

UDC 536.24:532.526

USSR

KONDRAT'YEV, I. A.

"Experimental Study of Heat Transfer in a Plane Plate Under the Interaction of an Oblique Shock With a Laminar Boundary Layer"

Uch. zap. Tsentr. aerogidrodinam. in.-ta (Scientific Notes of the Central Aerohydrodynamic Institute), 1971, Vol. 2, No. 2, pp 18-23 (from RZh-Mekhanika, No 12, Dec 71, Abstract No 12B1180)

Translation: The experimental results are given from an experimental study of heat exchange in a plane plate where two-dimensional and three-dimensional interaction ofan oblique shock wave with the boundary layer exists. The experiments were conducted at $M_\infty = 3$ and 5 and $R_\infty = 0.5 \cdot 10^6 - 1.3 \cdot 10^6$. The correlation of the maximum values of the heat flow in the region of the attached boundary layer is given. Resume.

1/1

UNCLASSIFIED PROCESSING DATE--11SEP70

1/2 023

TITLE--WELDING ELECTRODE FOR HARD SURFACING OF STEEL PARTS -U-

AUTHOR--FRUMIN, I.I., KONORATEV, I.A.

K

COUNTRY OF INFO--USSR

SOURCE--BRIT. 1,181,940

DATE PUBLISHED--18FEB70

SUBJECT AREAS--MATERIALS

TOPIC TAGS--WELDING ELECTRODE, LOW CARBON STEEL, MANGANESE CONTAINING ALLOY, SILICON CONTAINING ALLOY, VANADIUM CONTAINING ALLOY, CHROMIUM CONTAINING ALLOY, MOLYBDENUM CONTAINING ALLOY, IRON BASE ALLOY, TOOL STEEL, THERMAL STABILITY, PATENT

CONTROL MARKING--NO RESTRICTIONS

DOCUMENT CLASS--UNCLASSIFIED
PROXY REEL/FRAME--1931/1029 STEP NO--UK/0000/70/000/000/0000/0000

CIRC ACCESSION NO--AA0051020
UNCLASSIFIED

UNCLASSIFIED PROCESSING DATE--11SEP70

2/2 023

CIRC ACCESSION NO--AA0051020

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. A WELDING ELECTRODE WIRE IS PROVIDED FOR THE HARD SURFACING OF STEEL PARTS, COMPOSED OF A LOW C STEEL ENVELOPE AND A FILL CHARGE CONTG. FE-CR, FE-MO, FE-V, FE-SI, FE-MN, NA SUB2 SIF SUB6, CR, AND FE POWDER. THE COMPONENTS OF THE CHARGE ARE SELECTED SO THAT THE METAL BUILT UP BY THE AID OF THE ELECTRODE WIRE, UNDER A LOW SI FLUX, WILL HAVE THE COMPN.: C 0.2-0.3, MN 0.4-0.8, SI 0.9-1.3, V 0.3-0.5, CR 4.8-5.5, MO 0.9-1.3, S AND P UP TO 0.04PERCENT, FE BALANCE, AND WILL POSSESS PROPERTIES NEAR TO THOSE OF HEAT TREATED TOOL STEEL HAVING A HIGH THERMAL ENDURANCE AND EMPLOYED, E.G., FOR HOT FORGING DIES AND PRESS MOLDS FOR PRESSURE CASTING. PREVENTION OF CRACK FORMATION AND BAINITE STRUCTURE IN THE WELD METAL IS ENSURED BY A REDUCED PROPORTION OF C AND MO, AND AN INCREASED SI CONTENT, AS COMPARED WITH CONVENTIONAL WELDING WIRE. THE PRESENCE OF METALLIC CR IN THE CHARGE CONTRIBUTES TO THE FORMATION OF CRYSTN. NUCLEI.

UNCLASSIFIED

1/2 020 UNCLASSIFIED PROCESSING DATE--27NOV70

TITLE--NET RADIATION AND ITS COMPONENTS FOR INCLINED SURFACES ON THE MOON -U-

AUTHOR-(02)-KONDRATEV, K.I., FEDEROVA, M.P.

COUNTRY OF INFO--USSR, UNITED STATES

SOURCE--IN: APPLIED SCIENCES RESEARCH AND UTILIZATION OF LUNAR RESOURCES; INTERNATIONAL ACADEMY OF ASTRONAUTICS, INTERNATION ASTRONAUTICAL

DATE PUBLISHED-------70

SUBJECT AREAS--ASTRONOMY,ASTROPHYSICS

TOPIC TAGS--LUNAR SURFACE, SOLAR RADIATION ABSORPTION, LONG WAVE RADIATION, LUNAR RADIATION

CONTROL MARKING--NO RESTRICTIONS

DOCUMENT CLASS--UNCLASSIFIED

PROXY REEL/FRAME--3009/0216 STEP NO--UK/0000/70/000/000/0017/0035

CIRC ACCESSION NO--AT0139072

UNCLASSIFIED

UNCLASSIFIED PROCESSING DATE--27NOV70

2/2 020

CIRC ACCESSION NO--AT0139072

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. INVESTIGATION OF THE NET RADIATION NOT ONLY OF THE HORIZONTAL BUT ALSO OF THE INCLINED SURFACE OF A CELESTIAL BODY HAVING NO ATMOSPHERE, A PROBLEM WHICH ARISES FROM THE RELIEF COMPLEXITY OF THE SURFACE OF THE MOON. THE AVAILABLE DATA ON THE SURFACE TEMPERATURE OF THE MOON; ITS SURFACE NET RADIATION AND ITS COMPONENTS; THE THERMAL EMISSION OF THE SURFACE AND ABSORBED SOLAR RADIATION; AND THE DISTRIBUTION OF NET RADIATION AND ITS COMPOENENTS OVER THE SURFACE OF THE MOON ARE DISCUSSED. . ALSO CONSIDERED ARE THE INCOME OF SOLAR RADIATION ON THE SURFACE OF VERTICAL WALLS OF VARIOUS ORIENTATIONS, AND THE LOSS OF HEAT FROM THE VERTICAL SURFACES DUE TO LONG WAVE RADIATIONS AND THE POSSIBILITIES OF CALCULATING THE NET RADIATION OF A VERTICAL CIRCULAR CYLINDER. FACILITY: LENINGRADSKII GOSUDARSTVENNYI UNIVERSITET, LENINGRAD, USSR.

UNCLASSIFIED

1/3 036 UNCLASSIFIED PROCESSING DATE--09OCT70

TITLE--ANALYSIS OF THE RESULTS OF SPECTRAL INVESTIGATIONS OF THE TWILIGHT AUREOLE IN THE EARTH'S ATMOSPHERE FROM THE SOYUZ 5 SPACESHIP, SPECTRAL

AUTHOR-(05)-KONDRATYEV, K.YA., VOLYNOV, B.V., GALTSEV, A.P., SMOKTIY, O.I., KHRUNOV, YE.V.

COUNTRY OF INFO--USSR

SOURCE--LENINGRAD, STATE UNIVERSITY; MOSCOW, IZVESTIYA AKADEMII NAUK SSSR, FIZIKA ATMOSFERY I OKEANA, VOL VI, NO 4, 1970, PP 388-411

DATE PUBLISHED--------70

SUBJECT AREAS--ATMOSPHERIC SCIENCES, SPACE TECHNOLOGY

TOPIC TAGS--TWILIGHT, SPACEBORNE ATMOSPHERIC OBSERVATION, SPECTROPHOTOMETRIC ANALYSIS, ATMOSPHERE/(U)SOYUZ 5 MANNED SPACECRAFT

CONTROL MARKING--NO RESTRICTIONS

DOCUMENT CLASS--UNCLASSIFIED

PROXY REEL/FRAME--1994/0366 STEP NO--UR/0362/70/006/004/0388/0411

CIRC ACCESSION NO--AP0114658

UNCLASSIFIED

UNCLASSIFIED PROCESSING DATE--090CT70

2/3 036

CIRC ACCESSION NO--AP0114658

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. THIS PAPER PRESENTS THE RESULTS OF SPECTROPHOTOMETRIC INVESTIGATION OF THE TWILIGHT AUREOLE OF THE EARTH'S ATMOSPHERE, MADE FOR THE FIRST TIME FROM THE "SOYUZ-5" SPACESHIP. THE AUTHORS ANALYZE THE COLLECTED EXPERIMENTAL DATA AS A FUNCTION OF WAVELENGTH, PERIGEE ALTITUDE OF THE LINE OF SIGHT ABOVE THE EARTH'S SURFACE, ANGLE OF SOLAR DEPRESSION AND OTHER PARAMETERS. THIS SIS FOLLOWED BY A COMPARISON OF THE VERTICAL PROFILES OF MONOCHROMATIC BRIGHTNESS OF THE TWILIGHT AUREOLE WITH THE RESULTS OF CORRESPONDING THEORETICAL COMPUTATIONS FOR THE L. ELTERMAN AEROSOL MODEL (1968). COLOR DIAGRAMS WERE CONSTRUCTED FOR THE TWILIGHT AUREOLE USING THE THEORETICAL BRIGHTNESS VALUES FOR DIFFERENT MODELS OF THE EARTH'S ATMOSPHERE AND EXPERIMENTAL DATA AND THE RESULTS OF VISUAL OBSERVATIONS MADE FROM THE "SOYUZ-5". THE PAPER HAS THE FOLLOWING BASIC SECTIONS: 1) OPTICAL CHARACTERISTICS OF THE MANUAL SPECTROGRAPH AND METHOD FOR PROCESSING SPECTROGRAMS; 2) BASIC RESULTS OF VISUAL OBSERVATIONS AND SPECTROPHOTOMETRIC STUDY OF THE TWILIGHT AUREOLE OF THE EARTH'S ATMOSPHERE; 3) THEORETICAL MODEL OF THE FIELD OF SPECTRAL BRIGHTNESS OF THE TWILIGHT AUREOLE IN THE EARTH'S ATMOSPHERE; 4) MOLECULAR ATMOSPHERE; 5) MOLECULAR ATMOSPHERE IN PRESENCE OF AEROSOL PARTICLES; 6) MOLECULAR ATMOSPHERE IN THE PRESENCE OF AEROSOL PARTICLES AND OZONE; 7) COMPARATIVE ANALYSIS OF COMPUTED AND EXPERIMENTAL DATA FROM SPECTROPHOTOMETRIC STUDY OF THE TWILIGHT AUREOLE. MOST IMPORTANTLY, THE STUDY REVEALED THAT IT IS POSSIBLE TO OBTAIN RELIABLE VERTICAL PROFILES OF THE AEROSOL SCATTERING COEFFICIENT FROM SPACESHIPS.

UNCLASSIFIED

3/3 036 UNCLASSIFIED PROCESSING DATE--09OCT70

CIRC-ACCESSION NO--AP0114658

ABSTRACT/EXTRACT--THE METHOD IS EFFECTIVE IN ANALYZING THE VERTICAL DISTRIBUTION OF OPTICALLY IMPORTANT ATMOSPHERIC COMPONENTS.

UNCLASSIFIED

1/3 035 UNCLASSIFIED PROCESSING DATE--27NOV70
TITLE--EXPERIMENT IN THERMAL SOUNDING OF THE ATMOSPHERE FROM SATELLITES
-U-
AUTHOR-(05)-KONDRATYEV, K.YA., NORDBERG, V., POKROVSKIY, O.M., TIMOFEYEV, YU.M., KHANEL, R.
COUNTRY OF INFO--USSR

SOURCE--MOSCOW, DOKLADY AKADEMII NAUK SSSR, VOL 191, NO 6, 1970, PP 1274-1276
DATE PUBLISHED-------70

SUBJECT AREAS--SPACE TECHNOLOGY, ATMOSPHERIC SCIENCES

TOPIC TAGS--TEMPERATURE, MEASUREMENT, INTEGRAL EQUATION, EARTH RADIATION, THERMAL RADIATION, SATELLITE DATA ANALYSIS

CONTROL MARKING--NO RESTRICTIONS

DOCUMENT CLASS--UNCLASSIFIED
PROXY REEL/FRAME--3003/0050 STEP NO--UR/0020/70/191/006/1274/1276

CIRC ACCESSION NO--AT0129332
UNCLASSIFIED

2/3 035 UNCLASSIFIED PROCESSING DATE--27NOV70

CIRC ACCESSION NO--AT0129332

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. THE PROBLEM OF THERMAL SOUNDING OF THE ATMOSPHERE ESSENTIALLY INVOLVES SOLUTION OF A FREDHOLM INTEGRAL EQUATION OF THE FIRST KIND: I(V) INTEGRAL FUNCTION OF K(GAMMA, P) PHI (P) DP. TWO METHODS ARE USED IN THIS STUDY FOR SOLVING INTEGRAL EQUATION (1): THE REGULARIZATION METHOD (A. N. TIKHONOV, DAN, 153, NO 1, 34, 1963) WITH CHOICE OF A QUASI OPTIMUM APPROXIMATION BY A METHOD PROPOSED BY ONE OF THE AUTHORS AND THE M. T. CHAHINE METHOD (J. OPT. SOC. AM., 58, NO 12, 1934, 1968), BASED ON MINIMIZING THE MEAN SQUARE DIFFERENCE BETWEEN THE MEASURED AND THEORETICALLY COMPUTED RADIATION VALUES. IN BOTH METHODS THE INITIAL INFORMATION, THE MAGNITUDE OF OUTGOING RADIATION, AND KERNEL OF THE EQUATION COINCIDED. COMPARISON OF THE TWO METHODS REVEALS A GOOD GENERAL AGREEMENT BETWEEN DIRECT AND INDIRECT TEMPERATURE DETERMINATIONS. HOWEVER, ERRORS IN DETERMINING TEMPERATURE FROM SATELLITE DATA IN SOME CASES ARE CONSIDERABLE, ATTAINING APPROXIMATELY 10DEGREES NEAR THE 100 MB LEVEL IN INTERPRETATIONS BY THE CHAHINE METHOD AND 8DEGREES BY THE REGULARIZATION METHOD. THE STANDARD DEVIATIONS FOR BOTH INTERPRETATION METHODS ARE APPROXIMATELY IDENTICAL AND CLOSE TO 3DEGREES. RELATIVELY LARGE ERRORS IN INDRIECT DETERMINATION OF TEMPERATURE CAN BE ATTRIBUTED TO A NUMBER OF FACTORS: ERRORS IN MEASURING RADIATION, ERRORS IN STIPULATING THE KERNEL OF EQUATION (1), ERRORS IN NUMERICAL SOLUTION OF THE INTEGRAL EQUATION (APPROXIMATION ERRORS, ERRORS IN ROUNDING OFF). THE PRINCIPAL SOURCES OF ERRORS ARE THE FIRST TWO. ERRORS IN STIPULATING THE KERNAL OF EQUATION (1) ARE PARTICULARLY IMPORTANT.

UNCLASSIFIED

3/3 035 UNCLASSIFIED PROCESSING DATE--27NOV70

CIRC ACCESSION NO--AT0129332

ABSTRACT/EXTRACT--DESPITE A HIGH MEASUREMENT ACCURACY THESE ERRORS CONSIDERABLY LOWER THE ACCURACY IN RECONSTRUCTING THE TEMPERATURE PROFILE. THE SINGLE EXAMPLE CITED IN THIS ARTICLE OF A COMPARISON BETWEEN THE TWO INTERPRETATION METHODS DOES NOT MAKE IT POSSIBLE TO DRAW SERIOUS CONCLUSIONS CONCERNING THE ADVANTAGES OF THE DIFFERENT APPROACHES TO SOLUTION OF THE PROBLEM. HOWEVER, THE REGULARIZATION METHOD MADE POSSIBLE A MORE PRECISE RECONSTRUCTION OF THE TEMPERATURE PROFILE IN THE REGION ABOVE 100 MB AND WAS SOMEWHAT POORER THAN THE CHAHINE METHOD IN THE PRESSURE RANGE FROM 100 TO 500 MB.

FACILITY: LENINGRAD STATE UNIVERSITY.

UNCLASSIFIED

1/2 047 UNCLASSIFIED PROCESSING DATE--13NOV70

TITLE--TWILIGHT COLORIMETRY FROM HORIZON SPECTRA OBTAINED ON BOARD THE SOYUZ 5 SPACECRAFT -U-

AUTHOR-(04)-KONDRATYEV, K.YA., GALTSEV, A.P., SMOKTIY, O.I., KHRUNOV, YE.V.

COUNTRY OF INFO--USSR

SOURCE--AKADEMIIA NAUK SSSR, DOKLADY, VOL. 191, APR. 11, 1970, P. 1044-1047

DATE PUBLISHED--------70

SUBJECT AREAS--ATMOSPHERIC SCIENCES, SPACE TECHNOLOGY

TOPIC TAGS--TWILIGHT, COLORIMETRY, ATMOSPHERIC MODEL, SPACEBORNE ATMOSPHERIC OBSERVATION/(U)SOYUZ 5 MANNED SPACECRAFT

CONTROL MARKING--NO RESTRICTIONS

DOCUMENT CLASS--UNCLASSIFIED

PROXY REEL/FRAME--3003/0967 STEP NO--UR/0020/70/191/003/1044/1047

CIRC ACCESSION NO--AT0129936

UNCLASSIFIED

2/2 047 UNCLASSIFIED PROCESSING DATE--13NOV70

CIRC ACCESSION NO--AT0129936

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. CALCULATION OF THE COLORIMETRIC CHARACTERISTICS OF THE TWILIGHT AUREOLE FOR SEVERAL MODELS OF THE VERTICAL STRUCTURE OF THE ATMOSPHERE AND THE OBSERVATION CONDITIONS ON BOARD SOYUZ 5. THE CHROMATICITY COEFFICIENTS (X, Y, Z) OF THE TWILIGHT AUREOLE ARE COMPUTED FOR A PURELY SCATTERING MOLECULAR ATMOSPHERE WITH AND WITHOUT THE PRESENCE OF NONABSORBING AEROSOL PARTICLES AND OZONE. THE RESULTS ARE GIVEN IN GRAPHICAL FORM.

UNCLASSIFIED

1/2 , 042 UNCLASSIFIED PROCESSING DATE--30OCT70

TITLE--VISUAL ESTIMATES OF THE COLOR OF THE TWILIGHT SKY ACCORDING TO OBSERVATIONS FROM THE SOYUZ 5 SPACECRAFT -U-

AUTHOR-(04)-KONDRATYEV, K.YA., GALTSEV, A.P., SMOKTIY, O.I., KHRUNOV, YE.V.

COUNTRY OF INFO--USSR

SOURCE--AKADEMIIA NAUK SSSR, DOKLADY, VOL. 191, APR. 1, 1970, P. 824, 825

DATE PUBLISHED--01APR70

SUBJECT AREAS--ATMOSPHERIC SCIENCES, METHODS AND EQUIPMENT, SPACE TECHNOLOGY

TOPIC TAGS--TWILIGHT, COLOR PHOTOGRAPHY/(U)SOYUZ 5 MANNED SPACECRAFT

CONTROL MARKING--NO RESTRICTIONS

DOCUMENT CLASS--UNCLASSIFIED

PROXY REEL/FRAME--2000/1084 STEP NO--UR/0020/70/191/000/0824/0825

CIRC ACCESSION NO--AT0124741

UNCLASSIFIED

2/2 ? 042 UNCLASSIFIED PROCESSING DATE--30OCT70

CIRC ACCESSION NO--AT0124741

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. SUMMARY OF VISUAL OBSERVATIONS OF THE TWILIGHT AUREOLE FROM THE SOYUZ 5 SPACECRAFT ON JAN. 15 AND 16, 1969. THE CHANGES IN THE APPEARANCE OF THE TWILIGHT AUREOLE UNDER CLOUDLESS CONDITIONS AND IN THE PRESENCE OF SOLID AND BROKEN CLOUDINESS ARE REVIEWED. CERTAIN DIFFERENCES NOTED IN THE COLOR PICTURE THUS OBTAINED AS COMPARED WITH THE FIRST HAND FINDINGS OF ASTRONAUTS ARE CITED. FACILITY: LENINGRADSKII GOSUDARSTVENNYI UNIVERSITET, LENINGRAD, USSR.

UNCLASSIFIED

1/2 041 UNCLASSIFIED PROCESSING DATE--13NOV70

TITLE--ANALYSIS OF THE RESULTS OF SPECTRAL STUDIES OF THE TWILIGHT AUREOLE OF THE EARTH'S ATMOSPHERE FROM THE SOYUZ 5 SPACECRAFT -U-

AUTHOR-(05)-VOLYNOV, B.V., KONDRATYEV, K.YA., GALTSEV, A.P., SMOKTIY, O.I., KHRUNOV, YE.V.

COUNTRY OF INFO--USSR

SOURCE--AKADEMIIA NAUK SSSR, IZVESTIIA, FIZIKA ATMOSFERY I OKEANA, VOL. 6, APR. 1970, P. 388-411

DATE PUBLISHED-------70

SUBJECT AREAS--ATMOSPHERIC SCIENCES, SPACE TECHNOLOGY

TOPIC TAGS--SPECTRUM, TWILIGHT, SPECTROPHOTOMETRIC ANALYSIS, SPACEBORNE ATMOSPHERIC OBSERVATION/(U)SOYUZ 5 MANNED SPACECRAFT

CONTROL MARKING--NO RESTRICTIONS

DOCUMENT CLASS--UNCLASSIFIED

PROXY REEL/FRAME--3003/0425 STEP NO--UR/0362/70/006/000/0388/0411

CIRC ACCESSION NO--AP0129650

UNCLASSIFIED

2/2 041 UNCLASSIFIED PROCESSING DATE--13NOV70

IRC ACCESSION NO--AP0129650

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. SUMMARY OF THE RESULTS OF SPECTROPHOTOMETRIC MEASUREMENTS OF THE TWILIGHT AUREOLE OF THE EARTH'S ATMOSPHERE AS FIRST PERFORMED FROM THE SOYUZ 5 SPACECRAFT. AN ANALYSIS IS MADE OF THE EXPERIMENTAL DATA THUS OBTAINED AS A FUNCTION OF WAVELENGTH, PERIGEE HEIGHT OF THE LINE OF SIGHT ABOVE THE EARTH'S SURFACE, ANGLE OF DEPRESSION OF THE SUN, AND OTHER PARAMETERS. THE VERTICAL PROFILES OF THE MONOCHROMATIC BRIGHTNESS OF THE TWILIGHT AUREOLE ARE COMPARED WITH THE RESULTS OF CORRESPONDING THEORETICAL CALCULATIONS FOR ELTERMAN'S (1968) AEROSOL MODEL. COLOR DIAGRAMS AND COLOR PICTURES OF THE TWILIGHT AUREOLE ARE CONSTRUCTED USING THEORETICAL BRIGHTNESS VALUES FOR VARIOUS MODELS OF THE EARTH'S ATMOSPHERE, AND ALSO USING EXPERIMENTAL DATA AND THE RESULTS OF VISUAL OBSERVATIONS CARRIED OUT FROM THE SOYUZ 5 SPACECRAFT. FACILITY: LENINGRADSKII GOSUDARSTVENNYI UNIVERSITET, LENINGRAD, USSR.

UNCLASSIFIED

1/6 048 UNCLASSIFIED PROCESSING DATE--02OCT70
TITLE--PRIORITY ATTACHED TO SATELLITE WEATHER FORECASTING -U-

AUTHOR--KUNDRATYEV, K.

COUNTRY OF INFO--USSR

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SUBJECT AREAS--ATMOSPHERIC SCIENCES, SPACE TECHNOLOGY, METHODS AND EQUIPMENT
TOPIC TAGS--WEATHER FORECAST, METEOROLOGIC SATELLITE, CLOUD COVER, SPACEBORNE ATMOSPHERIC PHOTOGRAPHY, IR PHOTOGRAPHY, TV PHOTOGRAPHY, CLOUD FORMATION, HEAT BALANCE, AEROSOL/(U)METEOR METEOROLOGIC SATELLITE

CONTROL MARKING--NO RESTRICTIONS

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2/8 048 UNCLASSIFIED PROCESSING DATE--020CT70

CIRC ACCESSION NO--AN0110841

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. THE WORDS UTTERED BY THE GREAT RUSSIAN SCIENTIST M. V. LOMONOSOV HAVE BY NO MEANS LOST THEIR CURRENCY: MAN WOULD HAVE NOTHING LEFT TO DEMAND OF GOD IF HE COULD LEARN TO PREDICT WEATHER CORRECTLY. THE PROBLEM OF FORECASTING WEATHER, IN PARTICULAR FOR PERIODS OF UP TO 2 OR 3 WEEKS, WHICH HAS COLOSSAL PRACTICAL SIGNIFICANCE, IS STILL FAR FROM BEING SOLVED. THIS IS HAMPERED BY A LACK OF UNDERSTANDING OF THE LAW GOVERNED PATTERNS OF WEATHER FORMING PROCESSES, THE CAPACITY OF COMPUTERS (SPEED AND MEMORY CAPACITY) WHICH DOES NOT SATISFY THE DEMANDS OF METEOROLOGISTS, AND THE LACK OF INITIAL METEROLOGICAL DATA. IN ALL THESE DIRECTIONS IN RECENT YEARS THERE HAVE BEEN MAJOR CHANGES WHICH OPEN UP NEW HORIZONS FOR METEOROLOGY. THIS HAS MADE IT POSSIBLE ON THE BASIS OF INTERNATIONAL COOPERATION TO SET ABOUT THE CARDINAL SOLUTION OF THE PROBLEM OF NUMERICAL (QUANTITATIVE) WEATHER FORECASTING. WHILE IN FORECASTING WEATHER FOR 24 TO 48 HOURS IT IS SUFFICIENT TO POSSESS INITIAL METEOROLOGICAL DATA FOR A COMPARATIVELY LIMITED TERRITORY, THE FORECAST FOR A WEEK DEMANDS INFORMATION ON THE STATE OF THE ENTIRE ATMOSPHERE OF THE PLANET. IF ONE TAKES INTO ACCOUNT THE FACT THAT THE MAJORITY OF THE EARTH'S SURFACE IS TAKEN UP BY OCEANS, IT BECOMES CLEAR THAT THE ONLY PRACTICALLY ACCESSIBLE AND MOST ECONOMICAL MEANS OF OBTAINING THIS INFORMATION MUST BE THE SATELLITE (NATURALLY THE USE OF DATA FROM THE OBSERVATIONS OF THE EXISTING NETWORK OF GROUND STATIONS IS ALSO VERY IMPORTANT). FOR THIS PRECISE REASON THE DEVICES OF THE SOVIET METEOR METEOROLOGICAL SPACE SYSTEM CARRY OUT A DAILY SERVICE OF ORBITAL WEATHER PATROL.

UNCLASSIFIED

3/8 048 UNCLASSIFIED PROCESSING DATE--02OCT70

CIRC ACCESSION NO--AN0110941

ABSTRACT/EXTRACT--THE TELEVISION AND INFRARED APPARATUS INSTALLED IN THESE SATELLITES TRANSMITS PICTURES TO EARTH DAY AND NIGHT, WITH THEIR AID THE FEATURES OF THE DISTRIBUTION OF THE CLOUD COVER OVER THE ENTIRE PLANET ARE STUDIED. AN ANALYSIS OF THE PLANETARY CLOUD DISTRIBUTION HAS MADE IT POSSIBLE TO DETECT CYCLONES, JET STREAMS AND ATMOSPHERIC FRONTS, THE SO CALLED INTERTROPICAL ZONE OF CONVERGENCE, THE ACCUMULATION (CLUSTER) OF CUMULUS CLOUDS IN THE LOW LATITUDES, AND MUCH MORE. THE POSSIBILITY OF DETECTING SUCH MENACING NATURAL PHENOMENA AS HURRICANES AND TYPHOONS IS PARTICULARLY IMPORTANT. THIS HAS MADE THE STORM WARNING SERVICE MUCH MORE RELIABLE AND EFFECTIVE. AN ANALYSIS OF THE TELEVISION AND ESPECIALLY THE INFRARED PICTURES OF CLOUD COVER HAS OPENED THE ROAD OF QUANTITATIVE EVALUATIONS OF A NUMBER OF PARAMETERS IMPORTANT FROM THE VIEWPOINT OF WEATHER FORECASTING. IT IS WELL KNOWN FOR EXAMPLE THAT AS A RULE CLOUDS ARE FORMED WHERE THERE ARE ASCENDING MOVEMENTS OF AIR. THEREFORE WITH DATA ON THE SPATIAL DISTRIBUTION OF CLOUDS IT IS POSSIBLE TO EVALUATE THE VELOCITIES OF ASCENDING AND DESCENDING CURRENTS OF AIR. OBSERVATIONS OF THE MOVEMENT OF CLOUD SYSTEMS WITH THE HELP OF GEOSTATIONARY SATELLITES MAKE IT POSSIBLE TO JUDGE THE VELOCITY AND DIRECTION OF WINDS. THE DECIPHERING OF INFRARED PICTURES PROVIDES INFORMATION ON THE TEMPERATURES OF THE EARTH'S SURFACE AND THE UPPER LIMITS OF THE CLOUD COVER. AS SHOWN BY THE EXPERIENCE OF THE MAIN GEOPHYSICAL OBSERVATORY, WHEN STUDYING THE NONUNIFORMITY OF THE TEMPERATURE OF THE OCEAN SURFACE, IT IS POSSIBLE TO DETECT CURRENTS AND TO TRACE THEIR DYNAMICS.

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4/8 048

CIRC ACCESSION NO--AN0110941

ABSTRACT/EXTRACT--AMONG THE SCIENTIFIC APPARATUS CARRIED BY SOVIET METEOROLOGICAL SATELLITES ARE ACTIONOMETRIC INSTRUMENTS FOR MEASURING SOLAR RADIATION REFLECTED BY EARTH INTO SPACE AND ITS OWN THERMAL IRRADIATION. THIS ASSISTS THE STUDY OF THE ENERGETICS OF OUR PLANET. VIRTUALLY EARTH'S ONLY SOURCE OF HEAT IS THE SOLAR RADIATION ABSORBED BY IT. HENCE THE SIGNIFICANCE OF THE MEASUREMENT OF THAT PART OF SOLAR RADIATION REFLECTED BY OUR PLANET INTO SPACE IS CLEAR. COMPARING THE "RECEIPT" AND "EXPENDITURE" ITEMS OF THE EARTH'S THERMAL BALANCE, IT IS POSSIBLE TO JUDGE WHAT SECTORS OF THE EARTH ACQUIRE HEAT AND WHERE THERE IS A LACK OF IT. DATA ON THE GEOGRAPHICAL DISTRIBUTION OF SOURCES AND OUTLETS OF HEAT ARE EXCEPTIONALLY IMPORTANT INSOFAR AS THEY DETERMINE THE LAW GOVERNED PATTERNS OF LARGE SCALE ATMOSPHERIC PROCESSES. RESEARCH IN RECENT YEARS HAS INTRODUCED VERY CONSIDERABLE CORRECTIONS INTO THE NOTIONS ABOUT THE PLANET'S ENERGETICS. IT TURNS OUT THAT THE MAGNITUDE OF THE SOLAR CONSTANT WHICH CHARACTERIZES THAT QUANTITY OF THE SUN'S RADIANT ENERGY WHICH REACHES THE OUTER LIMIT OF THE ATMOSPHERE IS NOT TWO CALORIES PER SQUARE CENTIMETER PER MINUTE, BUT 1.94 CALORIES. THIS RESULT HAS BEEN CONFIRMED RECENTLY BY A NUMBER OF STUDIES BY AMERICAN SCIENTISTS. MOREOVER, IT TURNS OUT THAT DEPENDING UPON THE ACTIVITY OF OUR HEAVENLY BODY, THE SOLAR CONSTANT CAN BE REDUCED BY 2 TO 2.5PERCENT COMPARED WITH ITS MAXIMUM MAGNITUDE. AT FIRST GLANCE ALL THIS MAY SEEM TRIVIAL. BUT IN FACT IT IS A MATTER OF FUNDAMENTAL SIGNICANCE.

UNCLASSIFIED

5/8 048 UNCLASSIFIED PROCESSING DATE--02OCT70

CIRC ACCESSION NO--AN0110841

ABSTRACT/EXTRACT--AS THEORETICAL CALCULATIONS SHOW, A FLUCTUATION IN THE MAGNITUDE OF THE SOLAR CONSTANT BY ONEPERCENT SHOULD ENTAIL A CHANGE IN THE AVERAGE TEMPERATURE OF THE ATMOSPHERE BY APPROXIMATELY ONE DEGREE. IF ONE TAKES INTO ACCOUNT THE FACT THAT THE RISE IN TEMPERATURE OF THE CLIMATE, ESPECIALLY IN THE ARCTIC, IN THE FIRST HALF OF THE 20TH CENTURY, WHICH HAS CAUSED INTENSIVE DISCUSSION, HAS BEEN EXPRESSED IN A RISE IN THE AVERAGE HEIGHTS OF TEMPERATURE BY ONLY TENTHS OF A DEGREE, THEN THE SIGNIFICANCE OF THE RESULTS OBTAINED BECOMES CLEAR. ON THE BASIS OF SATELLITE DATA THERE HAS BEEN SUCCESS IN DETERMINING MORE PRECISELY THE MAGNITUDE OF THE EARTH'S REFLECTIVITY OBTAINED EARLIER THROUGH CALCULATIONS. IT TURNS OUT THAT THE MAGNITUDE OF SOLAR RADIATION ASSIMILATED BY EARTH HAS BEEN UNDERESTIMATED UP TO NOW. A DETAILED ANALYSIS HAS SHOWN THAT SURPLUS RADIATION IS ABSORBED MAINLY BY OCEANS. THE CONSIDERABLE ACHIEVEMENTS OF SATELLITE METEOROLOGY WHICH HAVE BEEN EXPRESSED IN THE CREATION OF SPACE SYSTEMS FOR OBTAINING METEOROLOGICAL INFORMATION OF PLANETARY SCALES AND THE SUCCESSFUL APPLICATION OF THIS INFORMATION ARE HINDERED BY THE PREDOMINANTLY QUALITATIVE NATURE OF THE ANALYSIS OF DATA OBTAINED. AS FOR QUANTITATIVE MEASUREMENTS OF THE INTAKE DISCHARGE OF HEAT, THEY HAVE HARDLY BEEN USED AT ALL SO FAR IN FORECASTING. QUANTITATIVE METEOROLOGICAL INFORMATION WITH THE AID OF SATELLITES HAS BEEN ADVANCED AS A MOST URGENT TASK. IT IS ESSENTIALLY A MATTER OF A NEW STAGE IN THE DEVELOPMENT OF SATELLITE METEOROLOGY. IN WEATHER FORECASTING WE ARE IN PRACTICE INTERESTED IN DATA CONCERNING THE ATMOSPHERE AT ALTITUDES UP TO 30 KILOMETERS.

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6/8 048 UNCLASSIFIED PROCESSING DATE--020CT70

CIRC ACCESSION NO--AN0110841

ABSTRACT/EXTRACT--NATURALLY, HERE THE PART PLAYED BY SATELLITES CAN ONLY BE INDIRECT. BUT ALL EXPERIMENTAL DATA IN ASTROPHYSICS HAVE BEEN OBTAINED IN PRECISELY THIS FASHION. BY RECORDING FROM SATELLITES THE EARTH'S IRRADIATION AT DIFFERENT WAVELENGTHS (THE SO CALLED EMITTED IRRADIATION), IT IS POSSIBLE TO OBTAIN FROM THE RESULTS OF THESE MEASUREMENTS, FOR EXAMPLE, INFORMATION ON THE VERTICAL SECTIONS OF AIR TEMPERATURE AND HUMIDITY. IT IS MOST CONVENIENT TO DO THIS ON THE BASIS OF MEASUREMENTS OF INFRARED THERMAL IRRADIATION, MEASUREMENTS WHICH IN SOME CASES MAKE IT POSSIBLE TO JUDGE THE TEMPERATURE OF THE EARTH'S SURFACE, AND IN OTHER CASES, THE TEMPERATURE OF THE OUTER STRATA OF THE ATMOSPHERE. BY RECORDING THE EMITTED IRRADIATION OF VARIOUS WAVELENGTHS IT IS POSSIBLE AS IT WERE TO "STRATIFY" THE ATMOSPHERE AND DETERMINE THE TEMPERATURE AT DIFFERENT ALTITUDES. HOWEVER, THE HEAT SOUNDING OF THE ATMOSPHERE FROM SATELLITES IS BY NO MEANS A SIMPLE MATHEMATICAL MATTER. HERE WE ENCOUNTER A CATEGORY OF PROBLEMS WHICH DO NOT HAVE A SINGLE SOLUTION. THE RESOLUTION OF THIS DIFFICULTY HAS BEEN CONSIDERABLY FACILITATED THANKS TO THE UTILIZATION OF METHODS FORMULATED BY ACADEMICIAN A. N. TIKHONOV FOR THE SO CALLED REGULARIZATION OF THE SOLUTION OF INCORRECT (NEKORREKTNYY) PROBLEMS. HIGH PRECISION IN MEASURING INFRARED EMITTED IRRADIATION HAS ALSO BEEN ACHIEVED. ALL THIS GIVES GROUND FOR CONSIDERING THE PROBLEM OF THE HEAT SOUNDING OF THE ATMOSPHERIC FROM SATELLITES TO BE AS GOOD AS SOLVED.

UNCLASSIFIED

7/6 048 UNCLASSIFIED PROCESSING DATE--02OCT70

CIRC ACCESSION NO--AN0110841

ABSTRACT/EXTRACT--THE UTILIZATION OF THESE MEASUREMENTS OF INFRARED OUTGOING RADIATION TO DETERMINE THE VERTICAL CONFIGURATION OF THE ATMOSPHERE'S TEMPERATURE IS COMPLICATED BY THE NEED TO TAKE THE EFFECT OF CLOUDS INTO CONSIDERATION, SINCE DENSE CLOUD IS IMPENETRABLE TO INFRARED RADIATION. IN THIS RESPECT BROADER PROSPECTS ARE BEING PROVIDED BY THE UTILIZATION OF GIVEN MEASUREMENTS OF MICROWAVE OUTGOING RADIATION (IN THE CENTIMETER WAVEBAND). STUDIES BY THE USSR ACADEMY OF SCIENCES' INSTITUTES OF ATMOSPHERIC PHYSICS AND STUDIES BY RADIOELECTRONICS WORKERS OF MICROWAVE RADIATION MEASUREMENTS, MEASUREMENTS WHICH WERE FIRST MADE BY THE COSMOS-243 SATELLITE, DEMONSTRATED THE POSSIBILITY OF SUCCESSFULLY DETERMINING THE TOTAL VAPOR AND MOISTURE CONTENT IN THE ATMOSPHERE, THE BORDERS OF THE ICECAP, AND SO FORTH. THE MICROWAVE BAND IS ALSO PROMISING FOR THE HEAT SOUNDING OF THE ATMOSPHERE. THE MAIN INTEGRAL PART OF THE PROGRAM FOR STUDYING THE ATMOSPHERE FROM SPACE COMPRISES THE DETERMINATION OF THE VERTICAL CONFIGURATION OF THE CONCENTRATION OF AEROSOL (SUSPENDED PARTICLES) IN THE ATMOSPHERE. IT IS WELL KNOWN, FOR EXAMPLE, THAT THE ATMOSPHERIC POLLUTION CAUSED BY VOLCANIC ERUPTIONS HAS ALWAYS LED TO A CONSIDERABLE REDUCTION IN THE EFFECT OF SOLAR RADIATION ON THE EARTH'S SURFACE AND TO NOTABLE CHANGES IN THE ATMOSPHERE'S THERMAL CONDITIONS. INDUSTRIAL POLLUTION PLAYS A NO LESS IMPORTANT ROLE. SYSTEMATIC AEROSOL SOUNDING FROM SPACE HAS BEEN CONDUCTED FROM MANNED SOVIET SPACECRAFT. THIS RESEARCH BEGAN WITH THE PHOTOGRAPHING OF THE CREPUSCULAR AUREOLE (BY V. V. NIKOLAYEVA-TERESHKOVA AND K. P. FEOKTISTOV).

UNCLASSIFIED

UNCLASSIFIED PROCESSING DATE--02OCT70

8/8 048

CIRC ACCESSION NO--AN0110841

ABSTRACT/EXTRACT--THE FIRST SPECTRA OF THE CREPUSCULAR AUREOLE WERE OBTAINED FROM THE SOYUZ-5 SPACECRAFT (BY B. V. VOLYNOV AND YE. V. KHRUNOV). THE INTERPRETATION OF ALL THIS DATA HAS MADE IT POSSIBLE TO OBTAIN VALUABLE INFORMATION ABOUT THE ATMOSPHERE'S OPTICAL PROPERTIES AND THE SPATIAL DISTRIBUTION OF AEROSOL. THE MORE TIME THAT PASSES, THE GREATER THE EXTENT TO WHICH COSMONAUTICS IS BECOMING AN INSTRUMENT FOR KNOWING THE EARTH AND THE UNIVERSE. ONE CAN BE SURE THAT THE FLIGHT OF THE SOYUZ-9 SPACECRAFT WILL PROVIDE SCIENCE AND THE NATIONAL ECONOMY WITH VALUABLE NEW INFORMATION.

UNCLASSIFIED

1/2 010 UNCLASSIFIED PROCESSING DATE--11SEP70

TITLE--ON RADIATION FACTORS OF THE GENERAL CIRCULATION OF THE ATMOSPHERE .
-U-

AUTHOR--KONORATYEV, K.YA.

COUNTRY OF INFO--USSR

SOURCE--METEOROLOGIYA I GIDROLOGIYA, 1970, NR 4, PP 36-41

DATE PUBLISHED--------70

SUBJECT AREAS--ATMOSPHERIC SCIENCES

TOPIC TAGS--ATMOSPHERIC CIRCULATION, EARTH RADIATION

CONTROL MARKING--NO RESTRICTIONS

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PROXY REEL/FRAME--1987/1036 STEP NO--UR/0050/70/000/004/0036/0041

CIRC ACCESSION NO--AP0104434

UNCLASSIFIED

2/2 010

CIRC ACCESSION NO--AP0104434

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. PROBLEMS ASSOCIATED WITH THE ACCOUNTING OF RADIATION FACTORS OF GENERAL CIRCULATION OF THE ATMOSPHERE ARE DISCUSSED. IT IS SHOWN THAT APPLICATION OF THE METHODS OF EMPIRICAL PARAMETRIZATION IS THE MOST EXPIDIENT METHOD FOR ACCOUNTING THESE FACTORS. IN THIS CONNECTION ATTENTION IS PAID TO THE NECESSITY OF PERFORMING THE COMPLEX EXPERIMENTAL INVESTIGATIONS OF RADIATION FIELD.

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Acc. Nr.: AP0042630 KONDRATYEV, K. Ya

Ref. Code: UR9067 JPRS 52162

Conference on Oceanology, Atmospheric Physics, Geography

(Summary: "Session of the Department of Oceanology, Atmospheric Physics and Geography Academy of Sciences USSR in Leningrad," by M. V. Zavarina; Moscow, Izvestiya Akademii Nauk SSSR, Seriya Geograficheskaya, No 1, 1970, p 147)

A scientific session of the Department of Oceanology, Atmospheric Physics and Geography of the Academy of Sciences USSR was held in Leningrad during the period 1-2 July 1969. It was devoted to the most important meteorological problems associated with the study of other natural processes and the use of natural resources in the national economy. D. V. Nalivkin discussed the overall aspects of the study of strong winds in relation to processes in the lithosphere and hydrosphere, emphasizing that their interaction with the atmosphere is most important at the time of catastrophic phenomena. M. I. Yudin gave a review of exceptionally severe dust storms over the European part of the USSR during the last 100 years and devoted much attention to the dust storms of 1969 affecting the Ukraine. The speaker felt that his theory of turbulent diffusion of heavy particles can be applied for studying the mechanics of dust storms. Yudin feels that shelterbelts are the most effective means for protecting soils

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against wind erosion. M. I. Budyko, in a report entitled "Study of Solar Radiation and its Transformations at the Earth's Surface," generalized the research work already done in this field and told of the existing sources of information and the many spheres of its use. He devoted particular attention to the energy processes in the vegetation cover (photosynthesis process). A. F. Treshnikov reported on studies of the Arctic and hydrometeorological servicing of the national economy in the north. The studies made during the last 15-20 years from drifting stations and by air expeditions have yielded much information on bottom relief, formation and circulation of air and water masses and the ice regime of the Arctic Ocean. The physicomechanical properties of ice of different ages have been studied and practical recommendations given on the design and power of engines for icebreakers and other vessels. This report also examined the prospects for further Arctic research. K. Ya. Kondrat'yev told of surveys of natural resources made using artificial earth satellites. He discussed the many aspects of this problem, emphasizing the importance of global surveys, commented on advances in satellite meteorology, advanced the idea of a lunar meteorological station and the desirability and feasibility of using spaceships in geophysical research. He described the work of the Aerospace Methods Laboratory at Leningrad State University. K. S. Shifrin gave a report on "Light Scattering as a Method for Studying the Structure of

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Natural Media"; it dealt with some problems in atmospheric optics of applied importance. The speaker described two methods for determining the size of scattering particles from measurements of the intensity of a scattered parallel beam in the medium: the small angles method and the spectral transparency method. It was emphasized that the theoretical data obtained by solving an integral equation correlate well with experimental data.

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Acc. Nr.: AT0045335 K Ref. Code: UR0020

JPRS 50052

Visual and Instrumental Observations of Twilight Aureole

(Abstract: "Some Results of Visual Observations and Spectrophotometric Measurements of the Twilight Aureole of the Earth's Atmosphere from the 'Soyuz-5' Spaceship," by K. Ya. Kondrat'yev, Corresponding Member, Academy of Sciences USSR, B. V. Volynov, A. P. Gal'tsev, V. V. Kol'tsov, O. I. Smoktiy and Ye. V. Khrunov; Moscow, Doklady Akademii Nauk SSSR, Vol. 190, No. 2, 1970, pp. 327-330)

The program for "Soyuz-5" included an optical experiment in space for studying the spectral (color), angular and spatial evolution of the brightness picture of the twilight atmosphere. This program included simultaneous photographic and spectrophotometric studies of the twilight aureole of the earth's atmosphere in the wavelength range 400-650 mμ, accompanied by visual observations. The program for working with the manual spectrograph provided for a survey of the twilight aureole of the earth's atmosphere in the direction of the sun from the time of appearance of the aureole until the total emergence of the spaceship on the illuminated side of the earth. The twilight aureole was also photographed on black-and-white and color film. Visual observations included an evalua-

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tion of the vertical evolution of brightness and color of the twilight aureole as the sun emerged from below the horizon. Some of the results can be summarized as follows. Near the earth's surface the principal contribution to brightness of the twilight aureole is from long-wave radiation. With an increase in the altitude of the sighted layer atmospheric density decreases and the brightness of the twilight aureole is at a wavelength of $\sim$480 mμ. A brightness minimum is observed at a wavelength of $\sim$600 mμ, caused by ozone absorption in the Chappuis band. The depth of this minimum is dependent on the altitude of the particular layer of the atmosphere above the earth's surface. Spectral brightness is greatly dependent on the azimuth of the direction of sighting and the angle of solar depression, sharply increasing with a decrease of the latter. The altitude corresponding to the spectral brightness maximum is also dependent on the angle of solar depression and wavelength, decreasing with an increase of the latter.

19780260

1/2 036 UNCLASSIFIED PROCESSING DATE--09OCT70
TITLE--SPACE METHODS FOR STUDYING THE EARTH, WAYS TO DEVELOP THEM AND THEIR APPLICATION FOR STUDYING THE EARTH'S NATURAL RESOURCES, SPACE
AUTHOR-(02)-VINOGRADOV, B.V., KONDRATYEV, K.YA.

COUNTRY OF INFO--USSR

SOURCE--LENINGRAD, STATE UNIVERSITY MOSCOW, IZVESTIYA AKADEMII NAUK SSSR, SERIYA GEOGRAFICHESKAYA, NO 2, 1970, PP 86-103
DATE PUBLISHED--------70

SUBJECT AREAS--SPACE TECHNOLOGY, EARTH SCIENCES AND OCEANOGRAPHY

TOPIC TAGS--ELECTROMAGNETIC RADIATION, ELECTROMAGNETIC FIELD, NATURAL RESOURCE, SPACEBORNE EARTH OBSERVATION, ARTIFICIAL EARTH SATELLITE

CONTROL MARKING--NO RESTRICTIONS

DOCUMENT CLASS--UNCLASSIFIED
PROXY REEL/FRAME--1994/0368 STEP NO--UR/9067/70/000/002/0086/0103

CIRC ACCESSION NO--AP0114659
UNCLASSIFIED

2/2 036 UNCLASSIFIED PROCESSING DATE--09OCT70

CIRC ACCESSION NO--AP0114659

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. AT PRESENT, IN CONNECTION WITH THE DEVELOPMENT OF SPACE METHODS AND THE CREATION OF VARIED AND HIGHLY SENSITIVE INSTRUMENTATION FOR THE REGISTRY OF ELECTROMAGNETIC RADIATION OF THE EARTH'S SURFACE AND THE ATMOSPHERE FROM SPACE, THE NEED HAS ARISEN FOR DEVELOPING A NEW SCIENCE WHICH THE AUTHORS CALL SPACE EARTH SCIENCE. THE OBJECTIVE OF THIS SCIENCE, WHOSE PRINCIPLES ARE DEFINED IN THIS ARTICLE, IS THE STUDY OF LOCAL, REGIONAL, ZONAL AND PLANETARY PATTERNS OF THE COMPOSITION, STRUCTURE, DYNAMICS AND RHYTHM OF THE GEOGRAPHIC ENVIRONMENT BY THE REGISTRY OF THE EARTH'S ELECTROMAGNETIC FIELD FROM FLIGHT VEHICLES AND THE INTERPRETATION OF IMAGES AND SPECTRA OF THE EARTH'S SURFACE IN DIFFERENT PARTS OF THE SPECTRUM FOR THE EXPLOITATION AND CONSERVATION OF NATURAL RESOURCES. THERE ARE SIX FUNDAMENTAL TYPES OF A SPACE SURVEY OF THE EARTH, EACH OF THEM DISCUSSED HERE IN DETAIL: 1) VISUAL OBSERVATIONS IN THE RANGE LAMBDA EQUALS 0.3-0.65 MU; 2) SPACE PHOTOGRAPHY IN THE RANGE LAMBDA EQUALS 0.3-1.1 MU; 3) SPACE SPECTROPHOTOMETRY IN THE RANGE LAMBDA EQUALS 0.3-3.0 MU; 4) SPACE OBSERVATIONS IN THE INFRARED, IN THE RANGE LAMBDA EQUALS 0.01-3 MM; 5) SPACE MICROWAVE OBSERVATIONS IN THE RANGE LAMBDA EQUALS 0.3-10 CM; 6) SPACE RADAR IN THE RANGE LAMBDA EQUALS 3-70 CM. SPACE EARTH SCIENCE IS CLOSELY RELATED TO INVESTIGATIONS OF PLANETS OF THE EARTH GROUP FROM SPACESHIPS WHICH CAN REGISTER THE ELECTROMAGNETIC FIELDS OF OTHER COSMIC BODIES. ACCORDINGLY, THE SPACE METHODS FOR EARTH SCIENCE DEFINED IN THIS PAPER ARE APPLICABLE IN GENERAL SPACE EXPLORATION.

UNCLASSIFIED

1/3 · -024 UNCLASSIFIED PROCESSING DATE--09OCT70

TITLE--VARIATIONS OF SOLAR CONSTANT -U-

AUTHOR-(02)-KONDRATYEV, K.YA., MIKULSKIY, G.A.

COUNTRY OF INFO--USSR

SOURCE--MOSCOW, IZVESTIYA AKADEMII NAUK SSSR, FIZIKA ATMOSFERY I OKEANA, VOL VI, NO 3, 1970, PP 227-238

DATE PUBLISHED--------70

SUBJECT AREAS--ASTRONOMY,ASTROPHYSICS, ATMOSPHERIC SCIENCES

TOPIC TAGS--HEAT BALANCE, BALLOON, METEOROLOGIC OBSERVATION, VERTICAL PROFILE, SOLAR CONSTANT, SOLAR RADIATION, TROPOSPHERE, STRATOSPHERE

CONTROL MARKING--NO RESTRICTIONS

DOCUMENT CLASS--UNCLASSIFIED

PROXY REEL/FRAME--1991/0713 STEP NO--UR/0362/70/006/003/0227/0238

CIRC ACCESSION NO--AP0110448

UNCLASSIFIED

2/3 024 UNCLASSIFIED PROCESSING DATE--09OCT70

CIRC ACCESSION NO--AP0110448

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. SINCE 1961 SPECIALISTS AT LENINGRAD UNIVERSITY HAVE BEEN USING BALLOONS FOR STUDYING VERTICAL PROFILES OF THE RADIATION BALANCE AND ALL ITS COMPONENTS IN THE TROPOSPHERE AND LOWER STRATOSPHERE. THE ACCURACY IN MEASUREMENTS OF THE ABSOLUTE FLUX OF SOLAR RADIATION IS PLUS OR MINUS 1.5 PERCENT. SINCE THE CEILING OF AEROSTAT SOUNDINGS WAS ABOUT 30 KM, THIS MADE IT POSSIBLE TO EXTRAPOLATE THE DETERMINED VALUES CORRECTLY BEYOND THE LIMITS OF THE ATMOSPHERE AND THUS DETERMINE THE ABSOLUTE VALUES OF THE SOLAR CONSTANT. EXTRAPOLATION OF THE EXPERIMENTAL VALUES OF THE FLUX S OF DIRECT SOLAR RADIATION FROM THE LEVELS 25-33 KM BEYOND THE LIMITS OF THE ATMOSPHERE WAS ACCOMPLISHED IN TWO WAYS. THE FIRST METHOD IS BASED ON USE OF BOUGUER'S LAW (LOG S EQUALS LOG S BUO PLUS M LOG P). THE TRANSPARENCY COEFFICIENT P OF THE ABOVE LYING LAYER WAS OBTAINED FROM DATA FROM ONE OF THE FLIGHTS WHEN THERE WAS HIGH STABILITY OF ATMOSPHERIC TRANSPARENCY BY CONSTRUCTING A GRAPH OF THE DEPENDENCE OF LOG S ON ATMOSPHERIC MASS M. FOR ALL OTHER FLIGHTS THE TRANSPARENCY COEFFIEIENT WAS ASSUMED TO BE A CONSTANT VALUE. THE S SUBO VALUES, OBTAINED USING BOUGUER'S FORMULA, ARE ONLY THE RESULTS OF A PARTIAL EXTRAPOLATION BECAUSE NO CORRECTION HAS YET BEEN INTRODUCED FOR RADIATION ABSENT AT ALTITUDES OF ABOUT 30 KM. IT IS KNOWN THAT FOR THE INTEGRAL FLUX OF SOLAR RADIATION THE DEPENDENCE OF LOG S ON M HAS A NONLINEAR FORM BECAUSE AT AN ALTITUTE OF ABOUT 30 KM THE ATMOSPHERIC THICKNESS ATTENUATING RADIATION IS SMALL AND THE USE OF A LINEAR DEPENDENCE DOES NOT LEAD TO A SIGNIFICIANT ERRORS IN THE VALUE S SUBO, SUBE, THE EXTRAPOLATED VALUE OF THE SOLAR CONSTANT.

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3/3 024 UNCLASSIFIED PROCESSING DATE--090CT70

CIRC ACCESSION NO--AP0110448

ABSTRACT/EXTRACT--THE EXTRAPOLATION METHOD USED MADE IT POSSIBLE TO TAKE INTO ACCOUNT THE ATTENUATION OF SOLAR RADIATION BY THE AEROSOL COMPONENT SITUATED ABOVE THE UPPER LEVEL OF SOUNDING. SINCE VERY LITTLE DATA IS AVAILABLE FOR THE OPTICAL AEROSOL THICKNESS OF THE ATMOSPHERE AT ALTITUDES 30-200-KM, THIS EXTRAPOLATION METHOD EVIDENTLY MAKES SENSE. AFTER INTRODUCING CORRECTIONS FOR THE RADIATION WHICH IS ABSENT AT THIS LEVEL, ONE OBTAINS THE FINAL VALUE OF THE SOLAR CONSTANT. ON THE BASIS OF THESE AEROSTAT OBSERVATIONS AND OTHER IT WAS SHOWN THAT THE MOST RELIABLE VALUE OF THE SOLAR CONSTANT IS 1.94 CAL-CM PRIME2 MIN AND THE ACCURACY IN DETERMINING THIS PARAMETER IS PLUS OR MINUS 1 PERCENT. THIS VALUE OF THE SOLAR CONSTANT IS OBSERVED FOR WOLF NUMBERS OF 80-100. WITH AN INCREASE (OR DECREASE) IN THE WOLF NUMBERS THE VALUE OF THE SOLAR CONSTANT CAN CHANGE. THE MAXIMUM POSSIBLE DECREASE DOES NOT EXCEED 2-2.5 PERCENT. THESE DATA REQUIRE FURTHER CONFIRMATION ON THE BASIS OF DIRECT MULTIPLE MEASUREMENTS OF THE SOLAR CONSTANT BEYOND THE LIMITS OF THE ATMOSPHERE. FACILITY: LENINGRAD STATE UNIVERSTIY.

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USSR UDC 681.327.2

TSVETAYE, V. K.P., ANTONOV, V. N., KONDRAT'YEV, P. P., SHISHKIN, A. M., and FUFLYGIN, G. I., Moscow Power Institute

"Recording Device"

USSR Author's Certificate No 372557, kl G 06 f 3/14, filed 4 Jul 69, published 25 Apr 73 (from RZh Avtomatika Telemekhanika i Vychislitel'naya Tekhnika, No 11, Nov 73, abstract No 11, A431P)

Translation: A device is proposed for recording, containing the following units arranged sequentially along one optical axis: a light source, system of controlling the light beam containing sequentially arranged polarizers, crystal blocks with controllable planes of polarization and an analyzer, an optical system, and an information carrier. To improve the speed, the crystals of the light beam control system contain openings corresponding to the shapes of the symbols to be recorded. Two illustrations.

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USSR UDC 628.492

KONDRAT'YEV, S. F., and LEBEDEVA, A. P., Scientific Research and Designing and Technological Institute of Municipal Management, Kiev

"A New Thermal Method for the Decontamination and Treatment of Solid Household Garbage From Cities"

Moscow, Gigiyena i Sanitariya, No 3, Mar 73, pp 58-61

Abstract: A new procedure for the conversion of city household garbage to a fertilizer was developed. After removal from it of ferrous metals by magnetic separation and then of non-ferrous metals manually, the garbage is brought to a particle size $\leq$ 15 mm by grinding and screening. The presence of non-ferrous metals to be removed is indicated by a high-frequency detector. The garbage in the form of a homogeneous, friable mass is treated for 3 hrs in a rotating drum with air at 120° that is blown through the drum. This results in sterilization and drying. The sterilized, dry mass is ground to a fine powder in a ball mill. The grinding in the ball mill is accompanied by a second magnetic separation to remove fine particles of ferrous metals. The product obtained, which did not require further composting and had the composition organic substances 46-58, total N 0.6-1.2, P 0.3-0.9, K 0.4-1.0%;

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USSR

KONDRAT'YEV, S. F., and LEBEDEVA, A. P., Gigiyena i Sanitariya, No 3, Mar 73, pp 58-61

pH 6.0-7.2; and C/N 14-24, was found to be an effective fertilizer. The thermal treatment at 120° brought N and P into forms readily assimilable by plants. S. K. Potemkina, Chem. Engr., and F. M. Konchakovskaya, Chemist, participated in the work on the development of the new method.

USSR

UDC 621.372.6

KONDRAT'YEV, S.L., KARPIN, YU.V. (Members Of The Scientific-Technical Society of Radio Engineering, Electronics, And Communication imeni A.S. Popov)

"Concerning Correlation Evaluation Of The Quality Of Communication Channel"

Radiotekhnika, Vol 27, No 3, Mar 1972, pp 93-95

Abstract: It is shown that an autocorrelated function can serve as a criterion of the quality of a synchronous discrete communication channel. This concept was experimentally verified with the aid of functional simulation on a digital computer. Models were investigated of AM and FM channels with additive normal noise and interference in the form of AM signals at frequencies close to the frequency of the effective signal. The levels of noise and interference were changed within wide limits. 2 fig. 3 ref. Received, 7 Jan 1970; after revision into short communication, 25 Oct 71.

1/1

USSR

UDC: 517.944.3

KONDRAT'YEV, V. A., EYDEL'MAN, S. D., and PLETNEVA, T. G.

"Positive Solutions of Partial Differential Equations in the Neighborhood of a Smooth, Noncharacteristic Hypersurface"

Moscow, Doklady Akademii Nauk SSSR, vol 204, No 2, 1972, pp 279-282

Abstract: This paper considers weak positive solutions of an arbitrary equation of the form

$$Pu \equiv \sum_{|k| \leq m} (-1)^k D_x^k (a_k(x) u(x)) = f(x)$$

and, as a primary result, establishes the fact of their summability for the summability of f(x) in any subregion G of region Ω contiguous with the smooth, noncharacteristic surface $\varphi(x) = 0$. For homogeneous elliptical equations, in particular, the summability of weak positive solutions is derived from an arbitrary boundary of a region with smooth limits.

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1/2 035 UNCLASSIFIED PROCESSING DATE--18SEP70

TITLE--SECONDARY PHOTOCHEMICAL PROCESSES OF TWO QUANTUM PHOTOIONIZATION OF AROMATIC AMINES AT 770EGREESK -U-

AUTHOR-(02)-KONDRATYEV, V.A., BAGDASARYAN, KH.S.

COUNTRY OF INFO--USSR

SOURCE--KHIM. VYS. ENERG. 1970, 4(1), 35-42

DATE PUBLISHED-------70

SUBJECT AREAS--CHEMISTRY, PHYSICS

TOPIC TAGS--QUANTUM CHEMISTRY, PHOTOCHEMISTRY, AROMATIC AMINE, PHENYLENE, DIAMINE, PHOTOEFFECT, LOW TEMPERATURE EFFECT, IONIZATION

CONTROL MARKING--NO RESTRICTIONS

DOCUMENT CLASS--UNCLASSIFIED

PROXY REEL/FRAME--1987/1116 STEP NO--UR/0456/70/004/001/0035/0042

CIRC ACCESSION NO--AP0104514

UNCLASSIFIED

2/2 035 UNCLASSIFIED PROCESSING DATE--18SEP70

CIRC ACCESSION NO--AP0104514

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. THE SECONDARY PHOTOCHEM. REACTIONS IN SOLNS. OF N,N,N',N'-TETRA-METHYL-P-PHENYLENEDIAMINE (I) AND N,N-DIMETHYL-P-PHEYLENEDIAMINE (II) IN ETOH, PR SUB2 O, AND TERT-BUOH, AND PH SUB2 NH IN PR SUB2 O ARE STUDIED. THE IRRADN. OF I TAKES PLACE IN 2 STEPS, THE 1ST YIELDING A PRODUCT ABSORBING AT 540 NM, FORMED WITH A RAPIDLY STABILIZING CONCN. OF THE CATION RADICAL, WHICH INCREASES WITH INCREASED LIGHT INTENSITY. THE 2ND STAGE PROCEEDS DIFFERENTLY IN THE PR SUB2 O AND THE ALCS. THE ALC. DISPROPORTIONATES TO GIVE AN ELECTRON RECOMBINING WITH THE CATION RADICAL. IN THE ETHER, A RADICAL MATRIX IS FORMED TO EFFECT PHOTORECOMBINATION. II AND PH SUB2 NH ARE SIMILARLY SENSITIZED TO GIVE AN IONIZATION OF THE AMINE FOLLOWED BY PHOTORECOMBINATION.

UNCLASSIFIED

1/2 022 UNCLASSIFIED PROCESSING DATE--30OCT7(

TITLE--SOME ASPECTS OF THE COURSE OF TERMINAL PROCESSES OF NITROGEN METABOLISM IN PNEUMONIA -U-

AUTHOR--KONDRATYEV, V.G.

COUNTRY OF INFO--USSR

SOURCE--TERAPEVTICHESKIY ARKHIV, 1970, VOL 42, NR 4, PP 86-90

DATE PUBLISHED--------70

SUBJECT AREAS--BIOLOGICAL AND MEDICAL SCIENCES

TOPIC TAGS--NITROGEN, METABOLISM, PNEUMONIA, URINE, LIVER FUNCTION

CONTROL MARKING--NO RESTRICTIONS

DOCUMENT CLASS--UNCLASSIFIED

PROXY REEL/FRAME--2000/0632 STEP NO--UR/0504/70/042/004/0086/0090

CIRC ACCESSION NO--AP0124306

UNCLASSIFIED

2/2 022 UNCLASSIFIED PROCESSING DATE--30OCT7(

CIRC ACCESSION NO--AP0124306

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. THE RESULTS ARE GIVEN OF INVESTIGATION OF THE UREA OF THE BLOOD AS WELL AS AMINO NITROGEN, UREA AND INDICAN IN THE URINE OF PATIENTS WITH ACUTE (CROUPOUS AND FOCAL) ANI CHRONIC PNEUMONIA. THE INDICES WERE ANALYSED AT THE HEIGHT OF THE DISEASE, DURING RECONVALESCENCE AND BEFORE DISCHARGING FROM THE HOSPITAL IN ACUTE PNEUMONIA; IN CHRONIC PNEUMONIA, DURING THE PERIOD OF EXACERBATION AND TWICE WHEN THE PROCESS WAS SUBSIDING. THE AUTHORS FOUND A SHARP INCREASE OF THE UREA IN THE BLOOD IN THE ACUTE PERIOD OF THE DISEASE, ITS CONSIDERABLE DROP DURING RECONVALESCENCE BUT NOT REACHING THE NORMAL LEVEL EVEN AT THE 5-6TH WEEK OF THE DISEASE. THE MENTIONED INDICES CHANGES SIMULTANEOUSLY IN ALL THREE FORMS OF THE DISEASE. DIURNA DISCHARGE OF AMINO NITROGEN WAS HIGH AND THE LEVEL OF INDICAN IN THE URINE REMAINED NORMALL. THERE IS AN OPINION THAT THE UREA SYNTHETIC FUNCTION OF THE LIVER BECOMES INTENSIFIES IN PNEUMONIA.

FACILITY: 301 Y OKRUZHNOI VOYENNYY GOSPITAL' AND TSENTRAL'NAYA N-I LABORATORIYA KHABAROVSKOGO MEDITSINSKOGO INSTITUTA.

UNCLASSIFIED

USSR

UDC 621.317.784.023

IL'INSKAYA, O. K., KONDRAT'YEV, V. M.

"Transmitted Power Meter"

USSR Author's Certificate No 276181, Filed 19 Feb 69, Published 8 Oct 70 (from RZh-Radiotekhnika, No 4, Apr 71, Abstract No 4A278P)

Translation: A transmitted power meter containing a wave guide directional coupler connected to a cutoff attenuator, a crystal detector and a loop coupler is proposed. The proposed meter is distinguished by the fact that in order to insure calibration of the crystal detector, the coupling loop of the loop coupler is included in the coaxial section of the cutoff attenuator.

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AA0043552

Soviet Inventions Illustrated, Section II Electrical, Derwent, UR 0482

2/70

242987 CALORIMETRIC COAXIAL LOAD ELEMENT in which central electrode (5) is housed in a dielectric cylinder (4) containing absorption liquid circulating between cylindrical walls. The construction reduces coefficient of reflexion in UHF band.

20.7.67 as 1174358/26-9. S.N.GANSHIN & V.M.KONDRAT'EV. (25.9.69) Bul 16/5.5.69. Class 21a4. Int.Cl. H 01 p.

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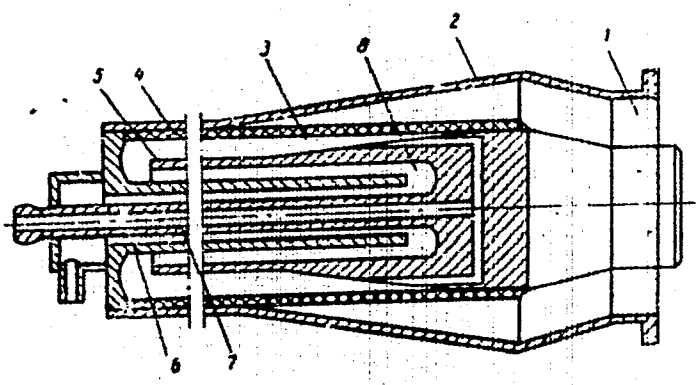
19761997

AA0043552



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19761998

1/2 032 UNCLASSIFIED PROCESSING DATE--30OCT70

TITLE--SPEED CONSTANTS OF GAS PHASE REACTIONS -U-

AUTHOR--KONDRATYEV, V.N.

COUNTRY OF INFO--USSR

SOURCE--SPEED CONSTANTS OF GAS PHASE REACTIONS (KONSTANTY SKOROSTI GAZOFAZNYKH REAKTSIY) MANUAL. MOSCOW, NAUKA, 1970, 351 PP

DATE PUBLISHED--------70

SUBJECT AREAS--PHYSICS, CHEMISTRY

TOPIC TAGS--CHEMICAL REACTION KINETICS, GAS KINETICS, REACTION RATE

CONTROL MARKING--NO RESTRICTIONS

DOCUMENT CLASS--UNCLASSIFIED

PROXY REEL/FRAME--1995/0334 STEP NO--UR/0000/70/000/000/0001/0351

CIRC ACCESSION NO--AM0116015

UNCLASSIFIED

2/2 032 UNCLASSIFIED PROCESSING DATE--30OCT70
CIRC ACCESSION NO--AM0116015
ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. TABLE OF CONTENTS: PREFACE 3. INTRODUCTION 7. REACTIONS OF ATOMS 9. REACTIONS OF RADICALS 119. REACTIONS OF SATURATED MOLECULES AND ELECTRON EXCITED PARTICLES 237. COMMENTS 259. BIBLIOGRAPHY 342. LIST OF REACTIONS 348.

UNCLASSIFIED

UDC: 51:621.391

USSR

KONDRAT'YEV, Ye. A., SOPRUNENKO, Ye. P.

"On a Class of Functions Which are Realizable on a Single-Track Cascade"

V sb. Diskretn. avtomaty i seti svyazi (Discrete Automata and Communications Networks--collection of works), Moscow, "Nauka", 1970, pp 73-77 (from RZh-Kibernetika, No 1, Jan 71, Abstract No 1V376)

Translation: The authors discuss the realizability of functions of an algebra of logic on a single-track cascade of functional elements in the basis of all functions of two variables. In this paper necessary and sufficient conditions are found for the realizability of a function of n variables on such a cascade of n cells. The corresponding algorithm is given. G. Blokhina.

USSR UDC 538.378:534-8

KARMINSKIY, YU. A., KONDRAT'YEV, YU.A., TUKKAYEV, A.A.

"Transfer Constant Of Electroacoustic Transducer"

V sb. Introskopiya (Introscopia--Collection Of Works), Moscow, 1970, pp 104-110 (from RZh--Elektronika i yeye primeneniye, No 2, February 1971, Abstract No 2A431)

Translation: An expression is derived for the ratio of the amplitude of the input signal which is supplied to the target of an electroacoustic transducer, and the output which is removed from the collector. It is shown that this ratio cannot be larger than one and at high-frequency it decreases inversely proportional to the frequency. 2 ill. 4 ref. N.S.

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USSR

UDC 538.378:534-8

KARMINSKIY, YU. A., KONDRAT'YEV, YU. A., TUKKAYEV, A.A.

"Signal-To-Noise Ratio At Output Of Electroacoustic Transducer"

V sb. Introskopiya (Introscopia--Collection Of Works), Moscow, 1970, pp 87-93 (from RZh--Elektronika i yeye primeneniye, No 2, February 1971, Abstract No 2A433)

Translation: A desired signal-to-noise ratio is determined for two forms of load (aperiodic load and oscillatory circuit). The band of the electrical channel in both cases is identical; rectangularity of the characteristics is assured in the amplifying channel. The conditions are derived in which the signal-to-noise ratio at the output of the transducer does not depend in practice on the form of the load. With use of an oscillatory circuit as a load, a Q times (Q is the figure of merit of the circuit) smaller amplification is required; however, at the same time specific limitations are imposed on Q. 1 ill. 3 ref. N.S.

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K Free Radicals

UDC: 54.151.5:541.141.4

USSR

BIKTIMIROV, R. S. and KONDRAT'YEV, YU. A.

"Free Radicals in Polyamides Irradiated with Fast Neutrons"*

Moscow, Khimiya Vysokokikh Energiy, Vol 4, No 2, p 169

Abstract: The EPR method was used to study the free radicals formed during radiolysis of ξ-caprolactam, caprone, and the lithium and sodium caprolones of polyamide resin 68. In the case of ξ-caprolactam, radicals of structure $\sim CH_2--CO--NH--CH--CH_2\sim$ were formed; these yielded EPR spectra of four hyperfine lines, each apparently split into two components. The spectra of the other substances consisted of six hyperfine lines. It was shown that resolution of the spectral lines, and also intensity of the components, depend both upon temperature of the recording and upon degree of crystallinity of the polymer.

*Review of a six-page paper (11 illus.) submitted to the All-Union Institute of Scientific and Technical Information.

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USSR

UDC: 612.766.2

KOVALENKO, Ye. A., POPKOV, V. L., KONDRAT'YEV, Yu. I., MAILYAN, E. S., GALUSHKO, Yu. S., PROKHONCHUKOV, A. A., KAZARYAN, V. A., MOROZOVA, R. S., SEROVA, L. V., POTAPOV, A. N., ROMANOV, V. S., and PISHCHIK, V. B.

"Shifts in the Functions of the Organism During Prolonged Hypolinesia"

Moscow, Patologicheskaya Fiziologiya i Eksperimental'naya Terapiya, Vol 14, No 6, Nov/Dec 70, pp 3-9

Abstract: Rats kept immobilized for up to 170 days in special cages showed an increase in general gas exchange and rate of oxygen utilization in the muscles, and a slowing of the rate of tissue metabolism in the liver and myocardium. The level of phosphotylation in the myocardium and, to some extent, in the skeletal muscles and liver dropped. Prolonged hypokinesia also stunted the animals' growth, pervented them from gaining weight, and in some cases caused them to lose weight. Besides disturbing mineral and protein metabolism, immobilization resulted in exhaustion of the hypothalamus - pituitary - adrenal cortex system.

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1/2 020 UNCLASSIFIED PROCESSING DATE--23OCT70
TITLE--ELECTRICAL CONDUCTIVITY OF LITHIUM ALUMINOSILICATE GLASSES AND THEIR STURCTURE X(LI SUB2 O.AL SUB2 O SUB3) TIMES (1-X)SIO SUB2 CROSS
AUTHOR-(02)-KONDRATYEV, YU.M., SMIRNOVA, L.A.

COUNTRY OF INFO--USSR

SOURCE--IZV. AKAD. NAUK SSSR, NEORG. MATER. 1970, 6(3), 524-7

DATE PUBLISHED--------70

SUBJECT AREAS--MATERIALS

TOPIC TAGS--ELECTRIC CONDUCTIVITY, LITHIUM GLASS, ALUMINOSILICATE GLASS, GLASS STRUCTURE, THERMAL DEGRADATION, ALUMINUM OXIDE

CONTROL MARKING--NO RESTRICTIONS

DOCUMENT CLASS--UNCLASSIFIED
PROXY REEL/FRAME--1997/0593 STEP NO--UR/0363/70/006/003/0524/0527

CIRC ACCESSION NO--AP0119511

UNCLASSIFIED

2/2 020 UNCLASSIFIED PROCESSING DATE--23OCT70

CIRC ACCESSION NO--AP0119511

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. THE ELEC. COND. FOR GLASSES AND POLYCRYST. SAMPLES OF THE SECTIONS XLI SUB2 O(1-X)SIO SUB2, 17LI SUB2 O.XAL SUB2 O SUB3 (83-X)SIO SUB2, AND 25LI SUB2 OXAL SUB2 O SUB3 (75-X) SIO SUB2 WAS STUDIED UPON THE ISOMORPHIC SUBSTITUTION IN THEIR STRUCTURE OF (SIO SUBFOUR HALVES) NODES BY THE (AL PRIME NEGATIVE O SUBFOUR HALVES)LI PRIME POSITIVE NODES. THE STURCTURE OF GLASSES OF THE SECTION X(LI SUB2 O.AL SUB2 O SUB3) TIMES (1-X)SIO SUB2 REPRESENTS A 3 DIMENSIONAL SKELETON IN THE 1ST APPROXN. THE DEGREE OF DISSOCN. OF THE (AL PRIME NEGATIVE O SUBFOUR HALVES)LI PRIME POSITIVE NODES INCREASES WITH INCREASING SILICA CONCN. IN THE STURCUTRE OF HIGH ALUMINA GLASSES THERE CAN BE OBSERVED (ALO SUBSIX FOURTHS) NODES, BEING A RESULT OF THERMAL DISSOCN. OF ALUMINOSILICATES AT HIGH TEMP.

UNCLASSIFIED