USSR UDC 612.825.261

KOROL'OVA, A. Ye., and FOYA, N. M., Division of the Pathology of Higher Nervous Activity and Laboratory of the Pathology of the Nervous System, Institute of Physiology imeni A. A. Bogomolets, Academy of Sciences Ukrainian SSR, Kiev

"Disorders of Short-Term Memory in Dogs With Injured Frontal Lobes of the Brain"

Kiev, Fiziologichniy Zhurnal, Vol 19, No 3, May/Jun 73, pp 303-309

Abstract: The short-term memory of dogs with various degrees of injury to the frontal lobes was studied on the basis of visual perception of food location. It was established that the field F_2 according to the classification of Adrianov and Mering was mainly responsible for the disturbance of delayed responses. This disturbance increased with an increasing extent of the site of the injury. The disturbance could not be ascribed solely to a deterioration of the kinesthetic gnosis; it was based on a low level of trace excitement and of the perservation phenomenon and also, at a simultaneous injury to the proreal and anterior sygmoid gyrus, to a far-reaching destruction of the collation apparatus. In connection with this, the ability to consider the results of a completed action was lost.
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USSR UDC 612.828:612.178.5

GENIS, E. D., DUKHIN, E. O., FOYA, N. M., and SHAPOVAL, L. M., Institute of Physiology imeni O. O. Bogomolets, Academy of Sciences, Ukrainian SSR

"Histochemical Changes in Neurons of the Bulbar Cardiovascular Center After Exclusion of the Baroreceptors of the Sino-Aortic Reflexogenic Zone"

Kiev, Fiziologichniy Zhurnal, No 6, 1970, pp 784-788

Abstract: Denervation of the sinocarotid and aortic reflexogenic zones in rabbits resulted in the development of stable hypertension. Histochemical study of the RNA content and succinic dehydrogenase activity in neurons of the medulla oblongata cardiovascular center revealed areas with significant changes in the above indices. The medial, lateral, and giant-cell nuclei of the reticular formation showed some increase in the number of activated neurons, which produce and utilize RNA, intensification of satellitosis, and large number of structures with high succinate dehydrogenase activity. No such changes were detected in other nuclei investigated (dorsal nucleus of the vagus, region of the tractus solitarius, and nucleus ambiguus).

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1/2 022 UNCLASSIFIED PROCESSING DATE--11SEP70

TITLE--EFFECT OF NEOCORTEX ABLATION ON THE STATE OF HYPOTHALAMUS NEUROSECRETORY ELEMENTS -U-

AUTHOR--GENIS, YE.D., FOYA, N.M.

COUNTRY OF INFO--USSR

SOURCE--FIZIOLOGICHNIY ZHURNAL, 1970, VOL 16, NR 1, PP 55-60

DATE PUBLISHED-------70

SUBJECT AREAS--BIOLOGICAL AND MEDICAL SCIENCES

TOPIC TAGS--CEREBRAL CORTEX, RABBIT, NERVE, SECRETION, BRAIN

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PROXY REEL/FRAME--1982/0887 STEP NO--UR/0238/70/016/001/0055/0060

CIRC ACCESSION NO--AP0052311

UNCLASSIFIED

2/2 022 UNCLASSIFIED PROCESSING DATE--11SEP70

CIRC ACCESSION NO--AP0052311

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. A BILATERAL ABLATION OF NEOCORTEX IN RABBITS RESULTS IN THE DISTURBANCE OF EVACUATION OF NEUROSECRETION AND ITS DEPOSITION IN ALL THE DIVISIONS OF THE HYPOTHALAMO HYPOPHYSEAL NEUROSECRETORY SYSTEM. AT THE SAME TIME SECRETORY ACTIVITY OF THE CELLS OF SUPRAOPTICAL AND PARAVENTRICULAR NUCLEI DECREASES, CYCLIC RECURRENCE OF THE NEUROSECRETORY PROCESS IS DISTURBED AND THE QUANTITY OF DARK PYCNOTIC FORMS OF CELLS INCREASES. BESIDES INTENSIFICATION OF NEUROSECRETION ENTRANCE IS ALSO OBSERVED ALONG EXTRAHYPOPHYSEAL PATHWAYS, INTO THE VESSELS OF THE BRAIN TISSUE AND BRAIN TISSUE SURROUNDING THEM, INTO LIQUOR BY ACTIVATING GLIA CELLS. THE MENTIONED CHANGES INTENSIFIED IN TIME AND WERE OBSERVED 1-2 MONTHS AFTER THE BILATERAL ABLATION OF NEOCORTEX. UNDER UNILATERAL DECORTICATION SUCH CHANGES WERE OBSERVED 5-10 MONTHS AFTER OPERATION. THE INVESTIGATIONS CONDUCTED SHOWN THE PRESENCE OF A NERVOUS CONTROL OF THE NEURO SECRETORY FUNCTION AND PERMIT ONE TO CONCLUDE THAT THE NEOCORTEX ABLATION RESULTS IN A STEADY DECREASE OF FUNCTIONAL ACTIVITY IN THE HYPOTHALAMUS NEUROSECRETORY ELEMENTS.

UNCLASSIFIED

USSR

UDC: 621.374.32

FOYDA, A. N.

"A Shift Register"

Moscow, Otkrytiya, Izobreteniya, Promyshlennyye Obraztsy, Tovarnyye Znaki, No 20, Jul 72, Author's Certificate No 343307, Division G, filed 4 Jan 70, published 22 Jun 72, p 176

Translation: This Author's Certificate introduces a shift register based on potential logic elements. The register contains two controlling elements in each digital place, an output flip-flop, and a data reception element. The controlling elements are connected to a cadence pulse line, and the data reception element is connected to the first controlling element. The output of this controlling element is connected to the input of one of the elements of the output flip-flop. As a distinguishing feature of the patent, the register is simplified by connecting the input of the second controlling element to an additional cadence pulse line with pulse displacement relative to the main cadence pulses by a time which exceeds the operating time of the first controlling element, and the output element of the output flip-flop is connected to the input of the next digital place.

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USSR UDC 621.384.634

ALEKSANDROV, I. A., FRACHEV, M. I., GUBRIYENKO, K. I., YERMENKO, YE. V., KOTOV, V. I., NFKRASOV, A. N., PRILEPIN, A. A., PICHUGIN, V. A., RSAYEV, R. A., SAMOYLOV, A. V., SELEZNEV, V. S., SEREBRSAKOV, B. A., KHANAMIRYAN, A. YE., and KHODYREV, YU. S.

"Negative Particle Channel With Momentum up to 60 Gigaelectron Volts/Second"

Moscow, Atomnaya Energiya, Vol 29, No 1, Jul 70, pp 29-34

Abstract: This article contains a description of a channel for transporting negative particles generated in an internal accelerator target with momentum up to 60 fifaelectron volts/second and an accelerated proton energy of 70 gigalectron volts. The channel is designed so that for an accelerated proton energy of 70 gigaelectron volts it can be adjusted to momentum in the range of 40-60 gigaelectron volts/second. On reducing the energy of the accelerated protons, the channel can be adjusted to lower momentum. The lower limit corresponds to an accelerated proton energy of 20 gigaelectron volts and is equal to 11.4 gigaelectron volts/second.

The optical system of the channel and its characteristics

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ALEKSANDROV, I. A., et al., Atomnaya Energoya, Vol 29, No 1, Jul 70, pp 29-34

are presented. The limiting solid capture angle of the secondary particles by the channel is 32 microsteradians. The best resolution with respect to momentum is 0.3 percent without decreasing the pacture angle. The channel was investigated primarily using a secondary beam with a momentum of p = 50 giga-electron volts/second. The procedure for adjusting the channel and the calculated data are described. The differences between the calculated operating conditions of the elements and the conditions after adjustment together do not exceed the errors of the fringing field of the accelerator, the magnetization curve, and the curve for calibrating the bypasses of the magnet. On the whole, the beam parameters agree well with the calculated data.

A detailed diagram of the channel layout is presented, and graphs are presented for the radial position of the targets and the production angle as functions of the momentum of the secondary particles, the optical system of the channel and path of the beams in the horizontal and vertical planes, the momentum

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ALEKSANDROV, I. A., et al., Atomnaya Energiya, Vol 29, No 1, Jul 70, pp 29-34

resolution of the channel, the beam profile with momentum of 50 gigaelectron volts/second in the parallel section and slit width of the aperture collimators of +20 mm and the pulse collimator +6mm, the beam profile with momentum of 50 gigaelectron volts/second in the final representation on including the lens doublet, and the beam profile with momentum of 50 gigaelectron volts/second in the final representation on including a lens triplet.

FRADKIN, G. M.

TECHNICAL TRANSLATION

FSTC-HT-23- 340-72

ENGLISH TITLE: Operational Characteristics of Type Beta-1 and Beta-2 Isotopic Thermoelectric Generators

FOREIGN TITLE: Ekspluatat sionnyye Kharakteristiki Izotopnykh Termoelektricheskikh Generatorov Tipa "Beta-1" i "Beta-2"

AUTHOR: G. M. Fradkin, V. M. Kodyukov, A. I. Kaganinskiy, N. P. Korotkov, Ye. A. Kazakov

SOURCE: Radioizotopnaya Tekhnika. Trudy, Issue 4, All-Union Scientific Research Institute for Radiation Technology, Atomizdat, Moscow, 1970.

Translated for FSTC by Eric Peabody, Leo Kanner

NOTICE

Nuclear Science and Technology

USSR

FRADKIN, G. M., BREZHNEVA, N. YE., YERSHOVA, Z. V., BOGDANOV, N. I. (Deceased), KODYUKOV, V. M., VORONIN, A. N., KOZLOV, A. G., MALYKH, YU. A., NIKIPELOV, B. V., RAGOZINSKIY, A. I., FEDOROV, V. V., and CHUSEKIN, YU. V., State Committee on the Use of Atomic Energy USSR, Fourth International Conference of the United Nations on the Peaceful Use of Atomic Energy, Geneva, 6-16 Sep 71

"Development of Isotopic Power Technology in the USSR"

Moscow, Atomnaya Energiya, Vol 31, No 4, Oct 71, pp 358-365

Abstract: The construction in the USSR of isotopic thermoelectric generators for powering oceanographic and navigation devices, hydrographic, automatic radiometeorological, magnetic variation stations, high-elevation cosmic ray stations, and other scientific research stations and ground installations is reported on. The most suitable for fuel applications are isotopes with a half-life period within the limits 100 days to 100 years (approximately 50 isotopes), of which 12-15 can be obtained in large amounts. Most quantities of fission radioactive isotopes and also the most widely used radioactive Sr^{90} are obtained by processing radioactive waste solutions. To simplify isolation of radiochemically pure elements, including Sr^{90}, the group concentration method is used, based on calcium oxalate precipitation. The most promising technique is extraction separation of alkaline-earth elements with the isolation of pure strontium. Here the following extractants are used: a.

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FRADKIN, G.M., et al, Moscow, Atomnaya Energiya, Vol 31, No 4, Oct 71, pp 358-365

solution of di-2-ethylhexylorthophosphoric acid in kerosene from a nitric acid medium, and a solution of salicylaldoxime in tributyl phosphate from an alkaline (sodium hydroxide or ammonia) solution. Currently construction has been completed for blocks with activities in the tens and hundreds of kilocuries based on Ce^{144} (20,000 curies), Sr^{90} (9000-100,000 curies), and Cs^{137} (50,000-150,000 curies), and also blocks based on Pu^{238}, Po^{210}, Cm^{242}, and Co^{60}. The thermal capacity of these blocks lies within the range 1-1000 watts. An empirical formula was derived and tested for the power yield in an isotopic (thermal) block. Also discussed is biological protection during development and construction of isotope power sources containing kilocurie amounts of radioactive heat. In dealing with the conversion of radioactive decay energy, the thermoelectric method was found to be most fully mastered at present: low-temperatures semiconductor materials (up to 300°C) have been obtained with quite high efficiencies (5-8%), as well as medium-temperature (300-700°C) and high-temperature (higher than 700°C) semiconductor materials. Combining different materials in the form of cascade elements already permits attainment of 12-15% conversion efficiency in prototypes. Demands of minimum weight and size and also low background of attendant neutron and gamma-radiation led to construction of portable generators of the MIG-67 type based on Pu^{238}. The unique properties of Cm^{242} and Po^{210} (high specific power yield and fairly low-gamma-radiation intensity) made feasible construction of isotopic thermoelectric generators using cascaded converters with efficiencies of 8-10% in the 300-850°K range.

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FRADKIN, G. M., BREZHNEVA, N. YE., YERSHOVA, Z. V., BOGDANOV, N. I. (Deceased), KUDYUKOV, V. M., VORONIN, A. N., KOZLOV, A. G., MALYKH, YU. A., NIKIPELOV, B. V., RAGOZINSKIY, A. I., FEDOROV, V. V. and CHUSHKIN, YU. V., State Committee for the Use of Atomic Energy USSR

"Advancement of Research in the Field of Nuclear Power Engineering in the USSR (Report Presented at the Fourth United Nations International Conference on the Peaceful Uses of Atomic Energy held 6 to 16 September 1971 in Geneva)"

Moscow, Atomnaya energiya, Vol 31, no 4, Oct 71, pp 358-365

Abstract: This report cites data on the Soviet development of the thermoelectric generators designed for feeding oceanographic and navigation devices, hydrographic, automatic, radiometeorological, magnetic variation stations, high-mountain cosmic ray stations, and other scientific research land stations. The report covers the scientific and technical fundamentals of such energy sources and cites the characteristics of some generators. Discussed in some detail are various aspects of radio isotopic fuels, selection, properties, distinctive characteristics, evaluation, requirements, cost factors, availability, handling safety factors, and forms of applica-

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FRADKIN, G. M., et al, Atomnaya energiya, Vol 31, no 4, Oct 71, pp 358-365

tion. The potential use of extraction separation of alkali-earth elements for obtaining pure strontium is noted. A table lists the comparative characteristics of various isotopes having potential use in thermoelectric generators. Much consideration is given to topics dealing with energy release in an isotopic unit, biological protection, radioactive decay energy conversion, thermal flow chart selection, and generator designs. Described and illustrated are some thermoelectric generators of various designations (using Ce^{144}, Cs^{137}, Sr^{90}, Pu^{238}, $Cm^{242}(Po^{210})$) including Beta-1, Beta-2, Beta-C, Efir, Penguin, MIG-67 (portable-type), and generators with cascade converters. (8 illustrations).

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USSR UDC 621.039.574.5

TERENT'YEV, V. P., ZHARKOV, V. A., ERADKIN, G. M., and CHAVYCHALOVA, T. P.

"Optimal Irradiation Modes in Isotope Production"

Moscow, Atomnaya energiya, Vol 29, No 4, Oct 70, pp 260-264

Abstract: In response to the need for developing economically favorable modes for obtaining radioisotope energy through irradiation, the authors use as the criterion for such modes minimum expense for obtaining the required isotope and the maximum value of energy output. In this process, a fairly stable initial isotope is bombarded by neutrons to form an intermediate isotope, which quickly decays to form the energy-producing result. The authors write an equation for the expense incurred in obtaining one gram-atom of the fuel isotope, and three equations for the irradiation expense which apply in most practically important cases. They also find an equation for determining the required irradiation duration. Curves are plotted for the optimal output of the original and fuel isotopes under neutron irradiation, and a table of various isotopes and corresponding parameters for optimal irradiation modes is reproduced.

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F

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UDC 621.362.2

FRADKIN, G. M., KODYUKOV, V. M., RAGOZINSKIY, A. I., KOROTKOV, N. P., KAZAR[illegible], Ye. A.

"Operational Characteristics of Type 'Beta-1' and (Beta-2' Isotopic Thermoelectric Generators"

Tr. Vses. n.-i. in-ta radiats. tekhn. (Works of the All-Union Scientific Research Institute of Radiation Technology), 1970, vyp. 4, pp 351-359 (from RZh-Elektrotekhnika i energetika, No 9, Sep 70, Abstract No 9A150)

Translation: The "Beta-1" and "Beta-2" experimental isotopic thermoelectric generators are designed for supplying electric power to ARMS-M automatic radiometeorological stations. The basic parameters of the "Beta-2" are given in the accompanying table. The generator is operationally reliable. The service life is set at five years or more. Eight illustrations, bibliography of two titles.

Abstract includes table on p A-20: Наполнитель = filler; Аргон = argon; $T_{окр}$ = ambient temperature; b = volts; вт = watts; $Z_{вн}$, ом = internal impedance, ohms; $R_н$, ом = load resistance, ohms. Ксенон = Xenon

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USSR

UDC 616.988.13+616.988.25]-092.9-07:616.155.34-076.5

VASIL'YEVA, O. A., FRADKIN, V. A., and SHIPULINA, N. I., Tomsk Institute of Vaccines and Sera and State Control Institute of Bioradical Preparations imeni L. A. Tarasevich, Moscow

"Index of Neutrophil Injury as a Test of Sensitivity to Smallpox and Tick-borne Encephalitis Vaccines"

Moscow, Laboratornoye Delo, No 12, 1972, pp 730-732

Abstract: The index of neutrophil injury (INI) (the criterion of injury is the amoboid activity of the cells) is a promising method of detecting specific sensitivity to smallpox and tickborne encephalitis vaccines. Amoboidism is determined from the formula $\frac{H-H_1}{100}$, where 100 is the number of neutrophils counted in each smear, H is the number of injured neutrophils in a specimen, and H_1 is the same number in the control. The INI ranged from 0.07 to 0.30 and from 0.02 to 0.09 in rabbits inoculated with smallpox and tickborne encephalitis vaccines, respectively, compared to 0.03 to 0.30 and 0.02 to 0.04 in the control. In children vaccinated with smallpox vaccine at age 1-2 and revaccinated at 8 or 15, the average INI was 0.05 (maximum 0.12) in those vaccinated for the first time, 0.16 (maximum 0.22) and 0.25 (maximum 0.3) in 1/2

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VASIL'YEVA, O. A., et al., Laboratornoye Delo, No 12, 1972, pp 730-732

those revaccinated at 8 and 15. In the control (nonvaccinated) group, the INI varied from 0.02 to 0.03.

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FRADKINA, V.I.

JPRS: 58876
27 Apr. 73

(2)

UDC: 616-036.86-057:62(470.23)

CHARACTERISTICS OF OCCUPATIONAL DISABILITY AMONG LENINGRAD INDUSTRIAL WORKERS

[Article by A.Ya. Yurkevich, Candidate of Medical Sciences, V.I. Fradkina, Leningrad Institute of Industrial Hygiene and Occupational Pathology, Leningrad VTEK* for Occupational Pathology; Moscow, Sovetskoye Zdravookhraneniye, Russian, No 3, 1973, submitted 5 September 1972, pp 21-24]

Investigation of the distinctions and dynamics of occupational disability plays a certain part of prevention of such disability. The data on disability reflect to some extent working conditions and effectiveness of health-improving measures. There are unjustifiably few works dealing with this subject, and the rare publications deal only with a narrow circle of problems.

For two years we followed up the outcome of occupational pathology in all patients picked up in Leningrad in 1968 and 1969. All of the patients undergo comprehensive work-up at the Leningrad Institute of Industrial Hygiene and Occupational Pathology or the occupational disease clinic of Leningrad Sanitary and Hygienic Medical Institute, in some cases repeatedly, and there the diagnosis is made; the question of necessity of transfer to disability status is settled definitively in a special VTEK*(medical commission for expert evaluation of disability) for occupational disease (organized in 1967). All this provided for proper diagnosis, substantiated therapeutic and work recommendations, and accordingly completeness of gathered data.

For each patient registered by the municipal sanitary and epidemiological station in 1968 and 1969 a statistical card was made up which was supplemented by information from his case history (with respect to need of temporary or permanent job placement, severity of illness, etc.) and VTEK documents regarding transfer to disability status of these patients in 1968-1969 and 1969-1970 respectively.

In order to determine the level, structure, and other distinctions of occupational morbidity referable to specific branches of industry and among workers in different occupations, of different sex, and age, cards were worked out for all patients registered in the two years. This approach

guaranteed greater accuracy and comparability of data than obtaining truly information about morbidity.

It was learned that there was prevalence of pathology due to physical exertion (primarily referable to the hands), namely: pathology of the musculo-nervous system (tendomyositis, epicondylitis, ligamentitis) and peripheral nervous system (primarily vegetative polyneuritis, less often neuritis and plexitis); then follow vibration sickness, dermatosis, chronic intoxication, pneumoconiosis, neuritis of the auditory nerve. The metal working industry which employs the largest number of workers "delivered" about 40 percent of the patients (the other 15 branches of industry each delivered 3-5 percent). and the intensity of morbidity was not high. Most of the patients were referable to a limited set (about 20) of occupations. In most subjects illness was detected at early stages and was usually mild. Before making the final decision as to possibility of continuing work in his specialty or need for permanent rational job placement, the patient underwent the necessary treatment: temporary transfer to a job that would not involve exposure to the factor that caused illness is widely practiced. Almost all individuals suffering pathology related to physical overexertion received such transfers; more than 80 percent of the patients with vibration sickness, dermatosis, and chronic intoxications, the mean constituting 62 percent of the patients (in the case of pneumoconiosis and neuritis of the auditory nerve an occupational medical certificate is not issued).

As we know the level of primary disability,especially related to occupational disease, is determined considerably by the possibilities with regard to employment of the sick. Precisely these data reflect most accurately and fully the consequences of occupational disease.

Analysis revealed that a mean of 39 percent of the patients acquire rational job placement within the first 2 years after establishing the existence of an occupational disease. Apparently upon further observation there will be more such patients. The highest percentage (56) of individuals requiring a change of occupation were those suffering from dermatosis and pneumoconiosis. With such pathology a need for such a transfer becomes obvious quite soon. In the case of vibration sickness and occupational hand pathology due to strain 23-26 percent of the patients required rational job placement within the last few years. The nature of illness and initiated therapeutic and preventive measures allow many of them to remain on their job for a longer time. A change of occupation was required for about 20 percent of the sick battery assemblers and insulation installers, 25 percent of the casting molders and spinners, one-third of the foundry cleaners, cutters, machine operators, fitters, electric arc welders, and meat handlers, almost 50 percent of the concrete workers, pressers, painters and planterers, and most sand blasters and metal shot blasters.

Most of the patients belong to 17 occupational groups. There were relatively many (25.5%) patients (sand and metal shot blasters, casting cleaners, cutters, fitters, concrete workers, polishers, and electric arc

1/2 030 UNCLASSIFIED PROCESSING DATE--07OCT70

TITLE--MEASUREMENT OF THE BRIGHTNESS TEMPERATURE OF THE EARTH'S ATMOSPHERIC EMISSION IN THE SUBMILLIMETER BAND FROM A HEIGHT OF 35 KM

AUTHOR-(05)-LAPSHIN, V.I., SALOMONOVICH, A.E., SOLOMONOV, S.V., TROITSKIY, V.F., FRADKOV, A.B.

COUNTRY OF INFO--USSR

SOURCE--IZVYUZ, RADIOFIZIKA, VOL. 13, NO. 3, 1970, P. 388-394

DATE PUBLISHED-------70

SUBJECT AREAS--NAVIGATION, PHYSICS, ATMOSPHERIC SCIENCES

TOPIC TAGS--RADIOMETER, RADIO BRIGHTNESS TEMPERATURE, SUBMILLIMETER WAVE, RADIO EMISSION, ATMOSPHERIC RADIATION

CONTROL MARKING--NO RESTRICTIONS

DOCUMENT CLASS--UNCLASSIFIED
PROXY REEL/FRAME--1991/0846 STEP NO--UR/0141/70/013/003/0388/0394

CIRC ACCESSION NO--AP0110567
UNCLASSIFIED

2/2 030 UNCLASSIFIED PROCESSING DATE--02OCT70

CIRC ACCESSION NO--AP0110567

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. DESCRIPTION OF A RADIOMETER AND THE RESULTS OF PRELIMINARY MEASUREMENTS OF THE BRIGHTNESS TEMPERATURE OF THE EARTH'S ATMOSPHERIC EMISSION, TAKEN AT A HEIGHT OF 35 KM AT WAVELENGTHS FROM 0.5 TO 2MM. THE SENSITIVE ELEMENTS OF THE RADIOMETER CONSISTED OF N-TYPE INSB PHOTORESISTORS COOLED TO LIQUID HELIUM TEMPERATURE. ANGULAR DISTRIBUTIONS OF BRIGHTNESS TEMPERATURE WERE OBTAINED IN THE VERTICAL PLANE. THE NATURE OF THE DISTRIBUTION AND THE RELATIVELY LOW BRIGHTNESS TEMPERATURE INDICATE THAT THE MAIN CONTRIBUTION TO THE SUBMILLIMETER RADIATION IS MADE BY THE RELATIVELY COLD UPPER LAYERS OF THE ATMOSPHERE. FACILITY: AKADEMIIA NAUK SSSR, FIZICHESKII INSTITUT, MOSCOW, USSR.

UNCLASSIFIED

USSR

FRADKOV, A. L.

"Duality Theorems in Certain Non-Convex Extreme Problems"

Sib. mat. zh. [Siberian Mathematics Journal], 1973, 14, No 2, pp 357-383 (Translated from Referativnyy Zhurnal - Kibernetika, No 8, 1973, Abstract No 8 V482 by the author)

Translation: The following problem is studied. Find the conditions which must be satisfied by real functions $F(x)$, $G_1(x),\ldots,G_n(x)$ and the set in which they are fixed X, in order for the relationship

$$F(x)\geq 0 \quad \text{where} \quad G_1(x)\geq 0,\ \ldots,\ G_m(x)\geq 0,\quad x\in X, \tag{1}$$

to indicate that there exists non-negative τ_j, $j=1,\ldots,m$, for which

$$F(x)-\sum_{j=1}^{m}\tau_j G_j(x)\geq 0,\quad x\in X. \tag{2}$$

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FRADKOV, A. L., Sib. mat. zh., 1973, 14, No 2, pp 357-383

Obviously, (2) leads to (1). The problem consists in explaining when (1) and (2) are equivalent. The correctness of the statement that (1) indicates (2) is related to the correctness of the theorem of duality in a certain problem of mathematical programming; the non-convex case is most interesting for practical application. A number of necessary and sufficient conditions for equivalents of (1) and (2) are established (in different terms). The case of strict inequality $F(x)>0$ in (1) is studied, as well as the case of limitations in the form of equations. Using the criteria produced, a new proof is presented for the known results that where m=1, (1) always leads to (2), if F(x) and G(x) are sign-changing quadratic (Hermitian) forms in real (complex) linear space X, as well as a new proof of the recently produced result that with certain natural limitations, (1) leads to (2) in the case when m-2 and F(x), $G_1(x)$, $G_2(x)$ are Hermitian forms in a complex linear space. We note that if m=2 and F(x), $G_1(x)$, $G_2(x)$ are real quadratic forms in a real linear space, then (1) generally does not lead to (2). It is

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FRADKOV, A. L., Sib. mat. zh., 1973, 14, No 2, pp 357-383

shown that these results are simple results from the Euclidean geometry of the space of quadratic forms with the convex cone of non-negative forms lying within it. Furthermore, a number of results are produced concerning cases when (1) does indicate (2). They are used as a basis for full solution of the problem for the case when $F(x)$, $G_1(x),\ldots,G_n(x)$ are quadratic or Hermitian forms of two variables, and the case is also studied when $m=1$ and $F(x)$, $G(x)$ are fourth-power forms of two real variables.

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USSR

FRADKOV, A. L., YAKUBOVICH, V. A.

"S-Procedure Relationship of Duality in Nonconvex Problems of Quadratic Programming"

Vestn. Leningr. Un-ta [Leningrad University Herald], 1973, No 1, pp 81-87 (Translated from Referativnyy Zhurnal Kibernetika, No 6, 1973, Abstract No 6V520, by the authors).

Translation: The following problem is studied. In set X, the real functions $F(x)$, $G_1(x),\ldots, G_m(x)$ are fixed. The problem is to determine which of conditions $F(x) \geq 0$ with $G_1(x) \geq 0,\ldots, G_m(x) \geq 0$, $x \in X$, indicates that there exist $\tau_j \geq 0$, $j = 1,\ldots, m$ for which $F(x) - \sum_{j=1}^{m} \tau_j G_j(x) \geq 0$, $x \in X$. If this is so, it indicates that for inequality $F(x) \geq 0$ with limitations $G_1(x) \geq 0,\ldots,$ $\ldots, G_m(x) \geq 0$, the S procedure is harmless if $m = 2$, X is a complex linear space, while $F(x)$, $G_1(x)$, $G_2(x)$ are quadratic functionals in X, where $G_1(x_0) > 0$, $G_2(x_0) > 0$ for a certain $x_0 \in X$. It is demonstrated that the

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Fradkov, A. L., Yakubovich, V. A., Vestn. Leningr. Un-ta, 1973, No 1, pp 81-87.

harmlessness of the S procedure in this case is related to the duality in the extremal problems. The correctness of the theorem of duality for a number of nonconvex problems of quadratic programming is established.

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USSR

UDC: 8.74

RUZHANSKIY, V. I., FRADKOV, A. L.

"On an Algorithm for Self-Instruction of Recognition Systems"

V sb. Vychisl. tekhn. i vopr. kibernet. (Computer Technology and Problems of Cybernetics--collection of works), vyp. 6, Leningrad, Leningrad University, 1971, pp 88-98 (from RZh-Kibernetika, No 1, Jan 72, Abstract No 1V1075)

Translation: The paper presents the results of experiments on distinguishing different kinds of ground fleas conducted with an algorithm of self-instruction without reward. A supplement to the algorithm is proposed which enables extension of its field of application. It is noted that in many instances it is advisable to index part of the training sequence with the exception of points which do not belong to even one of the given classes (interference points). A. Doroshenko.

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USSR UDC 669.046.58:532.73

GUREVICH, Yu. G., TOMILOV, V. I., FRAGE, N. R., and KIM, V. V., Zlatoust Branch of Chelyabinsk Polytechnical Institute

"Kinetics of Interaction of Titanium and Aluminum Nitrides With Slag Melts"

Novokuznetsk, Izv. VUZ, Chern. Metallurgiya, No 10, 1970, pp 15-17

Abstract: It is demonstrated experimentally that TiN interacts with the oxides of iron and manganese from slag, while AlN reacts with silica as well. The activation energies of the process of solution of TiN and AlN in slag melts are found. When metals are reduced from these oxides by nitrides, gaseous nitrogen is released, which may be dissolved in the liquid metal. The rate the process of interaction of nitrides with slags containing oxides of iron, manganese, and silicon is rather high.

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USSR

UDC 669.15'295-194

GUREVICH, YU. G., and FRAGE, N. R., Orenburg, Zlatoust

"On the Interaction of Titanium-Containing Steels with Atmospheric Air"

Moscow, Izvestiya Akademii Nauk SSSR, Metally, No 2, Mar-Apr 73, pp 105-108

Abstract: A thermal analysis was conducted of the formation reactions of titanium nitrides in liquid stainless steel as a result of interaction of dissolved titanium with nitrogen of the gaseous phase and with nitrogen dissolved in steel. On the basis of previously derived experimental data and using equations characterizing the cause of reactions, the isotherms of quasi-equilibrium of Ti with N and O dissolved in Kh18N10 stainless steel at 1600°C were plotted, as was the dependence between Ti and N concentration in this steel deoxidized with Al up to 0.0014-0.0016% of O content at 1600°C. With the interaction of liquid steel with air, titanium is oxidized by oxygen; therefore its interaction with N is not very likely. Titanium nitrides, which are stable up to 0.03-0.04% titanium concentration, can separate from deoxidized liquid stainless steel at 1600°C and below at certain Ti and N concentrations. Two figures, three tables, ten formulas, seven bibliographic references.

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Acc. Nr.: AP0041159

USSR

Ref. Code: UR 0121

UDC 621.923.5:621.922.023

FRAGIN, I. YE., FOMIN, A. A., MATVEVIVA, A. YE.

"The Honing of Hardened Cylinder Sleeves by Large-Grained Abrasive Blocks"

Moscow, Stanki i Instrument, No 1, 1970, pp 21-24

Abstract: The article deals with a study of the honing of hardened cylinder sleeves with large-grained abrasive blocks in order to determine the influence of the honing conditions and the structure of the blocks upon their wear and specific consumption, the productivity of the honing process and the errors in the shape of the opening. The purpose of the study was to determine the optimum grain size and hardness for the abrasive blocks. The research included investigation of the influence of specific pressure upon metal removal and block wear, the influence of the speed of the reciprocal motion upon metal removal and block wear, investigation of the influence of the peripheral velocity upon metal removal and

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block wear, determination of the relationship of ovality correction upon the cutting conditions, the effect of the machining time upon productivity and ovality correction.

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USSR

UDC 620.178.15

KISELEV, YU. A., FRAKLKENZON, A. G., and PSHENICHNIKOV, YU. V., Novosibirsk Aviation Plant imeni Chkalov, Siberian Scientific Research Institute of Metrology

"Effect of Surface Cleanliness and Form of Products on Results of Hardness Measurement"

Moscow, Zavodskaya Laboratoriya, No 4, 1973, pp 459-461

Abstract: A study was made of the dependence of Brinell, Rockwell, and Vickers hardness numbers of 30KhGSA, 30KhGSNA, VNS-5, and 45 brand steels and of V95 and AK4-1 aluminum alloys on the non-parallelism of the supporting and the investigated surfaces, the processing cleanliness, and the radius of curvature of finished products. The results are discussed by reference to diagrams and tabulated data showing the hardness by HB, HRC, HRB, HRA, and HV scales determined as an arithmetic mean from five impressions. The results indicate the existence of allowable angles of non-parallelism of surfaces and of their curvature by measuring the Rockwell hardness; they also reflect the influence of

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KISELEV, YU. A., Zavodskaya Laboratoriya, No 4, 1973, pp 459-461

surface cleanliness in hardness measuring by Rockwell, Brinell, and Vickers methods. The effect of cleanliness, non-parallelism, and curvature of the surface on the deviation of hardness numbers from actual values is explained. Three figures, one table, six bibliographic references.

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FRAKSINA V.N.

Acc. Nr: AP0049748 Abstracting Service: CHEMICAL ABST. 5/70 Ref. Code: UR0409

100421t Benzoindoles. I. Synthesis of 1-benzyl-4,9-dioxo-4,9-dihydrobenzo[f]indole. Suvorov, N. N.; Porotikova, V. A.; Fraksina, V. N. (Mosk. Khim.-Technol. Inst. im. Mendeleeva, Moscow, USSR). *Khim. Geterotsikl. Soedin.* 1970, (1), 24-6 (Russ). To 6.9 g Mg turnings in 70 ml dry anisole was added dropwise during 45 min 45 g EtI, the mixt. heated 45-60 min at 60-70° cooled, 19.6 g pyrrole in 70 ml anisole added during 30 min, stirred 15 min at room temp., then at 50-60° till bubbles of C_2H_6 ceased to evolve, 43.4 g phthalic anhydride in 140 ml anisole added in 2-3 min at room temp. and the mixt. heated 1-1.5 hr on a boiling water-bath to give 18.8 g *o*-(2-pyrrolecarbonyl)benzoic acid (I), m. 184-5°, and 3 g II, b_{10} 240°, m. 240-1° (Me_2CO). Attempts at reducing the keto-group in I to CH_2-group gave a product which produced a characteristic bluish-violet color with Ehrlich reagent, but the free reduced acid or its salt was not iso-

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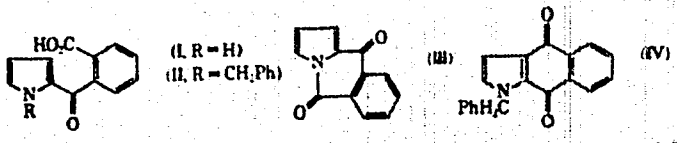

lated. A mixt. of 2.15 g I, 40 ml 35% KOH, and 6.5 g $PhCH_2Cl$ was boiled 6 hr to yield 2.45 g III, m. 139–40° (C_6H_6). To 1.6 g III in 200 ml warm *o*-xylene was added in small portions during 30 min 10 g P_2O_5 and the mixt. boiled 1.5 hr to give 0.3 g title compd. (IV), m. 178–9° (alc.). S. K. Banjerjee

19801662

USSR UDC: 632.95

PINAMONTA, FRANCO and MACCONE, SERGIO, Montecatini, Joint Stock Company of the Mineral and Chemical Industry (Italy)

"A Method for Preparing Liquid Insecticides"

USSR Author's Certificate No 248575, filed 23 Jul 62, published 8 Jan 70 (from RZh-Khimiya, No 22, 25 Nov 70, Abstract No 22 N659 P by P. V. Popov)

Translation: To prepare liquid concentrated preparations containing as an active insecticidal substance O,O-dimethyldithiophosphotylacetic acid monomethylamide and a surfactant, phenol, Cellosolve acetate, Carbitol acetate, and o--cresol are added to stabilize the active substance.

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USSR

UDC 541.49:547.553.1:547.355.9

NESMEYANOV, A. N., PEREVALOVA, E. G., KRIVYKH, V. V., KOSTINA, A. N., ERALIEV, K. I., and SHCHUPOVA, E. I., Moscow State University imeni M. V. Lomonosov

"Triphenylphosphine Complexes of Benzyl- and Vinylgold"

Moscow, Izvestiya Akademii Nauk SSSR, Seriya Khimicheskaya, No 3, 1972, pp 653-654

Abstract: Alkyl and aryl compounds of monovalent gold are stable only in the form of triphenylphosphine complexes. The benzyl compound was synthesized according to the reaction

$$C_6H_5CH_2MgCl + Cl\,Au \cdot P(C_6H_5) \longrightarrow C_6H_5CH_2Au \cdot P(C_6H_5)_3$$

The yield was 85% in toluene and 40% in tetrahydrofuran. The nmr spectrum of the product indicated a proton signal in the phenyl group (in the range of 6.9-7.3 m.d.) and two signals from the methylene group (in the range of 2.54 to 2.76 m.d.). By using the double nuclear magnetic resonance of H^1-P^{31}, it was shown that the interaction of the protons from the methylene group with phosphorus caused peak splitting. The vinyl compound was obtained from the reaction

$$CH_2 = CHMgBr + Cl\,Au \cdot P(C_6H_5)_3 \xrightarrow[50^\circ]{THF} CH_2 = CH\,Au \cdot P(C_6H_5)_3$$

The yield was 90%. 1/1

UDC: None

USSR

YEROZOLIMSKIY, B. G., BONDARENKO, L. N., MOSTOVOY, Yu. A., OBINYAKOV, B. A., FEDUNIN, V. P., and FRANK, A. I.

"Measurement of Neutron Spin-Electron Impulse Angular Correlation in the Decay of Polarized Neutrons"

Moscow, Pis'ma v Zhurnal Eksperimental'noy i Teoreticheskoy Fiziki, vol. 13, No. 7, 5 April 1971, pp 356-359

Abstract: This letter offers an experimental method for precise measurement of the angular correlation coefficient in the beta decay of neutrons. To avoid errors due to proton recoil and other factors, the operating part of the neutron beam in the experimental apparatus is separated out by a diaphragm from the electron detector, and the recording of all decay protons corresponding to the recorded electrons is thus guaranteed. A cross-sectional sketch of the apparatus is given. The polarization coefficient of the neutron beam, measured by the Stern-Gerlach method, was 0.77 ± 0.02 at an intensity of $3 \cdot 10^{7}$ neutrons/sec. The

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YEROZOLIMSKIY, B. G., et al, Pis'ma v Zhurnal Eksperimental'noy i Teoriticheskoy Fiziki, vol. 13, No. 7, 5 April 1971, pp 356-359

experimental work was done in the IRT-M reactor of the Institute of Atomic Energy imeni I. V. Kurchatov. The authors express their gratitude to P. Ye. Spivak for his interest; to A. I. Afonin, A. G. Roshchin, A. Yu. Kulikov, and S. I. Kuznetsov for setting up the equipment and making measurements; and to the personnel under the direction of V. P. Chernyshevich, in charge of the IRT-M reactor.

USSR

UDC 621.217.7.087.92-932

FRANK, G. A., and CHISTAKOV, Yu. D.

"On the Possibility of Making Precision Thin-Film Voltage Dividers for Digital Measuring Instruments"

Sb. nauch. tr. po probl. mikroelektron. Mosk. in-t elektron. tekhn. (Collected Scientific Works on Problems of Microelectronics. Moscow Institute of Electronic Technology), 1972, vyp. 8, pp 165-173 (from RZh-Avtomatika, Telemekhanika i Vychislitel'naya Tekhnika, No 9, Sep 72, Abstract No 9A112)

Translation: The authors consider requirements for the most typical resistor ratio circuits used in digital measuring instruments and investigate the possibility of making voltage dividers by thin-film techniques. Technological particulars which improve the electrophysical properties of voltage dividers are presented. Two illustrations, bibliography of one title. Resumé.

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Acc. Nr: AP0034718 F Ref. Code: UR 0241 1

PRIMARY SOURCE: Meditsinskaya Radiologiya, 1970, Vol 15, Nr 2, pp 29-34

THE RESULTS OF CHEMORADIATION TREATMENT OF OSTEOGENIC SARCOMAS OF BONES OF THE EXTREMITIES

Volkova, M. A; Kuznetsova, I. P.; Kolyadyuk, I. V.; Pel'man, S. G.; Frank, G. A.

The paper carries the results of treating 28 patients who were subjected to telegammatherapy and then chemotherapy by the method of regional perfusion. After the end of treatment the follow-up period comprised 2—3 years. In one half of the patients during the first year after treatment there was noted a recurrence of the neoplastic growth, in 4 of them with te simultaneous appearance of metastases in the lungs. Five patients are alive without signs of the disease, two of them with a preserved extremity. The above-mentioned technique may be recommended as palliative if the patient refuses an amputation of as the first stage of combined treatment.

D.M.

1/1 REEL/FRAME 02

19711424

Biophysics

USSR

BERESTOVSKIY, G. N., LIBERMAN, Ye. A., LUNEVSKIY, V. Z., and FRANK, G. M.,
Institute of Biological Physics, Academy of Sciences USSR

"Optical Studies on Changes in the Structure of the Nerve Membrane During the Conduction of Nerve Impulses"

Moscow, Biofizika, No 1, 1970, pp 62-68

Abstract: During action potential there is a change in the birefringence of the nerve fiber membrane due to change in the electric field in the membrane. At the peak of action potential, the birefringence of the membrane increases by $1.5 \cdot 10^{-4}$ and the value of the optical effect recorded is inversely proportional to the diameter of the axon. Changes in birefringence of phospholipid membranes are due to changes in their structure following displacement of the fat-soluble ions by the electric field and not to the direct action of the field on the lipid or protein part of the membrane. The mechanism of change in permeability of a nerve membrane may be similar to the mechanism of ion migration across these phospholipid membranes.

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FRANK, G.M.

"Tasks of Contemporary Biophysics"

Moscow, Biofizika, Vol 15, No 2, 1970, pp 195-197

Abstract: Modern biophysics includes molecular biophysics, cellular biophysics, and the biophysics of control systems. Its task is to analyze phenomena occurring in even the most complex biological systems on the molecular level. Therefore, physical and physicochemical research is invaluable as a giant step toward decoding the molecular basis of complex processes. Progress in instrument technology and in mathematical modeling generated progress in biophysics. Now, biophysics formulates and recommends physicochemical aspects, theoretical approaches, and experimental methods to other biological sciences, and simultaneously functions as a cementing factor. Its leading role will continue to grow. We may mention two biological areas where biophysics is particularly important. One is the study of homeostasis and control, not only on the neural and enzymatic level, but also on the basis of cell membranes and the recently discovered submicroscopic intracellular membranes. The second area is in-vitro reproduction of certain cellular processes, especially synthesis; progress in this research will be of great economic significance for the chemical industry. As more information

APPROVED FOR RELEASE: 09/17/2001 CIA-RDP86-00513R002200820008-9"

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FRANK, G.M., Biofizika, Vol 15, No 2, 1970, pp 195-197

is gathered, computers for data processing and analysis become indispensable. Less research should be done on dead fragments and more on intact organisms. Biophysics should supply not only new research instruments, but also new theoretical approaches, research programing, and statistical evaluations of results. Lenin's concepts of transformations and trends in sciences enable us to outline prospects for biophysics and evaluate its significance for other biological disciplines.

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1/2 023 UNCLASSIFIED PROCESSING DATE--16OCT70

TITLE--OPTICAL STUDIES OF THE CHANGE IN THE STRUCTURE OF NERVE MEMBRANE DURING NERVE IMPULSE TRANSMISSION -U-

AUTHOR-(04)-BERESTOVSKIY, G.N., LIBERMAN, YE.A., LUNEVSKIY, V.Z., FRANK, G.M.

COUNTRY OF INFO--USSR

SOURCE--BIOFIZIKA 1970, 15(1), 62-8

DATE PUBLISHED--------70

SUBJECT AREAS--BIOLOGICAL AND MEDICAL SCIENCES

TOPIC TAGS--CRAYFISH, NEURON, CELL MEMBRANE, PHOSPHOLIPID, LIGHT REFRACTION

CONTROL MARKING--NO RESTRICTIONS

DOCUMENT CLASS--UNCLASSIFIED

PROXY REEL/FRAME--1996/0625 STEP NO--UR/0217/70/015/001/0062/0068

CIRC ACCESSION NO--AP0117851

UNCLASSIFIED

2/2 023 UNCLASSIFIED PROCESSING DATE--16OCT70

CIRC ACCESSION NO--AP0117851

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. IN ISOLATED ABDOMINAL AND FOOT NERVE FIBERS AND GIANT AXONS OF ASTACUS ASTACUS (CRAYFISH), THE ACTION POTENTIAL PEAK INCREASED BIREFRINGENCE OF THE NERVE FIBER MEMBRANE. IN EXPTS. IN WHICH A BOVINE BRAIN BIMOL. PHOSPHOLIPID MEMBRANE WAS USED ALONE, THE BIREFRINGENCE CHANGES CAN BE EXPLAINED AS THE ACTION OF AN ELEC. FIELD ON IONS DISSOLVED IN MEMBRANE LIPIDS BUT NOT AS THE ACTION OF ELEC. CURRENT ON THE LIPID OR PROTEIN PART OF THE MEMBRANE. IT IS SUPPOSED THAT THE MECHANISM OF BIREFRINGENCE CHANGES IS SIMILAR TO THE MECHANISM OF ION TRANSPORT ACROSS THESE MEMBRANES. FACILITY: INST. BIOL. PHYS., PUSCHINO, USSR.

UNCLASSIFIED

USSR

BENETSKIY, B. A., NEFEDOV, V. V., FRANK, I. M., and SHTRANIKH, I. V.,
Institute of Nuclear Research, Academy of Sciences USSR

"Interaction of 13-17-Mev Neutrons With Lead Isotopes"

Moscow, Yadernaya Fizika, Vol 17, No 1, 1973, pp 21-23

Abstract: For purposes of studying the interaction of neutrons with heavy nuclei in the vicinity of filled shells, the authors investigated the total neutron cross-sections σ_T for $Pb^{206,207,208}$. The results of these experiments were reported at the Twenty-Second All-Union Conference on Nuclear Spectrometry. A resonance peculiarity is observed in the behavior of σ_T for Pb^{207} at a neutron energy of 16.8 Mev (16.7 Mev c.m.s.), which corresponds to excitation of the compound nucleus Pb^{208} equal to $\varepsilon = 24.1$ Mev. The position of the resonance, the order of its width and the character of the peculiarity in the variation of the elastic scattering cross-section with energy suggest the excitation of analog fast-neutron capture resonance.

The authors thank V. A. ROZOVSKIY and V. P. MALIKOV, who took part in the work, and F. L. SHAPIRO, G. Ye. BELOVITSKIY, I. Ya. BARIT, V. I. POPOV, and V. A. SERGEYEV for discussing the work and for their interest in it.
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USSR

BELOVITSKIY, G. Ye., KOLESNIKOVA, L. N., and FRANK, I. M., Institute of Nuclear Research of the Academy of Sciences USSR

"Angular Distribution of 13.7-Mev Neutrons in Elastic Scattering by $Pb^{206, 207, 208}$ Isotopes"

Moscow, Yadernaya Fizika, No 4, Apr 72, pp 662-665

Abstract: The differential cross sections for elastic scattering of 13.7-Mev neutrons by $Pb^{206, 207, 208}$ isotopes were measured and compared. All measurements were conducted under identical conditions. The angular distributions for the three isotopes were the same within the limits of the measurement accuracy (~20%). This is explained by the fact that neutron scattering by heavy nuclei is basically potential scattering. A comparison of the experimental data with calculations based on the optical model yielded satisfactory agreement. The agreement was best for scattering angles less than 110° but the experimental cross sections were higher than the theoretical cross sections for larger angles. This is attributed to the fact that a correction for multiple scattering was not introduced into the experimental data. Since the lead isotopes behave identically within the limits of the experimental accuracy, it is concluded that the good approximation of the experimental data

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BELOVITSKIY, G. Ye., et al., Yadernaya Fizika, No 4, Apr 72, pp 662-665

to the theoretical curve supports the validity of the experimental determination not only of the relative but also of the absolute values of the differential cross sections of the elastic scattering that were obtained. The similarity of the angular distributions for the three isotopes is said to be caused by the fact that elastic scattering by heavy nuclei for neutrons with energies of about 14 Mev is basically potential and is therefore not greatly different when the number of nucleons changes by 1-2 units.

USSR

BELOVITSKIY, G. Ye.; KOLESNIKOVA, L. N.; FRANK, I. M. (Institute of Nuclear Research, USSR Academy of Sciences)

"Inelastic Scattering of Neutrons with an Energy of 13.7 Mev by Isotopes of Lead"

Moscow, Yadernaya Fizika; April, 1972; pp 666-9

ABSTRACT: The authors measured the energy spectra for the inelastic scattering of 13.7 Mev by $Pb^{206,207,208}$ isotopes. A well-defined group corresponding to 2.6-Mev (3^-)-level excitement was observed in all the energy spectra. The angular distributions of the neutrons for the inelastic scattering with excitation of the well-known (3^-)-level in $Pb^{206,207,208}$ agree within the limits of accuracy of the measurements. The angular distributions were compared with ones calculated for the optical model in a distorted wave approximation. The value of the octupole deformation parameter $\beta_3 = 0.16 \pm 0.02$ was obtained for Pb^{208}.

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USSR UDC: None

KOBZEV, A. P., MIKHALYAK, S., RUTKOVSKI, Ye., and FRANK, I. M.

"Optical Radiation Excited by Nonrelativistic, Charged Particles on Metal Surfaces"

Moscow, Yadernaya Fizika, vol 15, No 2, 1972, pp 326-333

Abstract: The phenomenon of radiation in the visible and ultraviolet ranges of the spectrum from metal surfaces excited by charged particles has been observed in experiments in which silver, gold, and aluminum targets were bombarded by protons with energies of up to 4.5 Mev, with the radiation observed at an angle of 86° with the normal to the target surface. These results were found to be in agreement with the theory of transitional radiation. The purpose of the present article is to obtain additional arguments for the detection of transitional radiation by comparing measurements made in bombarding the same targets with protons and electrons. The measurements were made using protons at an energy level of 1.5-4.5 Mev, and electrons with levels of 0.5-15 kev. A description of the equipment is

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KOBZEV, A. P., et al., Yadernaya Fizika, Vol 15, No 2, 1972, pp 326-333

given together with an explanatory diagram, and the method of measurement is explained. The authors conclude that their experiments provide additional proof of the usefulness of the transitional radiation theory.

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USSR

UDC 612.015:615.739:577.158

VITOLIN', S. P., STEPCHKOV, K. A., FRANK, YE. L., and KREMER, YU. N., Riga Medical Institute and All-Union Scientific Research Institute for the Biosynthesis of Proteins

"Utilization of Nonnutritive Proteins in Human and Animal Nutrition. II. Yeast Proteins as a Source of Nutritive Nitrogen"

Riga, Izvestiya Akademii Nauk Latviyskoy SSR, No 2, 1971, pp 71-77

Abstract: The nutritive value of yeast preparations obtained by enzyme hydrolysis from Torula utilis in combination with various bread grains was studied in weanling rats. The growth of rats fed yeast, wheat flower, and fibrin (4:5:1 or 5:4:1) enriched with methionine was virtually indistinguishable from the control which received casein. A combination of yeast and barley groats or rice (6:4) manifested a much higher anabolic efficiency than did casein. The animals gained 48 and 38 g, respectively, in 10 days compared with 31 g in the control kept on the casein diet. A combination of whole blood proteins, yeast, and casein (3:4:3) or 5:4:1) resulted in weight gains equal to those produced by casein alone. It would appear, therefore, that nonnutritive proteins can be converted into nutritive forms and that the biological efficiency of plant proteins can be enhanced by combining them with a nonnutritive substance like yeast. 1/1

1/2 021 UNCLASSIFIED PROCESSING DATE--16OCT70

TITLE--DIOLS AS A SOURCE OF ENERGY IN ORAL AND PARENTERAL ALIMENTATION -U-

AUTHOR-(03)-KREMER, YU.N., VITOLINYA, S.P., FRANK, YE.L.

COUNTRY OF INFO--USSR

SOURCE--VOPROSY PITANIYA, 1970, NR 3, PP 62-67

DATE PUBLISHED--------70

SUBJECT AREAS--BIOLOGICAL AND MEDICAL SCIENCES

TOPIC TAGS--POLYHYDROXY ALIPHATIC ALCOHOL, DIET, ANIMAL PHYSIOLOGY, RAT, DOG

CONTROL MARKING--NO RESTRICTIONS

DOCUMENT CLASS--UNCLASSIFIED

PROXY REEL/FRAME--1998/0003 STEP NO--UR/0244/70/000/003/0062/0067

CIRC ACCESSION NO--AP0120703

UNCLASSIFIED

2/2 021 UNCLASSIFIED PROCESSING DATE--16OCT70

CIRC ACCESSION NO--AP0120703

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. THE EFFECTIVENESS OF USING 1,3,BUTANDIOL (BD) AND 1,2,PROPANDIOL (PD) AS A SOURCE OF ENERGY IN ORAL FEEDING WAS STUDIED ON WEANED RATTLINGS. BOTH DIOLS, LIKE SORBITE (SORBITOL), REPLACED (IN TERMS OF ISOCALORIES) 10 OR 20PERCENT OF SACCHAROSE IN SEMISYNTHETIC ANIMAL RATIONS. THE LATTER WERE GIVEN FOR 10 DAYS. THE WEIGHT GAIN OF THE ANIMALS KEPT ON A DIET CONTAINING BUTANDIOL (10 OR 20PERCENT) WAS NOT INFERIOR TO THAT IN ANIMALS OF CORRESPONDING CONTROL GROUPS. THE GROWTH RATE OF RATTLINGS IN WHOSE RATION 10PERCETN OF SACCHAROSE WAS REPLACED BY PD WAS HIGHER AND OF THOSE WITH 20PERCENT REPLACEMENT LOWER THAN IN THE CASE OF CONTROL DIET. THE TEN PERCENT OF SORBITE WHICH SUBSTITUTED CORRESPONDING AMOUNTS OF SACCHAROSE PRODUCED A MARKED INHIBITION OF GROWTH, WHILE A 20PERCENT REPLACEMENT RESULTED IN DEATH OF THE ANIMALS. INTRAVENOUS INJECTION TO DOGS OF A BD OR PD MIXTURE WITH GLUCOSE (IN A RATIO OF 1:1 IN TERMS OF CALORIES) AT THE RATE OF 50 GREAT CALORIES PER 1 KG OF BODY WEIGHT SHOWED THE NITROGEN BALANCE FIGURES TO BE NOT ANY LOWER THAN AFTER INTRODUCTION OF CALORIES EQUIVALENT AMOUNTS OF GLUCOSE, THIS PROVING THAT BOTH DIOLS ADMINISTERED PARENTERALLY ARE WELL ASSIMILATED BY THE CANINE ORGANIZM AS A SOURCE OF ENERGY. FACILITY: KAFEDRA BICKHIMII I TSENTRAL'NAYA N-I LABORATORIYA RIZHSKOGO MEDITSINSKOGO INSTITUTA.

UNCLASSIFIED

USSR

UDC:621.317.421

GORSKAYA, E.M., SKRYNNIKOV, R.G. and
FRANK-KAMENETSKIY, A.V.

"Measurement of Magnetic Induction During Pendulum Oscillations of Magnetometer Measurement Trans former"

Moscow, Metrologiya, 1973, No 4, pp 73-79

Abstract: The subject magnetometer consists essentially of a pendulum oscillating in the magnetic field to be measured. The voltage generated in a coil mounted on the pendulum is proportional to the magnetic field. Three problems related to this magnetometer are solved: 1. With the pendulum oscillating in the plane of the magnetic meredian, the mean voltage for one period of oscillation is derived, the expression of errors committed by averaging the voltage for a fraction of a period is given. 2. The effect of the magnetic moment of the magnetometer base is analysed. 3. The effect of oscillations of the magnetometer base is investigated.

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1/2 023 UNCLASSIFIED PROCESSING DATE--23OCT70

TITLE--THE SCIENCE OF TIME -U-

AUTHOR--FRANKKAMENETSKIY, D.A.

F

Deceased

1970

COUNTRY OF INFO--USSR

SOURCE--PRIRODA, NO. 3, 1970, P. 11-19

DATE PUBLISHED-------70

SUBJECT AREAS--PHYSICS

TOPIC TAGS--TIME, QUANTUM THEORY, PROBABILITY, ATOMIC CLOCK, SPECIAL RELATIVITY THEORY

CONTROL MARKING--NO RESTRICTIONS

DOCUMENT CLASS--UNCLASSIFIED

PROXY REEL/FRAME--1988/1464 STEP NO--UR/0026/70/000/003/0011/0019

CIRC ACCESSION NO--AP0106220

UNCLASSIFIED

2/2 023 UNCLASSIFIED PROCESSING DATE--23OCT70

CIRC ACCESSION NO--AP0106220

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. CONSIDERATION OF THE FUNDAMENTALS OF THE MODERN SCIENCE OF TIME, COVERING THE CONCEPT FO TIME IN QUANTUM PHYSICS AND IN THE SPECIAL THEORY OF RELATIVITY, THE DIRECTIVITY AND SYMMETRY OF TIME, AND TIME VS CONDITIONAL PROBABILITY. ALSO DISCUSSED ARE CLOCKS OF VARIOUS DESINGS, SUCH AS A MOLECULAR CLOCK DEVELOPED BY BASOV AND PROKHOROV, INDICATING THE CLOSE RELATION BETWEEN TIME MEASUREMENTS IN CLASSICAL PHYSICS AND THE THEORY OF OSCILLATIONS.

UNCLASSIFIED

1/2 024 UNCLASSIFIED PROCESSING DATE--27NOV70

TITLE--RESONANT PARTICLES IN ELECTRON CYCLOTRON HEATING OF PLASMA -U-

AUTHOR-(03)-IVANOV, A.A., SPEKTOR, M.D., FRANKKAMENETSKIY, D.A.

COUNTRY OF INFO--USSR

SOURCE--JETP LETTERS (USA), VOL. 11, NO. 2, P. 136-8 (JAN. 1970)

DATE PUBLISHED--------70

SUBJECT AREAS--PHYSICS

TOPIC TAGS--PLASMA HEATING, CYCLOTRON, ELECTRON, HIGH ENERGY PARTICLE

CONTROL MARKING--NO RESTRICTIONS

DOCUMENT CLASS--UNCLASSIFIED
PROXY REEL/FRAME--3007/1084 STEP NO--US/0000/70/011/002/0136/0138

CIRC ACCESSION NO--AP0136504

UNCLASSIFIED

2/2 024 UNCLASSIFIED PROCESSING DATE--27NOV70

CIRC ACCESSION NO--AP0136504

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. A NUMBER OF INVESTIGATIONS OF ELECTRON CYCLOTRON PLASMA HEATING HAVE REVEALED THE PRESENCE OF A GROUP OF HIGH ENERGY ELECTRONS (SEVERAL TIMES 10 KEV), EXCEEDING BY MANY ORDERS OF MAGNITUDE THE AVERAGE ENERGY OF THE PLASMA ELECTRONS. THE AUTHORS BELIEVE THE ORIGIN OF THE HOT ELECTRONS TO BE RESONANT PARTICLES, WHOSE DOPPLER SHIFTED FREQUENCY COINCIDES WITH THE CYCLOTRON FREQUENCY OMEGA OMEGA SUBC EQUALS K SUBZ V SUBZ. THEY SHOW, USING THE DISPERSION EQUATION FOR THE ELECTRON CYCLOTRON WAVES, THAT THIS ASSUMPTION LEADS DIRECTLY TO A CORRECT ESTIMATE OF THE ENERGY OF THE HOT ELECTRONS.

UNCLASSIFIED

Acc. Nr: AP0045589 Ref. Code: UR 0463

PRIMARY SOURCE: Molekulyarnaya Biologiya, 1970, Vol 4, Nr 1, pp 137-143

MELTING OF DNA WITH DEFECTS IN ITS SECONDARY STRUCTURE

Berestetskaya, I. V.; Kosaganov, Yu. N.; Lazurkin, Yu. S.; Trifonov, E. N.; Frank-Kamenetskiy, M. D.

Institute of Atomic Energy, USSR, Moscow

It is shown that the increase in width of the melting range of DNA due to shear degradation is in accordance with the recently developed theory [5]. Since this increase is due to the disruption of the base stacking interaction at the ends of helical regions, the measurement of the increase of the melting width can be used as a method for determination of concentration of defects (locally denaturated sites) in DNA of high molecular weight. Potentialities of the proposed thermodynamic method are illustrated by the experiments with DNA samples containing defects induced by UV-irradiation. The

REEL/FRAME
19780564

AP0045589

concentration of defects in these DNA samples was estimated also by means of recently proposed kinetic method [1]. Analysis of the question concerning the sensitivity of both methods in regard to the defects of different origin showed that as it has been expected these methods did not distinguish between the ends of sheared molecules and the ends of helical regions neighbouring the locally denaturated sites. This result confirms the validity of the use of shear degraded DNA for calibration of both methods.

19780565

1/2 027 UNCLASSIFIED PROCESSING DATE--18SEP70

TITLE--NATURE OF THE DESTABILIZATION OF ZR SUB1 MINUS X CA SUBX O SUB2 MINUS X SOLID SOLUTIONS DURING REACTION WITH BORON OXIDE -U-

AUTHOR-(04)-FILATOV, S.K., FRANKKAMENETSKIY, V.A., ZHURAVINA, T.A., KRYLOV, V.N.

COUNTRY OF INFO--USSR

SOURCE--IZV. AKAD. NAUK SSSR, NEORG. MATER. 1970, 6(1), 166-7

DATE PUBLISHED--------70

SUBJECT AREAS--MATERIALS, PHYSICS

TOPIC TAGS--SOLID SOLUTION, CRYSTAL LATTICE STRUCTURE, ZIRCONIUM, CALCIUM OXIDE, CHEMICAL REDUCTION, BORON

CONTROL MARKING--NO RESTRICTIONS

DOCUMENT CLASS--UNCLASSIFIED

PROXY REEL/FRAME--1984/0082 STEP NO--UR/0363/70/006/001/0166/0167

CIRC ACCESSION NO--AP0054879

UNCLASSIFIED

2/2 027 UNCLASSIFIED PROCESSING DATE--18SEP70

CIRC ACCESSION NO--AP0054879

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. THE UNIT CELL PARAMETERS OF THE STABILIZED CUBIC LATTICE OF ZR SUB1 MINUS X-CA SUBX O SUB2 MINUS X SOLID SOLNS. IN THE PRESENCE OF B SUB2 O SUB3 AND OF THE MONOCLINIC PHASE FORMING DURING DESTABILIZATION WERE MEASURED. SAMPLES WITHOUT ANY B PRESENT ARE REPRESENTED ONLY AS THE CUBIC PHASE WITH THE PARAMETER A BEING CONST. FOR ALL FIRING TEMPS. IN SAMPLES CONTG. 0.3 MOLE PERCENT CAO AND IN SAMPLES CONTG. B AND ANNEALED AT 600 AND 800DEGREES, THE PARAMETER OF THE CUBIC PHASE IS CONST. WITHIN THE SAME LIMITS. AFTER FIRING AT 1000 AND 1200DEGREES, THE SAMPLES ARE A MIXT. OF THE CUBIC AND MONOCLINIC PHASES, WHICH PREVENTS AN ACCURATE DETN. OF LATTICE PARAMETERS. THE A PARAMETER OF THE CUBIC PHASE REMAINS CONST. WITHIN THE EXPTL. ERROR OF PLUS OR MINUS 0.002 ANGSTROM, WHICH CORRESPONDS TO CONST. CHEM. COMPN. OF PLUS OR MINUS 2 MOLE PERCENT CAO. THE LATTICE PARAMETERS OF THE MONOCLINIC PHASE ARE CONST. IN ALL CASES WITHIN EXPTL. ERROR AND ARE CLOSE TO THE PARAMETERS OF PURE ZRO SUB2; THE CA CONTENT IS INSIGNIFICANT. DESTABILIZATION OF CUBIC ZR SUB1 MINUSX CA SUBX O SUB2 MINUS X SOLID SOLNS. IS ASSOCD. WITH A LOSS OF CA. THE MONOCLINIC PHASE FORMING DURING THE DESTABILIZATION IS PRACTICALLY PURE ZRO SUB2 AND THE CA CONTENT IN THE REMAINING CUBIC PHASE REMAINS CONST. WITHIN THE LIMITS OF 12 PLUS OR MINUS 2 MOLE PERCENT CAO.

UNCLASSIFIED

Acc. Nr. AP0048483 Abstracting Service: CHEMICAL ABST. 5/70 Ref. Code UR 0070

104896z Crystal-chemical limit of zirconium-calcium substitution in zirconium dioxide based on the fluorite motif. Filatov, S. K.; Frank-Kamenetskii, V. A. (Leningrad. Gos. Univ., Leningrad, USSR). *Kristallografiya* 1970, 15(1), 176–7 (Russ). The limiting structure of the $Zr_{1-x}Ca_xO_{2-x}$ system (I), satd. by 7-fold coordination polyhedra, $x = 0.25$, is discussed. The equal statistical distribution of vacancies in the vol. of the solid soln. leads to their localization in detd. positions in the fluorite structure and at the same time to a decrease of their symmetry. Crystals of compn. I cannot have the fluorite type of structure. The distribution of cations in I is statistical or localized. Deviations from the starting fluorite motif are brought about not only by ordering in the anionic or cationic part of the structure, but also by slight shifts of atoms. K. Volka

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REEL/FRAME 19800191

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Acc. Nr: AP0044397 Abstracting Service: CHEMICAL ABST. Ref. Code: 4-70 US 0000

84013d Mechanism of the magnetic field effect on anthracene photoconductivity. Frankevich, E. L.; Sokolik, I. A. (Inst. Chem. Phys., Moscow, USSR). *Solid State Commun.* 1970, 8(4), 251–3 (Eng). The effect of a magnetic field on the photocond. of anthracene crystals excited in the singlet-triplet absorption band under hole injection was investigated. This effect may be explained in terms of triplet exciton-trapped hole interaction. Such a model may be applied to the earlier results on magnetic field effect on uv-excited photocond. using neutral contacts. RCYZ

REEL/FRAME
19771015

1/2 028 UNCLASSIFIED PROCESSING DATE--20NOV70
TITLE--PHOTOGENERATION OF CURRENT CARRIERS IN CRYSTALLINE TETRACENE IN A MAGNETIC FIELD -U-
AUTHOR-(03)-YAKOVLEV, B.S., NOVIKOVA, L.I., FRANKEVICH, YE.L.

COUNTRY OF INFO--USSR

SOURCE--ZHURNAL EKSPERIMENTAL'NOY I TEORETICHESKOY FIZIKI, 1970, VOL 58, NR 5, PP 1574-1579
DATE PUBLISHED--------70

SUBJECT AREAS--PHYSICS

TOPIC TAGS--MAGNETIC FIELD, PHOTOCONDUCTIVITY, FLUORESCENCE, BENZENE DERIVATIVE, SURFACE FILM, ORGANIC CRYSTAL

CONTROL MARKING--NO RESTRICTIONS

DOCUMENT CLASS--UNCLASSIFIED
PROXY REEL/FRAME--3002/0024 STEP NO--UR/0056/70/058/005/1574/1579

CIRC ACCESSION NO--AP0127674

UNCLASSIFIED

2/2 028 UNCLASSIFIED PROCESSING DATE--20NOV70
CIRC ACCESSION NO--AP0127674
ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. THE EFFECT OF A MAGNETIC FIELD ON THE PHOTOCONDUCTIVITY OF A TETRACENE FILM IS INVESTIGATED. BY COMPARING THE RESULTS WITH DATA FROM THE LITERATURE ON THE EFFECT OF A MAGNETIC FIELD ON TETRACENE FLUORESCENCE, IT IS DEMONSTRATED THAT THE EFFECT OF THE MAGNETIC FIELD ON PHOTOCURRENT IS DUE TO AT LEAST TWO DIFFERENT PROCESSES. ONE PROCESS IS DUE TO THE FACT WANNIER TYPE EXCITONS PARTICIPATE IN GENERATION OF CURRENT CARRIERS. WITH DECREASE OF TEMPERATURE THE CONTRIBUTION OF THE FIRST PROCESS OF VARIATION OF PHOTOCURRENT IN THE MAGNETIC FIELD DECREASES WHEREAS THE CONTRIBUTION OF THE SECOND PROCESS INCREASES. FACILITY: INSTITUT KHIMICHESKOY FIZIKI, AKADEMII NAUK SSSR.

UNCLASSIFIED

Acc. Nr: AP0044607 Ref. Code: UR0497

PRIMARY SOURCE: Klinicheskaya Meditsina, 1970, Vol 48, Nr 1, pp 66-70

MATHEMATICAL ASSESSMENT OF THE IMPORTANCE OF SYMPTOMS IN THE DIFFERENTIAL DIAGNOSIS OF ACUTE PANCREATITIS AND PERFORATING GASTRIC ULCER

K. I. Myshkin, L. A. Frankfurt, M. V. Kalisova

Summary

By means of mathematical treatment on «Urals-2» electron computer of 320 case histories of patients suffering from acute pancreatitis and perforating gastric ulcer the authors have elaborated an original table of weight values of symptoms which enables to carry out the differential diagnosis between these two diseases. Verification of the diagnostic value of the table on another 330 case histories has demonstrated that the error comprised only 4 per cent and thus is not inferior to routine differential diagnosis. The authors are of the opinion that the proposed table as an accumulator of extensive clinical experience may in the first place be of essential aid to the inexperienced physician and in the second place be an important element in the programmatic teaching of clinical surgery.

11 REEL/FRAME 19771284 44 02

USSR

UDC 629.7.036.3:533.697.2

FRANKFURT, M. O.

"Loss Determination in a Diffuser During Thinning of the Boundary Layer by Means of Slit Suction"

Moscow, Promyshlennaya Aerodinamika--Sbornik (Industrial Aerodynamics--Collection of Works), Mashinostroyeniye, No 30, 1973, pp 34-40 (from Referativnyy Zhurnal--Aviatsionnyye i Raketnyye Dvigateli, No 10, 1973, Abstract No 10.34.54. Resume)

Translation: A formula is obtained for calculation of the hydraulic resistance of a hydraulic diffuser with slit suction, account being taken of energy expenditures for accomplishment of the suction. There is conducted an experimental investigation of the slit suction of a turbulent boundary layer in a two-dimensional and axisymmetrical stream, by means of which it becomes possible to estimate the relationship of the boundary-layer parameters during passage through the slit to the flow rate of the sucked-off fluid. 4 figures. 11 references.

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1/2 021 UNCLASSIFIED PROCESSING DATE--30OCT70

TITLE--INFLUENCE OF X IRRADIATION ON CELL DIFFERENTIATION -U-

AUTHOR--FRANKFURT, O.S.

COUNTRY OF INFO--USSR

SOURCE--TSITOLOGIYA 1970, 12(1), 123-7

DATE PUBLISHED-------70

SUBJECT AREAS--BIOLOGICAL AND MEDICAL SCIENCES

TOPIC TAGS--X RAY RADIATION BIOLOGIC EFFECT, MOUSE, RADIATION CELLULAR EFFECT, RADIATION SENSITIVITY

CONTROL MARKING--NO RESTRICTIONS

DOCUMENT CLASS--UNCLASSIFIED

PROXY REEL/FRAME--1996/0459 STEP NO--UR/9053/70/012/001/0123/0127

CIRC ACCESSION NO--AP0117695

UNCLASSIFIED

2/2 021 UNCLASSIFIED PROCESSING DATE--30OCT70

CIRC ACCESSION NO--AP0117695

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. SIX MONTH OLD MICE WERE SUBJECTED TO X IRRADN. AT 600 OR 2000 R, 1 AND 12 HR AFTER I.P. INJECTION OF THYMIDINE PRIME3ETA. THE STOMACHS WERE AUTORADIOGRAPHED 24-60 HR AFTER THE INJECTION. IRRADN. WITH 600 R, PERFORMED AT THE BEGINNING OF CELL DIVISION, INHIBITED CELL DIFFERENTIATION, WHILE IRRADN. WITH 2000 R AT THE SAME PERIOD DID NOT INFLUENCE CELL DIFFERENTIATION. CELLS IRRADIATED WITH 2000 R DURING THE S PHASE FAILED TO DIVIDE WITHIN 48 HR. PART OF THESE CELLS DIFFERENTIATED MORE RAPIDLY. MOST OF THE CELLS IRRADIATED DURING TTHE S AND G PHASES FAILED TO DIFFERENTIATE DURING 60 HR AFTER IRRADN. THE ROLE OF CELL DIFFERENTIATION IN THE RADIOSENSITIVITY OF RENEWING POPULATIONS IS DISCUSSED. FACILITY: LAB. EXP. ONCOL., INST. CHEM. PHYS., MOSCOW, USSR.

UNCLASSIFIED

1/2 024 UNCLASSIFIED PROCESSING DATE--23OCT70

TITLE--DISTRIBUTION OF DNA SYNTHESIZING CELLS IN HYPERPLASTIC EPIDERMIS AND PAPILLOMAS OF THE MOUSE SKIN -U-

AUTHOR--FRANKFURT, O.S.

COUNTRY OF INFO--USSR

SOURCE--TSITOLOGIYA; 12: 25-7 FEB 1970

DATE PUBLISHED--------70

SUBJECT AREAS--BIOLOGICAL AND MEDICAL SCIENCES

TOPIC TAGS--SKIN PHYSIOLOGY, DNA, BIOSYNTHESIS, CELL PHYSIOLOGY, NUCLEOSIDE, TRITIUM, CHEMICAL LABELLING

CONTROL MARKING--NO RESTRICTIONS

DOCUMENT CLASS--UNCLASSIFIED

PROXY REEL/FRAME--1997/1986 STEP NO--UR/9053/70/012/000/0025/0027

CIRC ACCESSION NO--AP0120629

UNCLASSIFIED

2/2 024 UNCLASSIFIED PROCESSING DATE--23OCT70

CIRC ACCESSION NO--AP0120629

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. IN THE HYPERPLASTIC EPIDERMIS, ONLY BASAL CELLS SYNTHESIZED DNA, WHEREAS PINOUS AND GRANULAR CELLS REMAINED UNLABELLED ONE HR AFTER PRIME3 H THYMIDINE INJECTION. IN PAPILLOMAS, 10PERCENT OF SPINOUS CELLS SYNTHESIZED DNA. THUS, PAPILLOMAS OF THE MOUSE SKIN WERE CHARACTERIZED BY A DISTURBANCE IN THE RELATIONSHIP BETWEEN SYNTHESIS OF DNA AND DIFFERENTIATION.

FACILITY: INST. OF CHEMICAL PHYSICS, MOSCOW.

UNCLASSIFIED

1/2 024 UNCLASSIFIED PROCESSING DATE--23OCT7

TITLE--DISTRIBUTION OF DNA SYNTHESIZING CELLS IN HYPERPLASTIC EPIDERMIS AND PAPILLOMAS OF MOUSE SKIN -U-

AUTHOR--FRANKFURT, O.S.

COUNTRY OF INFO--USSR

SOURCE--TSITOLOGIYA 1970, 12(2), 245-7

DATE PUBLISHED--------70

SUBJECT AREAS--BIOLOGICAL AND MEDICAL SCIENCES

TOPIC TAGS--DNA, BIOSYNTHESIS, ONCOLOGY, SKIN PHYSIOLOGY, TRITIUM, CHEMICAL LABELLING

CONTROL MARKING--NO RESTRICTIONS

DOCUMENT CLASS--UNCLASSIFIED

PROXY REEL/FRAME--1997/2034 STEP NO--UR/9053/70/012/002/0245/0247

CIRC ACCESSION NO--AP0120677

UNCLASSIFIED

2/2 024 UNCLASSIFIED PROCESSING DATE--23OCT7

CIRC ACCESSION NO--AP0120677

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. DNA SYNTHESIS WAS EXAMD. WITH THYMIDINE PRIME3 H IN RAT SKIN PAPILLOMAS INDUCED WITH 3,4,BENZOPYREME. IN THE HYPERPLASTIC EPIDERMIS, DNA SYNTHESIS WAS OBSD. ONLY IN THE BASA CELL ALYER. IN THE PAPILLOMAS, DNA SYNTHESIS WAS OBSD. IN THE BASAL CELLS AND IN SOME CELLS OF THE SPINOUS LAYER. THIS DISTURBANCE OF DNA SYNTHESIS IS CHARACTERISTIC, FOR MOUSE SKIN PAPILLOMAS. FACILITY LAB. EXP. ONCOL., INST. CHEM. PHYS., MOSCOW, USSR.

UNCLASSIFIED

1/2 014 UNCLASSIFIED PROCESSING DATE--13NOV70

TITLE--P,HYDROXY SUBSTITUTED BENZENES. X. ULTRAVIOLET SPECTRA OF SOME P,HYDROXYAZOBENZENE DERIVATIVES -U-

AUTHOR-(02)-STARTSEVA, N.V., FRANKOVSKIY, CH.S.

COUNTRY OF INFO--USSR

SOURCE--ZH. ORG. KHIM. 1970, 6 (5), 1032-5

DATE PUBLISHED--------70

SUBJECT AREAS--CHEMISTRY

TOPIC TAGS--BENZENE DERIVATIVE, ORGANIC AZO COMPOUND, HYDROXY RADICAL, UV SPECTRUM, CHLORINATED ORGANIC COMPOUND, AMINE DERIVATIVE, AROMATIC AMINE, AROMATIC CARBOXYLIC ACID, PHENOL, BROMINATED ORGANIC COMPOUND

CONTROL MARKING--NO RESTRICTIONS

DOCUMENT CLASS--UNCLASSIFIED

PROXY REEL/FRAME--3006/1280 STEP NO--UR/0366/70/006/005/1032/1035

CIRC ACCESSION NO--AP0134954

UNCLASSIFIED

2/2 014 UNCLASSIFIED PROCESSING DATE--13NOV70

CIRC ACCESSION NO--AP0134954

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. UV SPECTRA WERE REPORTED OR 2,4,RR PRIME1.C SUB6-H SUB3 N: NC SUB6 H SUB4 R PRIME2 -4 (I) (R, R PRIME1, AND R PRIME2 GIVEN): H, H, OH; H, NO SUB2, OH; H, CL, OH; H, CO SUB2 ET, OH; CL, H, OH; CL, NO USB2, OH; CL, CO SUB2 ET, OH; CL, CN, OH; CL, SCN, OH; H, H, NO SUB2; H, H, CN; H, H, AC; H, H, H; H, H, NH SUB2; H, H, NME SUB2; H, NH SUB2, NO SUB2; H, OH, NO SUB2; H, NME SUB2, NO SUB2; CL, OME, OH; CL, ME, OH; CL, CL, OH; CL, BR, OH; CL, NHAC, OH; CL, I, OH; AND CL, CO SUB2 H, OH. THE TRANSFER OF ELECTRONIC CHARGE THROUGH I CHROMOPHORE IS 3-5 TIMES WEAKER THAN THROUGH THE CORRESPONDING PHENOL SYSTEM. THE WAVE NOS. OF THE UV MAX. WERE CORRELATED WITH HAMMETT SIGMA CONTS.

UNCLASSIFIED

Acc. Nr: AA0101317 Abstracting Service: 3-70 Ref. Code: UR 0482

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

236913 POWDER LUBRICATED BEARING consists of a bearing 1 with shaft 2 in ribbed casing 3. The lubricating power is distributed by means of a centrifugal impeller 4 with diffuser 5 on one side of the bearing, connected by means of a pipe to a ribbed swirl chamber 7 with quick-release cover 8 on the other side. A small amount of lubricating powder is placed in the swirl chamber, and when shaft 2 is rotated the powder is sucked through the bearing through three throttling holes 10 by the impeller and returned by the connecting pipe to the swirl chamber. The suction of the powder through the bearing together with air at high speed provides constant lubrication of bearing surfaces, equal temps. and efficient heat dispersal.

3.11.67. as 1194535/25-27, FRANKSHTEIN, L.I.
(11.6.69) Bul. 7/3.2.69. Class 47b, Int. Cl. F 06c.

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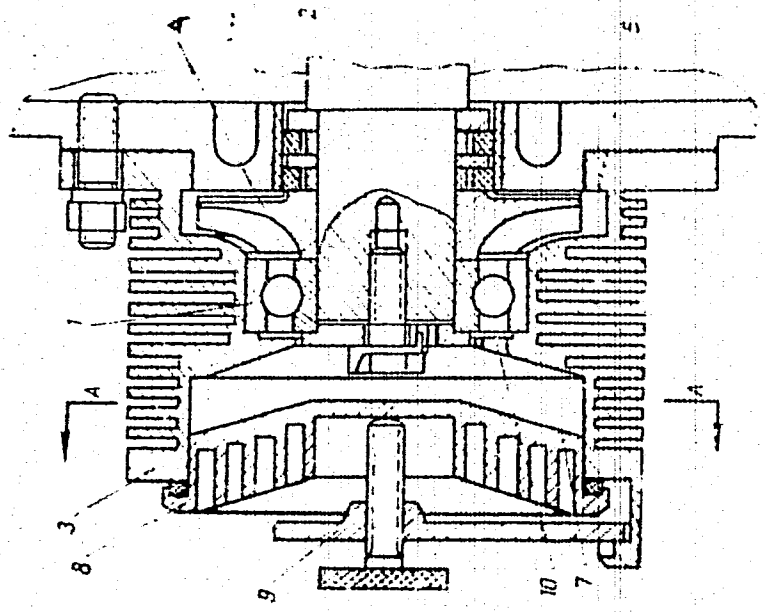
CK 11

REEL/FRAME
19851090

AA0101317



19851091

USSR

FRANKSHTEYN, S., Professor, Head of the Laboratory of Experimental Pathology, Institute of Normal and Pathological Physiology, Academy of Medical Sciences USSR

"Central Mechanisms of Dyspnea"

Moscow, Nauka i Zhizn', No 10, 1971, pp 71-73

Abstract: According to the theory of Soviet physiologists V. A. Orbeli and K. I. Kunstman, dyspnea is of central origin. They believe that in addition to thirst, hunger, emotional, and other centers, the brain stem has an air hunger fear and anxiety center located in the vicinity of the respiratory centers. Each time the inspiratory center discharges impulses to the inspiratory muscles, it also sends impulses to the air hunger fear and anxiety center. In health, this center has a high threshold. However, under pathological conditions (cerebral anemia, sclerosis, or tumor) this center becomes hypersensitive, so that it is stimulated even when the concentration of oxygen and carbon dioxide in blood is normal and creates the sensation of air hunger accompanied by fear and anxiety.

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1/2 020 UNCLASSIFIED PROCESSING DATE--30OCT70
TITLE--ON THE MECHANISM OF THE DEPRESSION OF THE INHIBITORY HERING BREUER REFLEX -U-
AUTHOR-(02)-FRANKSHTEYN, S.I., SERGEYEV, L.N.

COUNTRY OF INFO--USSR

SOURCE--FIZIOLOGICHESKIY ZHURNAL SSSR IEMNI I. M. SECHENOVA, 1970, VOL 56, NR 5, PP 764-766
DATE PUBLISHED--------70

SUBJECT AREAS--BIOLOGICAL AND MEDICAL SCIENCES

TOPIC TAGS--SLEEP, CRANIAL NERVE, BREATHING, RESPIRATORY PHYSIOLOGY, REFLEX

CONTROL MARKING--NO RESTRICTIONS

DOCUMENT CLASS--UNCLASSIFIED
PROXY REEL/FRAME--3001/1604 STEP NO--UR/0239/70/056/005/0764/0766

CIRC ACCESSION NO--AP0127095

UNCLASSIFIED

2/2 020 UNCLASSIFIED PROCESSING DATE--30OCT70

CIRC ACCESSION NO--AP0127095

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. REFLEX APNOE EVOKED BY STIMULATION OF THE VAGUS WAS INVESTIGATED IN UNRESTRAINED CATS WITH CHRONICALLY IMPLANTED ELECTRODES. THE APNOE WAS CONTINUAL DURING THE SLEEP, AND MORE DISTINCT DURING THE SYNCHRONIZED SLEEP THAN DURING THE DESYNCHRONIZED ONE. DURING WAKEFULLNES, PARTICULARLY IN THE ALERTED CATS, STIMULATION OF THE VAGUS DID NOT PRODUCE ANY APNOE. SIGNIFICANCE OF THE PRESENTED DATA FOR ANALYSIS OF THE DEPRESSION OF THE HERING BREUER INHIBITORY REFLEX IN MAN, IS DISCUSSED. FACILITY: INSTITUTE OF NORMAL AND PATHOLOGICAL PHYSIOLOGY ACAD. MED. SCI. USSR, MOSCOW.

END OF ACCESSION

1/2 018 UNCLASSIFIED PROCESSING DATE--020CT70
TITLE--SEGMENTARY AND SUPRASEGMENTARY MECHANISMS OF THE PROTECTIVE REFLEX PHENOMENON AT THE THORACIC LEVEL OF THE SPINAL CORD -U-
AUTHOR-(02)-SERGEYEVA, L.N., FRANKSHTEYN, S.I.

COUNTRY OF INFO--USSR

SOURCE--BYULLETEN' EKSPERIMENTAL'NOY BIOLOGII I MEDITSINY, 1970, VOL 69, NR 4, PP 44-47
DATE PUBLISHED-------70

SUBJECT AREAS--BIOLOGICAL AND MEDICAL SCIENCES

TOPIC TAGS--SPINAL CORD, REFLEX, NEURON

CONTROL MARKING--NO RESTRICTIONS

DOCUMENT CLASS--UNCLASSIFIED
PROXY REEL/FRAME--1988/1591 STEP NO--UR/0219/70/069/004/0044/0047

CIRC ACCESSION NO--AP0106337
UNCLASSIFIED

2/2 018 UNCLASSIFIED PROCESSING DATE--02OCT70
CIRC ACCESSION NO--AP0106337
ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. PLEURAL AFFECTION PRODUCES INHIBITION OF INTERCOSTAL REFLEXES ON THE SIDE OF THE CHEST LESION. INHIBITION OF MOTOR NEURONS AT THE THORACIC LEVEL OF THE SPINAL CORD IS IMPLEMENTED BY POSTSYNAPTIC MECHANISMS. SEVERENCE OF THE SPINAL CORD AT THE LEVEL C SUB7 MINUS TH SUB1 INTENSIFIES INTERCOSTAL REFLEXES ON THE SIDE OF THE LESION TO A GREATER EXTENT THAN IT DOES ON THE INTACT SIDE. HENCE, IN THE REALIZATION OF THE PROTECTIVE REFLEX AT THE THORACIC LEVEL, APART FROM SEGMENTARY MECHANISMS, PARTAKES ALSO DESCENDING INHIBITION.

UNCLASSIFIED

USSR

UDC 669.721.372

FRANTAS'YEV, N. A., and MUSHSHAVLEV, K. D., All-Union Institute of Aluminum and Magnesium

"Cathode Process on Magnesium Chloride Electrolysis in Melts Containing Impurities"

Ordzhonikidze, Izvestiya Vysshikh Uchebnykh Zavedeniy, Tsvetnaya Metallurgiya, No 6, 1973, pp 56-62

Abstract: The summary cathodic polarization in the electrolyte of the composition (in wt%) 10 $MgCl_2$, 50 NaCl, and 40 KCl was investigated at 700°C and 0.5 A/cm^2 cathodic current density; the results of measuring the stationary potentials of Ni, Fe, Cr, Al, Mn, Ti, and Mg, as compared to the Cl electrode, are presented. Equal weight Fe and Mn potentials, relative to the comparable Cl electrode, were determined for alloys containing (in ion fractions) $6.4 \cdot 10^{-3}$ and $2.06 \cdot 10^{-2}$ Fe and $5.87 \cdot 10^{-3}$ and $2.13 \cdot 10^{-2}$ Mn, respectively, and the respective empirical equa-

USSR

FRANTAS'YEV, N. A., and MUSHSHAVLEV, K. D., Izvestiya Vysshikh Uchebnykh Zavedeniy, Tsvetnaya Metallurgiya, No 6, 1973, pp 56-62

tions are formulated. Fe polarized on the cathode at potentials close to equilibrium. The joint Fe and Mg discharge in melts containing (in ion fractions) $1.07 \cdot 10^{-3}$ to $9.16 \cdot 10^{-3}$ Fe (700°) takes place at 0.06 to 0.4 A/cm^2 current densities. The limiting discharge current of Fe ions was not attained at $3.73 \cdot 10^{-2}$ Fe concentration. At 0.006 A/cm^2 current density, the Mo cathode potential becomes equal to the Fe stationary potential at appropriate Fe concentrations in the electrolyte and appropriate temperature of the electrolyte. Five figures, one table, eight formulas, six bibliographic references.

2/2

USSR UDC 666.764:621.928.37

MARANTS, A. G., GUTMAN, V. I., All-Union Institute of Refractories; FRANTOVA, E. S., ZEGER, I. Ye., VASILIVITSKIY, A. V., KREYDLIN, P. N., All-Union Scientific Research, Planning, and Design Institute of Metallurgical Machinery; ROMANOVSKIY, L. B., KOREN, L. N., and KOSTYRYA, Yu. F., Dnepropetrovsk Metallurgical Institute

"Prospects of the Application of the Melting Cyclone for the Production of Melted Refractories"

Moscow, Ogneupory, No 5, 1973, pp 50-54

Abstract: The process of cyclone melting was investigated with a view to produce melted refractories of the magnesium-spinel and brasilite-corundum types. Experiments were carried out at the Institute of the Problems of Material Science of the Academy of Sciences UkrSSR. The experiments indicated the possibility of applying melting cyclones with the use of a blast enriched with oxygen for the production of cast fused refractories with a 1800-1900°C fusion temperature in which the melt aggregates in the warming forehearth for aftercasting into molds. The dust removal in cyclone melting does not exceed 5%, thus ensuring the production of a melt which is close to the initial charge in chemical composition. The optimum content of oxygen in the blast at an approximate natural gas consumption of 1.5 nm^3/kg charge was determined.

USSR

MARANTS, A. G., et al., Ogneupory, No 5, 1973, pp 50-54

The properties of the produced materials are analyzed. Four figures, three tables, three bibliographic references.

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Magnesium

USSR

UDC 661.311.12.3:66.093.6

FRANTAS'YEV, N. A., SHCHEGOLEV, V. I., and MUZHZHAVLEV, K. D., All-Union Aluminum-Magnesium Institute

"Dehydration of Magnesium Chloride Crystallohydrates"

Ordzhonikidze, Izvestiya Vysshikh Uchebnykh Zavedeniy--Chernaya Metallurgiya, No 4, 1973, pp 47-50

Abstract: This work was devoted to an investigation of a number of questions concerning the final dehydration of the low hydrates of magnesium chloride and the production of a raw material, suitable for electrolysis. The investigations showed that during remelting of the crystallohydrates, close in composition to dihydrate magnesium chloride, in a treated electrolyte the losses of $MgCl_2$ in producing a melt containing 40% $MgCl_2$ amounted to 33-72%, being increased with the rise of temperature. The degree of $MgCl_2$ hydrolysis during remelting amounted to 14.5-27.5%, which exceeds the magnitude of hydrolysis during the dehydration of artificial and synthetic carnallite. Hydrolysis in the case of melting a mixture of magnesium chloride crystallohydrates and the electrolyte is increased by 2-5% in comparison with the variant of remelting crystallohydrates in the treated electrolyte. From the viewpoint of raw material savings it was more profitable to produce an anhydrous product with a lower

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FRANTAS'YEV, N. A., et al., Izvestiya Vysshikh Uchebnykh Zavedeniy--Chernaya Metallurgiya, No 4, 1973, pp 47-50

content of $MgCl_2$. The more economic variant of producing an anhydrous synthetic carnallite is remelting a mixture of salts in a chlorinator with chloridation of the $MgCl_2$ hydrolysis products, which makes it possible to lower consumption of raw material and electrical energy. 4 figures, 5 bibliographic references.

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MEDICINE

Aerospace Medicine

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FRANTSEN, B. S.

"Speed and Precision of Movement in Flight Personnel"

Moscow, Voyenno-Meditsinskiy Zhurnal, No 8, Aug 70, pp 68-70

Abstract: The speed and precision of motor reactions of fighter pilots (flying time, 500-1,500 hrs) and ground personnel were studied by measuring the time components of a simple motor reaction and reactions involving two or four selections. The device used was a model of a steering stick (control column). No significant difference was noted between pilots and ground personnel in time required for a simple motor reaction. Total reaction time was less for pilots when a selection of two alternatives was involved and greater when a selection among four alternatives was required. Total time was greater with four alternatives than with two lots but remained the same for ground personnel. The mean latent period under conditions in which a selection had to be made was shorter for pilots (387 and 426 msec for 2 and 4 selections, respectively) than for ground personnel (429 and 459 msec for 2 and 4 selections, respectively), while the mean duration of the motor component of the reaction was longer

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FRANTSEN, B. S., Voyenno-Meditsinskiy Zhurnal, No 8, Aug 70, pp 68-70

(331 vs. 307 and 368 vs. 300 msec for 2 and 4 selections, respectively). Pilots made approximately one-half as many errors as ground personnel. The lower reaction speed among pilots was accompanied by a considerably greater precision in carrying out the required motions. The indexes of speed of conversion of information were higher for pilots than for ground personnel (5.93 vs. 3.93 and 12.4 vs. 9.57 bit/sec for reactions involving 2 and 4 choices, respectively). The results showed that in a situation resembling actual flight, the experienced pilots acted more deliberately but also more smoothly and precisely than inexperienced ground personnel, making fewer mistakes than the latter.

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USSR

KAZADZH, L. B., MOLOTILOV, B. V., SUKHANOV, L. F., FRANTSEVICH, I. V. and SHAPOVALOV, A. P., Institute of Precision Alloys, Central Scientific Research Institute of Ferrous Metallurgy imeni I. P. Bardin, Novo-Lipetskiy Metallurgical Plant

"Effect of A High-Temperature Heat Treatment Medium on the Structure and Magnetic Properties of Transformer Steel"

Moscow, Izvestiya Akademii Nauk SSSR, Seriya Fizicheskaya, Vol. 34, No. 2, Feb 70, pp 262-266

Abstract: The refining ability of various media in high-temperature annealing in industrial dome furnaces was studied by optical microscopy methods, by measuring magnetic properties and by determining the chemical composition of transformer steel. Four different steel compositions were tested in the experiment and their concentrations of Si, C, S, N, O, Al, Mn, and H before and after annealing in a vacuum or in a hydrogen or nitrogen medium are given in tabular form. It was found that high-temperature annealing in dome vacuum and gas furnaces did not ensure the required degree of refinement of the steel from C, N, O, and S impurities. Raising the degree of evacuation under high-temperature heat treatment of the steel in the most improved industrial furnaces also had little effect in improving the refinement. It was concluded that in order to

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KAZADZH, L. B., et al, Izvestiya Akademii nauk SSSR, Seriya fizicheskaya, Vol. 34, No. 2, Feb 70, pp 262-266

lower specific losses and raise the output of high-grade transformer steels, heat treatment should be carried out under industrial conditions in a vacuum higher than 10^{-3} mm Hg or in dry hydrogen with a dew point $\leq$-40°C.

Card 2/2

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TITLE--EFFECT OF HIGH TEMPERATURE THERMAL TREATMENT MEDIUM ON THE STRUCTURE AND MAGNETIC PROPERTIES OF TRANSFORMER STEEL -U-

AUTHOR-(05)-KAZADZHAN, L.B., MOLOTILOV, B.V., SUKHANOV, L.F., FRANTSENYUK, I.V., SHAPOVALOV, A.P.

COUNTRY OF INFO--USSR

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TOPIC TAGS--TRANSFORMER STEEL, MAGNETIC PROPERTY, METAL HEAT TREATMENT, NITROGEN, HYDROGEN

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PROXY REEL/FRAME--1995/0189 STEP NO--UR/0048/70/034/002/0262/0266

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ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. THE REFINING ABILITY OF THE PROTECTIVE MEDIA USED IN HIGH TEMP. THERMAL TREATMENT WAS STUDIED AND ALSO THEIR EFFECT ON THE STRUCTURE AND MAGNETIC PROPERTIES OF TRANSFORMER STEEL. THE INVESTIGATED MEDIA WERE VACUUM IN THE RANGE 10 PRIME NEGATIVE3 MINUS 30 TORR, H, H AFTER PURGING WITH N 95PERCENT-H 5PERCENT, AND N 95PERCENT-H 5PERCENT. FOR THE ACHIEVEMENT OF GOOD MAGNETIC PROPERTIES THE THERMAL TREATMENT SHOULD BE CARRIED OUT AT A PRESSURE SMALLER THAN 10 PRIME NEGATIVE3 TORR. FACILITY: TSNIICHM IM. BARDINA, MOSCOW, USSR.

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F

FRANTSEVYCH, I. M., Academician of the Academy of Sciences Ukrainian SSR, KALYNOVYCH, D. F., Candidate of Technical Sciences, KOVENS'KYY, I. I., Candidate of Technical Sciences, and SMOLIN, M. D., Candidate of Technical Sciences

"Development and Use of the Electrotransport Method to Determine the Principal Parameters of a Metallic Bond"

Kiev. Visnik Akademiyi Nauk Ukrayins'koyi RSR, Vol 34, No 3, Mar 70, pp 24-33

Abstract: The article describes results of a study of the development and use of the electrotransport method to determine the principal characteristic parameters of the metallic bond of a substance; viz., the actual ion charges of alloy metals and components z, electron and hole concentrations n- and n+, the cross-sections of current-carrier scattering by diffusing ions $\sigma-$ and $\sigma+$, and the temperature parameters respectively of electron and hole conductivity ρ_{o-} and $\alpha-$, ρ_{o+} and $\alpha+$. The study includes the solution to the following theoretical, methodological, and experimental problems:

1. Developing a theory on the connection between the values of the effective charges of ions which migrate during electransport, z*, temperature

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FRANTSEVYCH, I. M., et al., Visnik Akademiyi Nauk Ukrayins'koyi RSR, Vol 34, No 3, Mar 70, pp 24-33

and composition, and the derivation of new relations which connect the values of the characteristics z, n_-, n_+, σ_-, σ_+, ρ_{o-}, α_-, ρ_{o+}, and α_+ with experimentally established values.

2. Development of theoretical and experimental tests for the applicability of the electrotransport method.

3. Development of experimental procedures for determining effective charge values and a system for checking on experimental results.

4. Using the electrotransport method to determine the principal characteristic parameters of a number of specific alloys.

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AUTHOR-(04)-FRANTSEVICH, I.M., KALINOVICH, D.F., KOVENSKIY, I.I., SMOLIN, M.O.

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