

Metrology

USSR

UDC: 531.787.083.8.089.6

BELYAYEV, M. F., RAMM, D. V., UDALAYA, V. N. /

"Errors of Vibration-Frequency Pressure Pickups Caused by Imperfections in the Elasticity of the Material"

V sb. Vibratsionno-chastotn. preobrazovateli. Ch. 1 (Vibration-Frequency Transducers--collection of works. Part 1), Moscow, "Energiya", 1970, pp 72-88 (from RZh-Metrologiya i Izmeritel'naya Tekhnika, No 9, Sep 70, Abstract No 9.32.696)

Translation: The authors present the results of an analysis of the elastic system of vibration-frequency pressure pickups from the standpoint of errors due to imperfections in the elasticity of the pickup material. It is shown that a peculiarity of the elastic system of these pickups is the possibility of reducing errors of this class by compensating for the inelastic properties of the elastic and sensing elements of the pickups. An equation is given for the elastic lag of the pickups, and data are given from measurements of this lag in pickups of various standard dimensions. It is shown how the hysteresis and sensitivity of the characteristics are related to the procedure for graduating and checking the pickup. Nine illustrations, two tables, bibliography of seven titles.

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BELYAYEV, M. F., RAMM, D. V., UDALAYA, V. N.

"Errors of Vibration-Frequency Pressure Gages Caused by Elasticity Imperfections of the Material"

Vibratsionno-chastotn. preobrazovateli. Ch. 1 (Vibration-Frequency Converters. Part 1), Moscow, Energiya Press, 1970, pp 72-88 (from RZh-Mekhanika, No 11, Nov 70, Abstract No 11V1395)

Translation: This article contains the results of analyzing an elastic system of vibration-frequency pressure gages from the point of view of errors from elastic imperfections of the gage material. It is demonstrated that a characteristic feature of the elastic system of the investigated sensors is the possibility of decreasing the given type of error by compensating for the inelastic properties of the elastic and sensitive elements of the sensors. The elastic lag of the sensors is analyzed, and the results of measuring it for sensors of various types and sizes are presented. The relation of hysteresis and sensitivity of the characteristic to the procedure for calibrating and checking the sensor is demonstrated. The bibliography has 7 entries.

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USSR

UDC: 621.396.677

UDALOV, A. I.

"Effect Which Nonlinearity of the Characteristics of Active Elements has on the Sensitivity of a Receiving Antenna Array"

Tr. Mosk. aviats. in-ta (Works of the Moscow Aviation Institute), 1970, vyp. 203, pp 67-80 (from RZh-Radiotekhnika, No 1, Jan 71, Abstract No 1B41)

Translation: Scatter of the amplitude and phase characteristics of amplifiers and mixers used in active arrays has an adverse effect on the radiation pattern and reduces sensitivity; therefore it is necessary to complicate the reception system, e. g. by introducing a phase stabilization device and limiter in each channel. It is shown that an active array with limiters has noise characteristics identical to those of a single-channel receiver with a limiter at the output. Expressions are derived which define the effect which nonlinearity of individual elements of the array has on its sensitivity. The author shows the advantages of active arrays over passive arrays of the same dimensions with respect to noise characteristics. Four illustrations, bibliography of nine titles. N. S.

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Radiobiology

USSR UDC 617-001.28-06:616.441-089.87)-092.9-089:616.419-089.843

CHERTKOV, I. L., Professor, NEMENOVA, N. M., Professor, NOVIKOVA, M. N., KOTLYAROV, A. M., MALANINA, V. N., UDALOV, G. A., ROGACHEVA, L. S., and SHEPSHELEVICH, L. I., Laboratory of Myelo-Hemotherapy of Acute Radiation Sickness, Pathological Anatomy Laboratory, and Cytological Laboratory, Central Institute of Hematology and Blood Transfusion, USSR Ministry of Health, Moscow

"Transplantation of Allogeneous Bone Marrow to Thymectomized Irradiated Monkeys"

Moscow, Problemy Gematologii i Perelivaniya Krovi, Vol 16, No 3, Mar 71, pp 45-53

Abstract: Since transplantation of allogeneous bone marrow to irradiated animals for the purpose of alleviating radiation sickness gives rise to a secondary disease due to differentiation of the transplanted tissue into lymphocytes which enter into an immunological reaction with the host, a study was performed in which thymectomized monkeys were irradiated with 800-1,000 r and then given allogeneous bone marrow transplants. The thymectomy did not prevent the development of the secondary disease, but made it 1/2

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CHERTKOV, I. L., et al., Problemy Gematologii i Perelivaniya Krovi, Vol 16, No 3, Mar 71, pp 45-53

considerably milder and promoted regeneration of hematopoiesis of the donor type. Histological examinations indicated that bone marrow stem cells play an important role in the development of the secondary disease.

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Radiobiology

USSR

UDC 612-001.28-092.9-089:616.419-089.843-06.616-018.13

UDALOV, G. A., and CHERIKOV, I. L. Central Institute of Hematology and Blood Transfusion, Moscow

"Chromosome Aberrations in Bone Marrow Donor Cells Transplanted to Irradiated Monkeys"

Moscow, Byulleten Eksperimentalnoy Biologii i Meditsiny, Vol 71, No 2, Feb 71, pp 97-101

Abstract: Baboons and rhesus monkeys were irradiated with γ -rays in a dose of 800-100 r for 1 1/2-2 hours and then given transplants of autologous or allogenic bone marrow in amounts of $2-5 \cdot 10^5$ viable, nucleus-containing cells per kg of body weight. Females were used as donors and males as recipients in the allogenic transplantation. Since allogenic bone marrow produces in monkeys a pronounced secondary disease with differentiation of hemopoietic lymphoid cells and rapid allergic breakdown of the emerging immunocytes, this portion of the study was conducted with thymectomized monkeys (operation was performed 1 1/2-3 months prior to the experiments). No pronounced secondary illness developed in these animals. It was found that 10-15 days after irradiation, up to one third of the hematopoietic donor cells exhibited

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UDALOV, G. A., et al, Byulleten Eksperimentalnoy Biologii i Meditsiny, Vol 71, No 2, Feb 71, pp 97-101

structural chromosome lesions: chromatid and isochromatid fragments. Within three weeks, the number of injured cells was reduced. Similar damage to hematopoietic cells was observed also after autotransplantation of bone marrow. It is proposed that chromosome aberrations are caused by viral infections, which are quite probable under the conditions of acute radiation sickness.

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USSR

UDC: 621.396.668

KULESHOV, V. N., UDALOV, N. N., UDALOVA, S. N.

"Locking of a Signal With Linearly Changing Frequency in an Astatic Phase AFC System"

Kiev, IVUZ: Radioelektronika, Vol 15, No 3, Mar 72, pp 363-368

Abstract: The paper deals with the problem of establishing synchronism of an astatic phase AFC system in the case of linearly changing frequency of the input signal. It is assumed that initial conditions are random, and that the frequency of the input signal changes slowly. It is shown that there is an unstable limiting cycle which bounds the region of initial conditions under which locking into synchronism can take place on the phase plane of the phase AFC system. The probability of locking is determined as a function of initial detuning, the rate of change in the signal frequency and circuit parameters.

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USSR

UDC 621.316.825

UDALOV, N.P.

"Positors"

V sb. Entsiklopediya izmereniy kontrolya i avtomatiz (Encyclopedia Of Measurements Of Control And Automation--Collection Of Works), No 14, Moscow, "Energiya," 1970, pp 39-40 (from RZh--Elektronika i yeye primeneniye, No 11, November 1970, Abstract No 118264)

Translation: The characteristics are considered of semiconductor resistors with a positive temperature coefficient of resistance amounting to 60-percent/ $^{\circ}$ C. Recommendations are given for the computation of the static characteristics of posistors and the transients in circuits with them, taking account of the varistor properties of the posistor. The parameters of the native Type ST5-1 posistor are presented. 2 ill. 7 ref. Summary.

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USSR

UDC 621.317.444

IGNATOV, A. I., UDALOV, V. F.

"An Automatic Magnetometer for Research on Films"

Moscow, Izmeritel'naya Tekhnika, No 7, 1971, pp 53-55

Abstract: A description is given of an automatic magnetometer for the measurement, in the longitudinal field and in the transverse field, of the magnetization curves, the hysteresis loop, the constant of plane and perpendicular anisotropy, and other physical values of magnetic fields. An analysis of various magnetometers is conducted, and the advantages of the proposed instrument are noted.

Instruments developed in previously published works, both in the USSR and abroad, do not permit automatic research on films within a wide range of fields with sufficient reliability and accuracy. The magnetometer described in the article is presented in Figure 1. This magnetometer makes it possible to investigate automatically the various physical properties of thin films. In distinction from the known automatic magnetometers, the proposed instrument has a higher sensitivity, and can automatically measure with precision and reliability the relationship $I_p(H)$ under quasi-static conditions. The
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IGNATOV, A. I., UDALOV, V. P., Izmeritel'naya Tekhnika, No 7, 1971, pp 53-55

broad range of fields and moments of compensation of the instrument makes it possible to investigate all the characteristics of film that have to do either with emergence of the magnetization vector from the plane, or with rotation of the magnetization vector in the plane of the film. 5 figures, 27 bibliographic entries.

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USSR

UDC: 621.372.8

KAZANTSEV, Yu. N. and UDALOV, V. V., Institute of Radio Engineering and Electronics

"Tubular-Diaphragm Waveguide"

Gor'kiy, Izvestiya VUZ---Radiofizika, No 10, 1972, pp 1561-1566

Abstract: Ordinary metal waveguides cease to be efficient in the millimeter and decimillimeter wavelength ranges. This paper therefore considers a tubular dielectric waveguide in which the attenuation at these wavelengths is reduced through an external additional structure in the form of an absorbing diaphragm. A diagram of this device is shown. A tubular-diaphragm waveguide of this type, representing the combination of a diaphragmed open line and a dielectric tube, has a relatively simple structure and fairly good filtration of extraneous oscillations. The reduction in the attenuation of the desired wave is explained by the fact that that portion of its energy passing through the dielectric wall is not dissipated in the surrounding space but is reflected back into the guide by the diaphragm system. The theory of the waveguide is developed, and the method and results of the attenuation measurement given.

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Waveguides

USSR

UDC: 621.372.822(088.8)

PERSIKOV, M. V., UDALOV, V. V., Institute of Radio Engineering and Electronics, Academy of Sciences of the USSR

"A Waveguide H_{01} -to- H_{20} Converter"

USSR Author's Certificate No 233036, filed 16 Jan 67, published 4 May 70
(from RZh-Radiotekhnika, No 1, Jan 71, Abstract No 1B206 P)

Translation: The proposed converter consists of sections of rectangular waveguide of ordinary and double width and a coupling element between the ends of these sections. To reduce the overall dimensions of the converter, the coupling element is made in the form of a half-wave length of T-section waveguide.

USSR

KUKINOV, A. M., POLYAKOV, V. G., UDACHIN, G. F., KHOROVA, L. A.

"Experiment on Recognition of Manuscript Numerals Using a Tracking Scan"

Opoznavaniye i Opisaniye Linii [Recognition and Description of Lines -- Collection of Works], Moscow, Nauka Press, 1972, pp 108-118 (Translated from Referativnyy Zhurnal, Kibernetika, No 3, Moscow, 1973, Abstract No 3 V707 by the authors).

Translation: A model is described of an automaton for reading of non-stylized manuscript arabic numerals. The model calls for a tracking scan of a pattern around its outside contour, recognition using a system of characteristics and a nonparametric method of production of the decision rule.

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USSR

UDC 612.397.2.015.6

UDALOV, Yu. F., GARASHOV, B. N., and BAKHTADZE

"Value of Introducing Supplementary Vitamins Into the Diet of Persons Doing Emotionally Tense Work in Correcting Unbalanced Lipid Metabolism"

Moscow, Voprosy Pitaniya, No 1, 1973, pp 17-23

Abstract: Systematic administration of vitamins A (2 mg), C (100 mg), B₁ (3 mg), B₂ (3 mg), and PP (10 mg) for 10 to 25 days to 114 airplane pilots, some of whom showed signs of incipient atherosclerosis, had beneficial effects on various indexes of lipid and protein metabolism while improving the vitamin levels. In those with atherosclerosis, prophylactic vitaminization lowered the cholesterol level, increased the lecithin-cholesterol coefficient, lowered the content of beta lipoproteins, and increased the plasma proteins. The sense of well-being improved in both groups, especially those with atherosclerosis, and their work capacity increased. Some positive changes were also noted on the EKG taken at the end of vitaminization. There were no changes in lipid or protein metabolism among the 117 pilots not given supplementary vitamins.

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USSR

UDC 616.13-004.6-02:616-008.939.15]-02:613.867

UDALOV, Yu. F., BAKHTADZE, N. N., and GARASHOV, B. N.

"Prevention of Disturbances of Lipid Metabolism in Individuals Working Under High Nervous Tension"

Moscow, Gigiyena Truda i Professional'nyye Zabolevaniya, No 2, 1973, pp 54-56

Abstract: Examination of 440 pilots revealed disturbances of lipid metabolism (hypercholesterolemia, abnormal lecithin: cholesterol ratio, etc.) in a substantial number of cases, especially in individuals age 32 to 35. The longer the flying time, the more pronounced the hypercholesterolemia. Temporary periods on the ground, e.g., while the men were in hospitals undergoing fitness examinations, did not result in swift normalization. Two vitamin complexes were tested as possible prophylactic agents. One consisting of vitamins A, B₁, B₂, PP, and C lowered the cholesterol level, content of beta lipoproteins, and improved the lecithin: cholesterol ratio in 56 pilots. The other complex consisting of vitamins A, E, B₁, B₂, PP, B₆, pantothenic acid, folic acid, B₁₂, C, and P was even more efficacious in 57 pilots, restoring normal lipid levels in 20 to 30 days, in a few cases several days earlier (day 15) or much later (day 60). Vitamin supplements plus the systematic alternation of work and rest will help to prevent disturbances of lipid metabolism in persons working under stress and thereby reduce the incidence of atherosclerosis.

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UDC 616.281-008.35+615.216.85-071

LAPAYEV, E. V., Candidate of Medical Sciences, UDALOV, YU. F., Doctor of Medical Sciences, and KHALATOV, O. P.

"The Pharmacological Effect of Pyridoxine and Its Combination With Adenosine Triphosphoric Acid on the Functional State of the Vestibular Analysor"

Kiev, Zhurnal Ushnykh, Nosovykh, i Gorlovykh Bolezney, No 5, Sep/Oct 71, pp 15-19

Abstract. An evaluation was made by the cupulometric method of the effect of pyridoxine and its combination with an equal amount of adenosine triphosphoric acid on the dynamics of the illusion of counterrotation and of the duration, frequency, and amplitude of postrotatory nystagmus. Test results demonstrated that whereas pyridoxine had a positive effect on the functional state of the vestibular analysor in the case of an initial deficit of this vitamin in the body, its combination with adenosine triphosphoric acid was effective with a satisfactory supply of the substance present prior to the test. The preparation may be recommended as an effective means of preventing or reducing any marked illusory sensations of vestibular origin, an important factor in modern aviation, by lowering the reactivity of the vestibular analysor to the effect of stimulants while increasing vestibular stability.

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MEDICINE

Aerospace Medicine

USSR

UDC 613.2:577.164.137:613.693

UDALOV, YU. F., and KHALATOV, O. P., Moscow

"Pyridoxine Metabolism and Supply in Flight Crew Members"

Moscow, Voprosy Pitaniya, No 3, May/Jun 1971, pp 12-18

Abstract: Nitrogen, amino acid, and vitamin metabolisms are among the most sensitive metabolic changes produced by stress on the nervous-emotional system as a result of various physical factors encountered in airplane flights. The metabolism of pyridoxine was studied in 252 pilots, 83 of whom flew training missions in IL-14 transport planes (it has been found that personnel in flight training are under particular nervous-emotional stress, and that daytime flights at low altitudes are characterized by the effect of atmospheric turbulence on the crews. During the entire study period, the test subjects were restricted to a normal diet with a daily intake of 4,110 calories, including 142 g protein, 154 g fat and 649 g carbohydrates. The daily ration included also: 2 mg vitamin A, 4.2 mg thiamine, 3.8 mg riboflavine, 33 mg nicotinic acid, 75 mg ascorbic acid, and 2.4 mg pyridoxine. A group of 40 nonfliers (ground crew personnel) and 40 sailors (on a cruise) served as controls. The pyridoxine, 4-pyridoxic acid, and oxalate contents in the urine were determined. The

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UDALOV, YU. F., and KHALATOV, O. P., Voprosy Pitaniya, No 3, May/Jun 71, pp 12-18

blood pyridoxine level and the serum aspartateaminotrasferase and alanine-aminotransferase were determined. Considerable changes in pyridoxine metabolism were found; there was a significant increase of the vitamin in the blood and in the urine after 4-6 hr flights. The pyridoxine requirement on flight and non-flight days changed very little. This fact was attributed to the used of pyridoxine from the tissue reserves. The authors consider it probable that pyridoxine is not only used up but redistributed and included in the enzyme systems of other organs so that the excretion of 4-pyridoxic acid decreased only slightly during a flight and its daily excretion remained unchanged. The amino-transferase activity of the blood was increased 10-20%; this is considerably less of an increase than that of the pyridoxine level in the blood. When pilots acted as passengers (on IL-18 planes) no increase in the vitamin B₆ concentration in their blood was found after the flight. This was interpreted as an indication of the importance of nervous and emotional stress in connection with the changes in the pyridoxine metabolism of pilots. The authors conclude that the content of pyridoxine in the daily rations of flight crews must be carefully watched since a lack of the vitamin might give rise to a decrease in vestibular stability.

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UDC 616.282.3-092.9-08:616-092

ZHERNAVKOV, V. F., and UDALOV, Yu. F., Moscow

"Experimental Impairment of Vestibulomotor Tolerance and Its Therapy"

Moscow, Patologicheskaya Fiziologiya i Eksperimental'naya Terapiya, Vol 14, No 4, Jul/Aug 70, pp 55-59

Abstract: Metabolism was studied in human volunteers as a possible cause of shifts in vestibular tolerance observed during airplane flights. Metabolism was disrupted by administering amino acids (lysine, tryptophan, glutamic acid), the antimetabolite pyridoxine, and inhibitors of pyridoxalic enzymes (iprazid, cycloserine). Various indices of vestibulomotor function deteriorated including threshold, latent period, and duration of the reaction to electrical stimulation of the vestibular apparatus. Following administration of pyridoxal-5-phosphate, all of these indices improved. Experimentally induced shifts in protein metabolism (increased rate, imbalance of amino acids), deficiency of pyridoxine, and action of pyridoxalic enzymes thus intensify vestibulomotor reactions. This fact suggests that the shifts in protein and vitamin balance that occur while flying may alter the reactivity of the vestibular analyzer and play a role in the pathogenesis of vestibular disturbances. Since pyridoxal-5-phosphate helps to normalize these shifts, it appears to be a useful therapeutic aid.

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Physiology

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USSR

UDC 523:612.015.3:611.85

LAPAYEV, E. V., PAVLOV, G. I., SIDEL'NIKOV, I. A., UDALOV, Yu. F., YUGANOV, Ye. M., and CHELNOKOVA, N. A.

"The Effect of Linear and Angular Accelerations on Some Metabolic Indices"

Moscow, Izvestiya Akademii Nauk SSSR, Seriya Biologicheskaya, No 4, 1970, pp 515-520

Abstract: Exposure of human subjects to linear and angular accelerations produced definite shifts in protein and vitamin metabolism. Some of the shifts were quite specific to vestibular stimulation -- decrease in transaminase activity, increased excretion of amino acids with decreased excretion of total nitrogen, and relative increase in content of the replaceable acids and amino acids involved in transamination reactions in the blood (aspartic and glutamic acids, glutamine, alanine). The shifts were more pronounced after Coriolis accelerations than after linear accelerations.

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Acc. Nr.: AP0029432

Ref. Code: UR 0391

PRIMARY SOURCE: Gigiyena Truda i Professional'nyye Zabolevaniya,
1970, Nr 1, pp 37-40

PROPHYLACTIC AND THERAPEUTIC EFFECTIVENESS OF SOME VITAMINS
IN CHLOROPHOS POISONING

N. V. Zhdanovich, Yu. F. Udalov

Summary

Experimental investigations on albino rats were carried out to determine the toxicity parameters of the insecticide dipterex with varying vitamin allowances of the animal organism and also to decode the mode of thiamine and pyridoxine action in poisoning with this insecticide. As evidenced, when introduced 25 minutes before application of dipterex (LD_{50} -570 mg/kg) and also at the appearance of intoxication symptoms, thiamine regularly increases the survival rate in the animals. Prophylactic administration of pyridoxine likewise lengthens the survival time. Antimetabolites (oxythiamine and 4-desoxypyridoxine) appreciably complicate the clinical picture of the dipterex poisoning, while 4-desoxypyridoxine, when given in a dose of 50 mg/kg, tends to markedly raise the toxicity of the preparation. Subacute poisoning produced by introduction of dipterex ($1/10 LD_{50}$) and also of dipterex applied against the background of the B_1 and B_6 vitamin deficiency, is attended by decreased respiratory enzymes activity. Thiamine exerts normalizing influence, raises

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the activity of succinate dehydrogenase in all organs, and of cytochromozydase in the brain, kidney and liver tissues. Pyridoxal-5-phosphate proves more effective than pyridoxine hydrochloride, increasing not only the cytochromoxidase activity, but in dipterex poisoning it also substantially increased that of succinate-dehydrogenase in the brain, kidney and heart.

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Acc. Nr: **AP0041467**

Ref. Code: UR 0244

PRIMARY SOURCE: Voprosy Pitaniya, 1970, Vol 29, Nr 1,
pp 28-34

THE ROLE OF THIAMINE AND PYRIDOXINE IN ACUTE AND SUBACUTE
POISONING WITH DIPTEREX—AN ORGANOPHOSPHORUS INSECTICIDE

N. V. Zhdanovich, Yu. F. Udalov (Ryazan)

Summary

The toxicity and the effect of dipterex on the tissue respiration depending upon the thiamine and pyridoxine allowances of the organism were studied in acute and subacute tests set up on albino rats of both sexes. The laboratory animals were poisoned by peroral administration of the preparation in doses of 1140, 570 mg/kg (acute poisoning) and in that of 57 mg/kg per day (subacute poisoning). Vitamins (thiamine hydrochloride and pyridoxalphosphate) and their antimetabolites (oxythiamine and 4-desoxypyridoxine) were injected intramuscularly. Thiamine and pyridoxine introduced into the organism at different time periods following acute dipterex poisoning in a dose of 1140 mg/kg (2LD₅₀) were found not to produce any marked protective and curative effect, but in all test series the life-span of the poisoned animals was lengthened. With dipterex poisoning in a dose of 570 mg/kg (LD₅₀) both the protective and "therapeutic" effects were fairly distinct. Partial thiamine and pyridoxine deficiency aggravated the clinical picture (oxythiamine) and raised the toxic effect of the preparation (4-desoxypyridoxine). Subacute dipterex poisoning was characterized by material changes in the activity of the succinate dehydrogenase and cytochromoxidase, especially with the poisoning superimposed.

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upon experimentally-induced hypovitaminosis. The enhanced toxic effect of dipterex in these conditions was confirmed also by changed weight of the laboratory animals. Introduction of dipterex simultaneously with thiamine and pyridoxine helped normalizing the activity of respiratory enzymes, attenuate the severity of the clinical picture and avert weight loss in the animals.

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UDC 615.285.7.099.036.11.085.356:577.164.1

ZHDANOVICH, N. V., and UDALOV, YU. P., Ryazan' Medical Institute
imeni I. P. Pavlov

"The Role of Thiamine and Pyridoxine in Acute and Subacute Intoxica-
tion with the Organophosphorus Insecticide Dipterex"

Moscow, Voprosy Pitaniya, Vol 29, No 1, Jan/Feb 70, pp 28-34

Abstract: The toxicity and effect of dipterex on tissue respira-
tion was studied depending on levels of thiamine and pyridoxine in
the organism with acute or subacute toxicity. Male and female rats
were given 1140 or 570 mg/kg of dipterex orally (acute intoxication)
or 57 mg/kg of dipterex (subacute poisoning) per day. The vitamins
(thiamine hydrochloride and pyridoxal phosphate) and their antimeta-
bolites (oxythiamine and 4-desoxypyridoxine were injected intramus-
cularly. Thiamine and pyridoxine, introduced into the organism
at different periods following a dipterex dose of 1140 mg/kg. had no
marked protective or curative effect, but in all cases prolonged the
lifespan of animals. With the 570 mg/kg dose of dipterex, both the
protective and "therapeutic" effects were fairly distinct. Partial
thiamine and pyridoxine deficiency aggravated the clinical picture
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ZHDANOVICH, N. V., et al., Moscow, Voprosy Pitaniya, Vol 29, No 1, Jan/Feb 70, pp 28-34

(oxythiamine) and enhanced the toxic effects of the preparation (4-desoxypridoxine). Subacute dipterex poisoning was characterized by changes in succinate dehydrogenase and cytochromoxidase activity, especially when poisoning was combined with experimentally induced hypovitaminosis. The enhanced toxic effect of dipterex under these conditions was also confirmed by weight changes of animals. Introduction of dipterex simultaneously with thiamine and pyridoxine normalized the activity of respiratory enzymes, lessening the severity of the clinical picture and preventing weight loss.

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UDC 615.285.7:546.18/099+616-099-02:615.285.7:
546.187-085,357:577.164.11/13

ZHDANOVICH, N. V., and UDALOV, YU. F., Medical Institute imeni I. P. Pavlov

"Prophylactic and Therapeutic Effectiveness of Some Vitamins in Chlorophos Intoxication"

Moscow, Gigiyena Truda i Professional'nyye Zabolevaniya, No 1, 1970, pp 37-40

Abstract: An endogenous vitamin deficiency was induced in rats by injections of antimetabolites (hydroxythiamine, 4-desoxypyridoxine, ethionamide, cycloserine, cetamiphen). Neither thiamine nor pyridoxine had any prophylactic or therapeutic value when animals were poisoned with chlorophos (Dipterex) (2 LD₅₀). However, the vitamins increased the animals' survival rate considerably when a smaller dose of chlorophos (LD₅₀) was used, because the poisoning developed more slowly. Hydroxythiamine hypovitaminosis did not reduce the survival rate, although the clinical course of the poisoning was very severe. The administration of other antimetabolites (ethionamide, 4-desoxypyrimidine, etc) had little effect on the survival

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ZHDANOVICH, N. V., et al., Moscow, Gigiyena Truda i Professional'nyye Zabolevaniya, No 1, 1970, pp 37-40

rate. Sublethal doses of chlorophos against a background of vitamin B₁ and B₆ deficiency reduce the activity of the respiratory enzymes. Administration of thiamine increased succinic dehydrogenase activity in all organs and cytochromeoxidase activity in the brain, kidneys, and liver.

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USSR

UDC 616.13-004.6-084

MOLCHANOV, N. S., ~~UDALOV, Yu. E.~~ and GARASHOV, B. N.

"A Special Vitamin Complex to Prevent Atherosclerosis in Fliers"

Moscow, Voenno-Meditsinskiy Zhurnal, No 7, 1972, pp 75-77

Abstract: Examination of a group of fliers showed a disturbance of lipid metabolism in 42.8% and the presence of atherosclerosis in 34.7%; 34.7% were normal in both respects. Administration of Aerovitan [a complex of 11 vitamins consisting of A, B₁, and B₂ (2 mg each), B₆ and pantothenic acid (10 mg each), PP (15 mg), E (20 mg), P (50 mg), C (100 mg), folic acid (0.5 mg), and B₁₂ (25 µg)] for 30 days (dosage not given) to both the healthy fliers and to those with atherosclerosis markedly lowered the cholesterol and β-lipoprotein levels. In those with atherosclerosis, the cholesterol level dropped from 272±8 to 237±8 mg% and the β-lipoprotein level from 79.3±0.8 to 74.0±0.7%. The lecithin content increased in the healthy fliers, while in those with impaired lipid metabolism or with atherosclerosis it remained high. Rough calculations showed that the systematic prophylactic administration of Aerovitan reduces the probability of atherosclerosis developing by a factor of 2.7 in all persons examined, 1.2 in those with normal lipid metabolism, and 2.8 in those with disturbed lipid metabolism.

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USSR

UDC 591.461.1

VASILEVSKAYA, N. YE., and UDALOVA, G. P.

"Bioelectrical Reactions in the Thalamic Nuclei in Response to Stimulation of the Intestinal Receptors"

Leningrad, Vestnik Leningradskogo Universiteta, No 1, 1970, pp 84-93

Abstract: Stimulation of the intestinal receptors of anesthetized cats with hydrochloric acid (0.25-1%) and sodium chloride (3-15%) solutions was followed by two forms of bioelectrical activity in the thalamic nuclei and motor cortex: (i) changes in the background rhythms and (ii) appearance of evoked potentials. The particular response varied largely with the depth of anaesthesia. The background reactions, elicited by light anaesthesia, were highly variable: depression of electrical activity, synchronisation, or decrease/increase in amplitude without a change in frequency, and vice versa. The evoked potentials were likewise variable in configuration, duration, amplitude, speed and frequency of appearance.

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021 UNCLASSIFIED PROCESSING DATE--30OCT70
TITLE--CONCENTRATION OF FREE AMINO ACIDS IN THE BLOOD OF PATIENTS WITH
UTERINE CANCER DURING SURGICAL AND RADIATION TREATMENT -U-
AUTHOR-(05)-TYUTIN, L.A., NIKITINA, M.P., SEREGIN, M.S., TYUTINA, YE.H.,
UDALOVA, I.YE.
COUNTRY OF INFO--USSR
SOURCE--VOP. ONKOL. 1970, 16(2), 29-33
DATE PUBLISHED-----70
SUBJECT AREAS--BIOLOGICAL AND MEDICAL SCIENCES
TOPIC TAGS--AMINO ACID, REPRODUCTIVE SYSTEM, CANCER, SURGERY,
RADIOTHERAPY, PAPER CHROMATOGRAPHY, ENZYME ACTIVITY
CONTROL MARKING--NO RESTRICTIONS
DOCUMENT CLASS--UNCLASSIFIED
PROXY REEL/FRA--1998/0251 STEP NO--UR/0506/70/016/002/0029/0033
CIRC ACCESSION NO--AP0120941
UNCLASSIFIED

2/2 021

UNCLASSIFIED

PROCESSING DATE--30OCT70

GIRC ACCESSION NO--AP0120941

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. THE CONC. OF FREE AMINO ACIDS WAS INVESTIGATED BY PAPER CHROMATOG. IN THE BLOOD OF WOMEN WITH UTERINE MALIGNANCY, AFTER SURGERY OR RADIOTHERAPY. IN CASES OF MALIGNANCY, A RISE IN THE LEVEL OF CYSTINE, SERINE, GLYCINE, TRYPTOPHAN AND PHENYLALANINE WAS RECORDED, WITH A FALL IN HISTIDINE, GLUTAMINE, AND GLUTAMIC ACID. AFTER DRASTIC SURGERY, LEVELS RETURNED TO NORMAL BY 3 WEEKS. THE INCREASES WERE GREATER IN ADVANCED CASES. AFTER RADIOTHERAPY, THE VALUES TEND TO BE HIGHER, AND MAY BE DUE TO CHANGED ACTIVITY OF CERTAIN ENZYME SYSTEMS. FACILITY: S. M. KIROV MIL. ACAD. MED. SCI., LENINGRAD, USSR.

UNCLASSIFIED

Magnesium

USSR

UDC 541.45:546.46:6 1.984.5

BOLYNETS, F. K., UDALOVA, L. V., ARANOVSKIY, L. I., and USACHEV, V. P.
"Study of the Kinetics of Compacting of Magnesium Oxide with Added Lithium
Fluoride at Various Hot Pressing Temperatures"

Moscow, Izvestiya Akademii Nauk SSSR, Neorganicheskiye Materialy, Vol 8,
No 2, 1972, pp 285-289

Abstract: The kinetics of compacting of magnesium oxide with added lithium fluoride (1.0 wt.%) by hot pressing in the 80-1100° C temperature interval was studied. The addition of lithium fluoride increases the rate of compacting of magnesium oxide beginning at 650° C.

At 850-1050° C, 3 stages of compacting are observed with slopes of kinetic curves in coordinates $\log \Delta L/L_0$ from $\log \tau$ equal to 0.95-1.40; 0.33-0.36; 0.1 respectively to intervals of densities of 0.96-0.97; 0.97-0.995 and over 0.995. Processes of recrystallization of magnesium oxide with the addition of lithium fluoride during hot pressing are studied. The activation energy of the process of recrystallization, equal to 25.7 kcal/mol, is determined from the temperature dependence of the increase in grain size, as 25.7 kcal/mol.

1/1

USSR

KULESHOV, V. N., UDALOV, N. N., UDALOVA, S. N.

UDC: 621.396.668

"Locking of a Signal With Linearly Changing Frequency in an Astatic Phase AFC System"

Kiev, IVUZ: Radioelektronika, Vol 15, No 3, Mar 72, pp 363-368

Abstract: The paper deals with the problem of establishing synchronism of an astatic phase AFC system in the case of linearly changing frequency of the input signal. It is assumed that initial conditions are random, and that the frequency of the input signal changes slowly. It is shown that there is an unstable limiting cycle which bounds the region of initial conditions under which locking into synchronism can take place on the phase plane of the phase AFC system. The probability of locking is determined as a function of initial detuning, the rate of change in the signal frequency and circuit parameters.

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1/2 021

UNCLASSIFIED

PROCESSING DATE--09OCT70

TITLE--STRENGTH OF THE FIELD OF RADIO WAVES IN THE RANGE 150-1,500 KC-SEC
PROPAGATING OVER GREAT DISTANCES FROM A TRANSMITTER, FIELD STRENGTH OF
AUTHOR--(03)--VILENSKIY, I.M., UDALTSOV, A.N., SHLYUGER, I.S.

COUNTRY OF INFO--USSR

SOURCE--GEOMAGNETIZM I AERONOMIYA, VOL X, NO 2, 1970, PP 262-267

DATE PUBLISHED--70

SUBJECT AREAS--NAVIGATION, PHYSICS

TOPIC TAGS--RADIO WAVE PROPAGATION, IONOSPHERIC PROPAGATION, LONG RANGE
SIGNAL, RADIO COMMUNICATION

CONTROL MARKING--NO RESTRICTIONS

DOCUMENT CLASS--UNCLASSIFIED

PROXY REEL/FRA--1991/1440

STEP NO--UR/0203/70/010/002/0262/0267

CIRC ACCESSION NO--AP0110938

UNCLASSIFIED

2/2 021

CIRC ACCESSION NO—AP0110938
ABSTRACT/EXTRACT—(U) GP-0-

UNCLASSIFIED

PROCESSING DATE--09OCT70

ABSTRACT. A PRECISE STUDY WAS MADE TO CONSTRUCT ACCURATE CURVES FOR PROPAGATION OF RADIO WAVES IN THE RANGE 150-1,500 KC-SEC TO CHECK ON THOSE RECOMMENDED BY THE INTERNATIONAL CONSULTATIVE COMMISSION ON RADIO COMMUNICATIONS FOR COMPUTING THE FIELD STRENGTH OF THE IONOSPHERIC WAVE IN THE EUROPEAN ZONE OF RADIO BROADCASTING. IT WAS FOUND THAT FOR PATHS UP TO 2,000 KM IN LENGTH THERE IS A GOOD CORRESPONDENCE TO THE MEASURED VALUES RECOMMENDED BY THE COMMISSION. FOR LONGER PATHS A CORRESPONDENCE IS OBSERVED ONLY AT LOW FREQUENCIES. FOR HIGHER FREQUENCIES THE MEASUREMENT RESULTS DEVIATE FROM THE PROPAGATION CURVE FOR THE CORRESPONDING FREQUENCY AND APPROACH THE LOW FREQUENCY CURVES. AN INCREASE IN ATTENUATION AT HIGH FREQUENCIES OVER THE TERRITORY OF THE USSR IS NOT CONFIRMED, AT LEAST FOR PATHS OF A LATITUDINAL DIRECTION. THE MAGNETIC INCLINATION CORRECTION CURVES AGREE WELL FOR PATHS UP TO 2,200 KM IN LENGTH. FOR LONGER PATHS IT IS PREFERABLE TO DETERMINE THE CORRECTION SEPARATELY FOR EACH HOP AND ADD THE RESULTS. THE DISTRIBUTION OF HOURLY MEDIANS IS CLOSE TO LOG NORMAL. DEVIATION OF THE QUASIMAXIMUM VALUE FROM THE ANNUAL MEDIAN IS PLUS 6 DB; DEVIATION OF THE QUASIMINIMUM VALUE IS 8 DB. THE SEASONAL VARIATION HAS TWO MAXIMA (MARCH AND OCTOBER) AND TWO MINIMA (SHALLOW IN JANUARY AND DEEPER IN MAY-JUNE).
FACILITY: NOVDOSIBIRSK ELECTRICAL ENGINEERING INSTITUTE OF GEOLOGY AND GEOPHYSICS, SIBERIAN DEPARTMENT ACADEMY OF SCIENCES USSR.
COMMUNICATIONS INSTITUTE.

UNCLASSIFIED

1/3 041
TITLE--HEAT RESISTANT CAST IRONS FOR GLASS MOLDS --U-- UNCLASSIFIED PROCESSING DATE--090C170
AUTHOR--(05)--YAKUBOVICH, B.I., POGODINA ALEKSEYEVA, K.M., UDALTSOV, V.I.,
LOPATKINA, L.I., KULINICH, V.P.
COUNTRY OF INFO--USSR
SOURCE--STEKLO KERAM. 1970, 27(2), 16-18
DATE PUBLISHED--70
SUBJECT AREAS--MATERIALS, MECH., IND., CIVIL AND MARINE ENGR
TOPIC TAGS--HEAT RESISTANT METAL, CAST IRON, MOLDING MATERIAL, PYREX
GLASS, ANNEALING, SILICON, PHOSPHORUS, NICKEL CONTAINING ALLOY,
GRAPHITE, GRAIN BOUNDARY, PLASTICITY
CONTROL MARKING--NO RESTRICTIONS
DOCUMENT CLASS--UNCLASSIFIED
PROXY REEL/FRAME--1992/1955
CIRC ACCESSION NO--AP0112924
STEP NO--UR/0072/70/027/002/0016/0018
UNCLASSIFIED

2/3 041

UNCLASSIFIED

PROCESSING DATE—09OCT70

CIRC ACCESSION NO—AP0112924

ABSTRACT/EXTRACT—(U) GP-0- ABSTRACT. THE EFFECT OF CHEM. COMPN. OF FERRITIC ANNEALED CAST IRONS CONTG. GLOBULAR GRAPHITE ON THE RESISTIVITY OF THE DIES TO THERMAL FATIGUE DURING THE MOLDING OF ARTICLES FROM PYREX TYPE GLASS WAS INVESTIGATED. THE EXPTL. CAST IRONS WERE MELTED IN AN INDUCTION ELEC. FURNACE AND WERE TWICE SUBJECTED TO GRAPHITIZING ANNEALING UNDER SIMILAR CONDITIONS (HEATING TO 1600DEGREES, HOLDING THERE FOR 4 HR, COOLING AT A RATE OF 50DEGREES PER HR TO 700DEGREES, HOLDING THERE FOR 4 HR, COOLING IN THE FURNACE TO 350DEGREES, AND COOLING IN AIR). AFTER THE ANNEALING, A SMALL PORTION OF THE PEARLITE REMAINED ONLY IN THE PHOSPHIDE EUTECTIC INCLUSIONS. ALL CAST IRONS STUDIED CONTAINED SMALLER THAN 0.01PERCENT S, 0.25-0.35PERCENT MN, AND SIMILAR TO 0.8PERCENT NI. THE C, SI, AND P CONTENT, IN ORDER TO INVESTIGATE THEIR EFFECT ON THE THERMAL STABILITY, WAS VARIED WITHIN THE FOLLOWING LIMITS: C 3.35-3.7, SI 1.7-2.1, AND P 0.05-0.35PERCENT. IN ORDER TO OBTAIN GLOBULAR GRAPHITE, THE CAST IRONS WERE MODIFIED WITH MG. PLUNGERS WERE PREPD. FROM THE EXPTL. CAST IRONS, AND THERMAL STABILITY OF THE CAST IRONS WAS STUDIED. THE CAST IRON CONTG. THE LEAST AMT. OF SI AND P WAS THE MOST STABLE THERMALLY. SI AND P ARE THE ELEMENTS WHICH DECREASE THE THERMAL STABILITY OF FERRITIC MOLDING CAST IRONS. ALLOYING WITH NI INCREASED THE THERMAL STABILITY OF THE CAST IRON WITH INCREASED P CONTENT. ANALOGOUS RESULTS WERE OBTAINED WHEN TESTING CASTINGS OF UNALLOYED CAST IRONS CONTG. GLOBULAR GRAPHITE AND MODIFIED WITH CE-MG 1.

UNCLASSIFIED

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041

CIRC ACCESSION NO--AP0112924

UNCLASSIFIED

PROCESSING DATE--09OCT70

ABSTRACT/EXTRACT--THERMAL FATIGUE CRACKS WERE OBSD. PRIMARILY ALONG THE BOUNDARIES OF THE FERRITE GRAINS AT THE SPOTS OF THE DEPRESSIONS IN THE SURFACE OF THE PLUNGERS AND AT THE SPOTS WHERE GRAPHITE GLOBULES WERE CLOSE TO THE SURFACE. AS THEY PROPAGATE, THE CRACKS INTERSECT THE GRAINS. THE HARMFUL EFFECT OF SI AND P ON THERMAL STABILITY OF ANNEALED CAST IRONS IS APPARENTLY ASSOC. WITH THE ENRICHMENT OF THE GRAIN BOUNDARIES BY THESE ELEMENTS. WITHIN THE RANGE INDICATED IN THIS WORK, P SHARPLY REDUCES THE PLASTICITY OF CAST IRON. FACILITY: VSES. ZAOCH. POLITEKH. INST., MOSCOW, USSR.

UNCLASSIFIED

USSR

UDC 538.4

MKHITARYAN, A. M., BOYARSKIY, G. N., UDARTSEV, YE. P., GOLEGO, A. N.

"Study of an Electromagnetic Jet Along a Wall"

Sb. nauch. tr. Kiev. in-t inzh. grazhd. aviatsii (Collection of Scientific Works. Kiev Institute of Civilian Aviation Engineers), 1970, No. 6, pp 92-98 (from RZh-Mekhanika, No 9, Sep 71, Abstract No 9B44)

Translation: The electrohydrodynamic control of flow in a boundary layer on a plane nonconducting plate is investigated experimentally with the aid of corona discharge between the corona electrode and the system of electrode-collectors located on the surface. The effect of the frequency f of the controlling electric field and electrode switching diagrams on the dynamic flow characteristics at different cross sections of the boundary layer is studied. The considerable increase in the rate in the region of the wall of propagation of the electrohydrodynamic jet is demonstrated. It is shown that the rise in f leads to an increase in the maximum "evoked" velocity and to a more uniform distribution of it along the section of interaction with the electric field. There is established the possibility of regulating the flow by changing the distribution of potential

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USSR

MKHITARYAN, A. M., et al, Sb. nauch. tr. Kiev. in-t inzh. grazhd. aviatsii,
1970, No. 6, pp 92-98

on the electrode-collectors. It is found that the relative increment of the pulse in the boundary layer ceases to rise with an increase in the electrogas-dynamic Euler number, beginning with a certain value. A. B. Vatazhin.

UDEL'NOV, M.G.
31 Mar 71

99

Cybernetics

FPD:CYBERNETICS

020212

H. Biological and Psychological Problems

NON-FOREIGN PRESS BLIST
31 Mar 71

122. USSR

UDEL'NOV, M. G.

UDC: 591.51:100.7

"Psychophysiological Bases of Adequate Reflection During the Process of Cognition"
Moscow, Biologicheskije Nauki, No 11, 1970, pp 29-38

Abstract: Based on detailed analysis of psychophysiological regularities, the author criticizes the false gnoseological conclusions drawn without basis from data indicating specialization of the organs of sense. The author proves that the sensory centers are formed during the process of interaction with the external medium under the influence of stimulation arriving from the external world. The conclusion of correspondence of qualitative and quantitative characteristics of sensations with the qualitative properties and quantitative parameters of the objective world is supported in detail. The question of the physiological mechanisms supporting the localization of sensations in correspondence with subjective localization of causal factors acting on the sense organs is studied.

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1/2 020
TITLE--CORRELATION BETWEEN VASOMOTOR REACTIONS TO NERVE STIMULATION AND
NORADRENALIN -U- UNCLASSIFIED
AUTHOR--(02)-UDELOV, M.G., KULAGINA, V.P. PROCESSING DATE--02OCT70
COUNTRY OF INFO--USSR
SOURCE--BYULLEEN' EKSPERIMENTAL'NOY BIOLOGII I MEDITSINY, 1970, VOL 69,
NR 4, PP 11-15
DATE PUBLISHED-----70
SUBJECT AREAS--BIOLOGICAL AND MEDICAL SCIENCES
TOPIC TAGS--NORADRENALIN, CAT, NERVE, DRUG EFFECT, BLOOD VESSEL
CONTROL MARKING--NO RESTRICTIONS
DOCUMENT CLASS--UNCLASSIFIED
PROXY REEL/FRAME--1988/1587 STEP NO--UR/0219/70/069/004/0011/0015
CIRC ACCESSION NO--AP0106333
UNCLASSIFIED

2/2 020

CIRC ACCESSION NO--AP0100333
ABSTRACT/EXTRACT--(U) GP-0-

UNCLASSIFIED

PROCESSING DATE--02OCT70

ABSTRACT. INVESTIGATION WAS MADE OF THE CAUSES FOR DIFFERENCES IN THE RESPONSE OF THE LIMB VESSELS OF THE CAT TO THE CONTROLLED DOSES OF NERVE INFLUENCE. THE AUTHORS DEMONSTRATED A PARALLELISM IN THE CHARACTER OF REACTION OF VESSELS TO NERVE STIMULATION AND INTRA ARTERIAL ADMINISTRATION OF NORADRENALIN: IN THE ANIMALS, IN WHICH STIMULATION OF THE SYMPATHIC CHAIN INDUCED AMBIGUOUS, DILATATIONAL AND CONSTRICTOR, REACTIONS, NORADRENALIN ALSO CAUSED DILATATION AT A LOW DOSE AND CONSTRICTION, AT A HIGH DOSE; IN THE ANIMALS, IN WHICH NEUROGENIC RESPONSES WERE CONSTRICTION ONLY, NORADRENALIN, IRRESPECTIVE OF THE GIVEN DOSE, CAUSED CONSTRICTION. PROLONGED INFUSION OF NORADRENALIN RESULTED IN THE SUBSTITUTION OF AMBIGUOUS NEUROGENIC REACTIONS BY CONSTRICTOR REACTIONS. IT IS SUPPOSED THAT THE DIFFERENCES IN THE VASOMOTOR RESPONSE TO THE NERVE INFLUENCE ARE DUE TO THE ACTION OF ENDOGENIC NORADRENALIN ON THE REACTIVE PROPERTIES OF THE VESSEL STRUCTURE IN THE SMOOTH MUSCLES.

UNCLASSIFIED

USSR

UDC 612.898:612.178

IONAVICHUTE, V. I., SAMONINA, G. Ye., and UDEL'NOV, M. G., Chair of Human and Animal Physiology, Moscow State University

"Localization and Structural and Functional Organization of the Vagus Nerve Nuclei That Form the "Heart Center" of the Medulla Oblongata"

Moscow, Uspekhi Fiziologicheskikh Nauk, No 2, 1972, pp 3-23

Abstract: The article critically reviews the literature and results of the authors' own studies on the distribution of efferent and intercalary neurons in the complex of vagal nuclei (dorsal nucleus, nucleus of the solitary tract, ambiguous nucleus). It discusses the participation of the reticular formation in the central regulatory mechanism of the heart. It also presents morphological and physiological data on the cell composition of the afferent and efferent nuclei and on the distribution of the neurons that constitute the initial portion of the effector pathways of the heart. The article concludes with some ideas on the structural and functional organization of the "heart center" and assumptions as to its relationships with other CNS structures responsible for the overall regulation of the cardiovascular system.

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I/2 026 UNCLASSIFIED PROCESSING DATE--20NOV70
TITLE--ELECTROLYTE FOR DEPOSITION OF INDIUM GALLIUM ALLOY -U-
AUTHOR--(05)-AKMENS, YA.P., MIKHALOVICH, D.L., RIKMAN, S.I., OZOLINSH,
I.M., UDEM, D.A.
COUNTRY OF INFO--USSR

SOURCE--U.S.S.R. 264,095
REFERENCE--OTKRYTIYA, IZOBRET., PROM. OBRAZTSY, TOVARNYE ZNAKI 1970,
DATE PUBLISHED--10FEB70

SUBJECT AREAS--CHEMISTRY, MATERIALS

TOPIC TAGS--CHEMICAL PATENT, ELECTROLYTE, INDIUM ALLOY, GALLIUM ALLOY,
PHENOL, GLYCINE, INDIUM CHLORIDE, GALLIUM CHLORIDE, METAL DEPOSITION

CONTROL MARKING--NO RESTRICTIONS

DOCUMENT CLASS--UNCLASSIFIED
PROXY REEL/FRAME--3004/1841

STEP NO--UR/0482/70/000/000/0000/0000

CIRC ACCESSION NO--AA0132106

UNCLASSIFIED

2/2 026

CIRC ACCESSION NO--AA0132106

UNCLASSIFIED

PROCESSING DATE--20NOV70

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. AN ELECTROLYTE FOR DEPOSITION OF
IN, GA ALLOY HAS THE FOLLOWING COMPN. IN CHLORIDE 50-150, GA CHLORIDE
2.5-25, GLYCINE 30-60, AND PHENOL 0.3-1 G-L.

UNCLASSIFIED

USSR

UDER, Yu.

UDC 621.365.82

"An Electromagnetic Theory of the Fresnel Hologram in the First Approximation to the Theory of Perturbations"

Izv. Fiz. mat. (News of Physics and Mathematics), Academy of Sciences of the Estonian SSR, Vol 22, No 2, 1973, pp 147-158, RZh-Fizika, No 9, Sep 73, Abstract No 9D822

Translation: An electrodynamic description of the process of light-wave generation from holograms of the Fresnel type is given. Solutions obtained make it possible to determine the state of polarization of a wave which in the general case is not generated. For the correct generation of the entire Fourier spectrum of the object wave, in addition to the requirement of identity between the spatial structure of the base wave at the stage of generation and the same wave in the process of hologram production, it is necessary for the average value of the complex dielectrical permeability of the finished hologram to be equal to its value for the recording medium. It is shown that scattering of the plane base wave in a 3-dimensional hologram proceeds exactly according to the Wolfe-Bragg law only in the absence of light absorption in the medium. Ten bibliographic citations. Abstract by the author.

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USSR

KUKHTENKO, A. I., SEMENOV, V. N., UDILOV, V. V.

"Abstract Theory of Systems. Present Status and Trends of Development"

Kiev, Kibernetika i Vychislitel'naya Tekhnika, No 15, 1972, pp 4-22

Abstract: The present state of the abstract theory of systems is briefly described and the deductive and inductive paths of its development are compared. The properties of reducibility of algebraic matrix representations of algebras and representation of algebras by differential forms (external algebra and the group ring) are studied on the abstract-algebraic level of description. The relationship is established between the reducibility of a group ring and the reducibility of the matrices of linear dynamic systems having group symmetry, and also between the reducibility of an external algebra and the property of controllability of dynamic systems. The approach is illustrated with examples. The constructions studied at the abstract-algebraic level illustrate a possible and very productive approach to the production of abstract system theory. Abstract system theory allows new constructive results to be produced for a precisely defined class of systems and also allows the corresponding generalizations to be made, fully confirming the fruitfulness of the construction of abstract theories for the study of systems of any nature.

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USSR

UDC 629.78.062.2

KUKHTENKO, A. I., UDILOV, V. V.

"Use of the Theory of Representations of Groups for Solution of Problems of Stabilization of Elastic Space Objects"

Kibernet. i Vychisl. Tekhn. Resp. Mezhved. Sb. [Cybernetics and Computer Equipment Republic Interdepartmental Collection], No 8, 1971, pp 4-17, (Translated from Referativnyy Zhurnal, Raketostroyeniye, No 10, 1971, Abstract No 10.41.141, from the Resume).

Translation: This work demonstrates a method for composition of the equations of elastic oscillations of symmetrical moving objects. It is shown how the theory of matrix representations of groups can be used to divide multidimensional problems into problems of lower dimensionalities. A possibility is discussed of using the method described to study processes of control of elastic space objects. 13 Figures; 1 Table; 8 Biblio. Refs.

172 025
UNCLASSIFIED
TITLE--ON THE DEPTH OF HORIZONTAL INHOMOGENEITY OF EARTH'S MANTLE UNDER
OCEANS AND CONTINENTS -U-
AUTHOR--(03)--DMITRIYEV, U.V., UDINTSEV, G.B., POPOVA, A.K.
PROCESSING DATE--20NOV70
COUNTRY OF INFO--USSR, SPAIN
SOURCE--INTERNATIONAL ASSOCIATION OF SEISMOLOGY AND PHYSICS OF THE EARTH'S
INTERIOR, MALKID, 1-12 SEPTEMBER, 1969. PROGRAM AND ABSTRACTS, VOLUME 1
DATE PUBLISHED--SEP69
SUBJECT AREAS--EARTH SCIENCES AND OCEANOGRAPHY
TOPIC TAGS--EARTH MANTLE, OCEAN BOTTOM, LAND, SEA FLOOR, RADIOACTIVITY,
URANIUM, THORIUM, RIFT, UPPER MANTLE, HEAT TRANSFER
CONTROL MARKING--NO RESTRICTIONS
DOCUMENT CLASS--UNCLASSIFIED
PROXY REEL/FRA--3005/1173
CIRC ACCESSION NO--AT0133188
STEP NO--SP/0000/69/001/000/0000/0000
UNCLASSIFIED

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025

CIRC ACCESSION NO--AT0133188
ABSTRACT/EXTRACT--(U) GP-0-

UNCLASSIFIED

PROCESSING DATE--20NOV70

INHOMOGENEITY OF THE MANTLE AND ON DIFFERENCES OF ITS STRUCTURE AND COMPONENTS IN CONTINENTAL AND OCEANIC SEGMENTS OF THE EARTH ORIGINATE FROM DATA ON EQUALITY OF HEAT FLOW VALUES MEASURED ON CONTINENTS AND THE OCEAN FLOOR. THEY ARE SUPPORTED ALSO BY DATA ON RELATIVELY LOW CONTENT OF RADIOACTIVE ELEMENTS IN THE CRUST AND MANTLE OF THE OCEANS AND RELATIVELY HIGH CONTENT OF THEM IN THE CONTINENTAL CRUST. 2. NEW DATA ON HIGH AND STABLE CONTENT OF URANIUM AND THORIUM IN ULTRA BASIC ROCKS OF RIFT ZONE AND MID INDIAN OCEAN RIDGE ARE OBTAINED. THESE ROCKS CAN BE IDENTIFIED WITH ROCKS OF THE UPPER MANTLE ON THE BASIS OF DATA ON THEIR STRUCTURAL POSITION. 3. WE CAN SOLVE SYSTEM OF EQUATION $Q_{SUBO} = K_{SUB1} + X \cdot M_{SUB1} + Q_{SUBK}$ EQUALS $K_{SUB2} + PLUX \cdot X \cdot M_{SUB2}$ WHERE Q_{SUBO} AND OCEANS; K_{SUB1} AND K_{SUB2} , M_{SUB1} AND M_{SUB2} GENERATION OF HEAT IN OCEANIC AND CONTINENTAL CRUST (K) AND MANTLE (M); X DEPTH OF DIFFERENTIATION OF MANTLE. IN RESULT OF SUCH SOLUTION, WE OBTAIN DEPTH OF LOWER BOUNDARY OF DIFFERENTIATED MANTLE ABOUT 190 KM. FACILITY: INSTITUTE OF GEOCHEMISTRY, USSR ACADEMY OF SCIENCES, MOSCOW, USSR. FACILITY: INSTITUTE OF OCEANOLOGY, USSR ACADEMY OF SCIENCES, MOSCOW, USSR.

UNCLASSIFIED

1/3 015 UNCLASSIFIED PROCESSING DATE--16OCT70
TITLE--GENEALOGY OF THE OCEAN -U-
AUTHOR--UDINTSEV, G. *U*
COUNTRY OF INFO--USSR
SOURCE--MOSCOW, IZVESTIYA, 26 FEBRUARY 1970, P 4
DATE PUBLISHED--26FEB70

SUBJECT AREAS--EARTH SCIENCES AND OCEANOGRAPHY
TOPIC TAGS--LITHOSPHERE, EARTH CRUST, UPPER MANTLE, ROTATION, OCEAN
BOTTOM, SEA FLOOR, CONTINENTAL DRIFT, OCEAN

CONTROL MARKING--NO RESTRICTIONS
DOCUMENT CLASS--UNCLASSIFIED
PROXY REEL/FRA--1993/1142 STEP NO--UR/9003/70/000/000/0004/0004
CIRC ACCESSION NO--AN0113891
UNCLASSIFIED

UNCLASSIFIED

PROCESSING DATE--16OCT70

2/3 015

CIRC ACCESSION NO--AN0113891

ABSTRACT/EXTRACT--(U) GP-0-

ABSTRACT. MANY SCIENTISTS HAVE CONCLUDED THAT A NEW CRUST IS FORMED IN A RIFT ZONE AND THEN DEVELOPS TO EITHER SIDE AND DISPLACES CONTINENTAL MASSES OR WEDGES BENEATH THEM. THE MECHANISM OF THIS PROCESS IS STILL NOT CLEAR. SOME VISUALIZE IT IN THE FORM OF TWO GIGANTIC CONVEYER BELTS WHICH MOVE FROM THE RIFT ZONES IN THE DIRECTION OF THE CONTINENTS AND CARRY ALONG THE OCEAN FLOOR WITH ITS BOTTOM DEPOSITS. OTHERS BELIEVE THAT GIANT SLABS OF THE LITHOSPHERE ARE MOVED. THIS INCLUDES NOT ONLY THE CRUST, BUT ALSO THE UPPER MANTLE AND THESE ARE ROTATED RELATIVE TO SOME POLES. STILL OTHERS FEEL THAT THE DISPLACEMENT OF THE LITHOSPHERIC SLABS OCCURS UNDER THE PRESSURE OF MASSES OF DEEP MATTER WHICH PENETRATE INTO THE UPPER LAYERS IN A RIFT ZONE. THERE ARE SOME WHO VISUALIZE THE MOVEMENT OF LITHOSPHERIC SLABS AS RIDING ON THE BACK OF FLOWS OF MATTER MOVING IN THE EARTH'S DEEPER LAYERS. ESTIMATES OF THE RATES OF MOVEMENT OF THESE SLABS IN RIFT ZONES VARY. MOST SUPPORTERS OF THE HYPOTHESIS OF EXPANSION OF THE OCEAN FLOOR ESTIMATE THIS RATE AT 1-4 CM PER YEAR. THEY FEEL THAT THE RESULTS OF OCEANIC DRILLING CONFIRM THIS ESTIMATE. THAT IS WHY THE HYPOTHESIS OF EXPANSION AND CONTINENTAL DRIFT HAS AGAIN BECOME SO POPULAR. HOWEVER, MORE CAREFUL GEOLOGICAL AND GEOPHYSICAL INVESTIGATIONS SUGGEST THAT THE STRUCTURE OF OCEAN REGIONS IS CONSIDERABLY MORE COMPLEX THAN THIS IDEALIZED MODEL. ACCORDINGLY, THE ORIGIN OF OCEANIC DEPRESSIONS WAS ALSO MORE COMPLEX. SOVIET EXPEDITIONS WORKING IN THE INDIAN AND ATLANTIC OCEANS DURING RECENT YEARS HAVE SHED MUCH LIGHT ON THIS PROBLEM.

UNCLASSIFIED

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UNCLASSIFIED

PROCESSING DATE--16OCT70

CIRC ACCESSION NO--AN0113891

ABSTRACT/EXTRACT--IT HAS BEEN NECESSARY TO DISCARD THE HYPOTHESIS OF FORMATION OF A NEW CRUST DUE TO THE OUTPOURINGS OF BASALTIC LAVAS IN RIFT FISSURES. COMPUTATIONS SHOW THAT THE MAGNETICALLY DISTURBING BODIES CREATING MAGNETIC ANOMALIES IN ROCKS DO NOT LIE AT THE SURFACE, BUT THREE OR FOUR KILOMETERS BELOW IT. IT CAN BE POSTULATED THAT THE NEW FORMATION OF THE CRUST IN A RIFT ZONE DOES NOT OCCUR IN A NARROW FISSURES BUT IN A RATHER BROAD BAND OF ABOUT 100-150 KM. THE MOTION OF THE NEW CRUST TO ONE SIDE OR THE OTHER OCCURS MORE SLOWLY THAN IS ESTIMATED ON THE BASIS OF THE AGE OF THE SEDIMENTS COVERING THE BASALT FLOWS. SCIENTISTS HAVE DISCOVERED THAT THE MID OCEANIC RIDGES DIFFER SUBSTANTIALLY IN STRUCTURE FROM THE ADJACENT PARTS OF THE OCEAN FLOOR. IT CAN BE SURMISED THAT THE ORIGIN OF THE PARTS OF THE OCEAN FLOOR NEIGHBORING ON THE MID OCEANIC RIDGES IS ASSOCIATED WITH SOME OTHER PROCESSES THAN NEW FORMATION OF THE CRUST IN RIFT ZONES AND ITS SUBSEQUENT OUTWARD EXPANSION. SOME PARTS OF THE FLOOR EVIDENTLY ARE VERY ANCIENT, WHEREAS OTHERS ARE RELATIVELY RECENT IN ORIGIN, FORMING AS A RESULT OF THE COLLAPSE AND SUBMERGENCE OF THE CONTINENTAL MARGINS. FORMATION OF OCEAN BASINS IS THEREFORE A RESULT OF A COMPLEX PROCESS COMBINING FORMATION OF A NEW CRUST IN RIFT ZONES AND SUBSIDENCE OF THE CONTINENTAL MARGINS.

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GEOPHYSICAL ABST.

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4R 0020

274-246 ~~Udintsev G.B.~~ O strukture riftovoy zony Indiysskogo okeana [On the structure of the rift zone of the Indian Ocean]: Akad. Nauk SSSR Doklady, v. 185, no. 4, p. 921-924, illus., 1969.

According to geomorphic, geophysical, and petrographic data obtained by the research vessels "Vityaz" and "Academician Kurchatov" in the Indian Ocean, the formation of the special mosaic structure of the crust of oceanic rift zones and the composition of the rocks constituting the blocks of the mosaic are the result of a combination of three global processes: zonal melting, leading to differentiation of primary meteoritic matter into the basalt and gabbro of oceanic crust; intensive ascent of upper mantle matter into the deep seated axial parts of mid ocean ridges; and degassing of the mantle, a process amplified by tectonic stresses, the formation of abyssal faults, and dedensification of matter. The rift

zone is a region of active formation of a special type of crust, generated under the direct influence of the upper mantle. Rift zones are a special type of tectonic region, as important as geosynclines in the evolution of the Earth's shell. Dedensification of upper mantle rocks from 3.1 to 2.6-2.7 g per cm³ accompanies the development of these rift zones, or "georiftogens." --D.B.V.

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AP 9052048

GEOPHYSICAL ABST.

11/69

UR0030

274 439 Sagalevich, A. M.; Sorokhtin, O. G.; Udintsov, G. A.; Shcheglov, B. V.
Seismicheskoye profilirovaniye dna Chernogo morya [Seismic profiling of the
Black Sea floor]; Akad. Nauk SSSR Vestnik, no. 3, p. 36-39, illus., 1969.

The sedimentary layer on the Black Sea floor was investigated in the summer of 1968 by seismic profiling. The results show that the continental shelf is overlain by unconsolidated sediments dipping gently seaward. On the continental slope the thickness of the sedimentary layer is variable, controlled by the irregular surface of the underlying denser rocks. A fault flexure and a gentle anticlinal fold are recognized. The abyssal plain is covered with practically horizontal sediments at least 600-700 m thick. The age of the sediments is Quaternary and Neogene, and the structures on the continental slope are presumably Alpine.—D.B.V.

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AP 0019511

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JPRS 49346

(Abstract: "Structure of the Rift Zone in the Indian Ocean and its Place in the World System of Rifts," by A. P. Vinogradov, G. B. Udintsev, L. V. Dmitriyev, V. F. Kanayev, Yu. P. Neprochnov, G. N. Petrova, L. N. Rykunov and L. I. Kogan, Institute of Geochemistry and Analytical Chemistry and Institute of Oceanology, Moscow, Izvestiya Akademii Nauk SSSR, Seriya Geologicheskaya, No. 10, 1969, pp. 3-27)

Structure of the Rift Zone in the Indian Ocean

Soviet investigations of the relief of the rift zone in the Indian Ocean were made during 1964-1967 in a dense network of stations and profiles. Detailed maps of submarine relief now show that the axial zone of the mid-oceanic ridges in the Indian Ocean are cut by narrow and deep rift canyons which are usually arranged at an angle to the axis of the ridge or in echelons. The width of the canyons is only 5-10 km; the depth relative to the crests of adjacent mountain ridges is from 1 to 3 km and the length is several tens of kilometers. The slope steepness in the canyons is up to 30°. Locally the canyon bottoms are level, but more frequently they are not. These canyons do not form a continuous rift valley along the axis of the ridge. The role of transverse faults is not so great as

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Reezen, Tharp and Fisher contend. Deep seismic sounding was carried out, taking into account the orientation of elementary structures in the rift zone: along the bottom of the rift canyons and along the crests of the rift ridges. The bottom of the rift canyons is covered by either a very thin layer of unconsolidated sediments or the latter are completely absent, consisting of rock with seismic wave velocities of 4.5-5.5 km/sec, forming a layer with a thickness of about 2 km. Underneath there are rocks with wave velocities of 7.0-7.5 km/sec, underlain at a depth of 13-16 km by a discontinuity with seismic wave velocities of about 9.0 km/sec. The discontinuity with velocities of 7.0-7.5 km/sec is identified with the Mohorovicic discontinuity. The surface outcropping of mantle rocks found in the rift zone indicates that this identification is correct. If it is in fact correct, the Moho in the rift zone is considerably uplifted in comparison with its position under the surrounding ocean bed (by approximately 3 km). The rift blocks (ridges) surrounding the canyons are covered by a thin or discontinuous cover of sediments and consists of rocks with seismic wave velocities changing with transition from block to block. In some cases 6.0 km/sec and in others 5.0 km/sec. In all cases they are underlain by rocks of the "basalt" layer with velocities 6.7 km/sec. Continuous seismic profiling by the reflected waves method along a profile from the Seychelles to the Chagos Islands revealed a marked decrease in thicknesses of the sedimentary cover from 500-800 to 200-100

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m with transition from the horizontal layers on the floor of the Somali Deep to the complex ridge structures with discontinuous lenses of sediments in the canyons of the mid-oceanic ridge. There is a remarkable difference in composition of the sediments: on the bottom of the canyons in the rift zone there is a predominance of sediments with a considerable content of weathered products of ultrabasic magmatic rocks, whereas in the rift ridges there are biogenous foraminiferous silts. A dissected magnetic field is observed over the mid-oceanic ridge in the Indian Ocean. The anomalies attain 300-650 gammas with a period from 10 to 20 km. The depth of the upper surfaces of magnetically disturbing bodies is close to the depths of the ocean, that is, most of the magnetic bodies lie close to the bottom surface. The horizontal dimensions of magnetic bodies are commensurable with the dimensions of individual rift ridges. Measurements of the heat flux made it possible to detect a great scatter of values, obviously associated with the block tectonics of the rift ridges. The lowest heat fluxes (about $0.8 \text{ mcal/cm} \cdot \text{sec}^2$) were observed on the bottom of the rift canyons, whereas normal ($1.3 \text{ mcal/cm} \cdot \text{sec}^2$) and high values ($3.5 \text{ mcal/cm} \cdot \text{sec}^2$) are associated with different rift ridges. Bottom seismographs were used in seismicity studies; about 100 earthquakes per day were registered with energies from 10^3 to 10^6 J . This is comparable to the most seismically active zones on the earth. This 25-page article, rich in maps and tables, is probably the most thorough and up-to-date compendium of detailed information yet published on Soviet studies of the Indian Ocean rift zone.

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INTERNATIONAL SCIENTIFIC RELATIONS

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SOVIET-JAPANESE COLLABORATION IN MARINE GEOPHYSICS

G. B. Udintsev, A. F. Beresnev, and A. M. Sagalevich

Pages 93-96

Vestnik Akademii Nauk SSSR,
Vol 39, No 5, May 1969

At a meeting of the Committee for the International Project "The Upper Mantle of the Earth and Its Influence on the Development of the Earth's Crust", convoked in Tokyo on the occasion of the 11th Pacific Ocean Scientific Congress held there (September 1966), Soviet scientists introduced a proposal regarding organization of Soviet-Japanese collaboration in marine geophysics. The basis of the proposal was the idea of uniting the efforts of the geophysicists of the two countries in conducting investigations according to the upper mantle project in the northwestern part of the Pacific Ocean, especially in the transitional zone from the Asiatic continent to the bed of the Pacific Ocean. That idea was supported by Japanese colleagues.

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An agreement was achieved that not only combined efforts for more intensive study of the northwestern margin of the Pacific Ocean should be included in the task of collaboration, but also mutual assistance in the improvement of ways and means of investigation by the exchange of experience. It was proposed to organize exchange of scientists for participation in the work of the two countries.

At the same time Soviet specialists were sent to Japan and took part in the work of Japanese geophysicists. In accordance with the national program of investigations on the upper mantle project, co-workers of the Institute of Study of Earthquakes of Tokyo University, the National Scientific Museum and Hokkaido University conducted at the same time deep seismic sounding on a profile across the island of Hokkaido and on a number of profiles across the Japanese and Kurile-Kamchatka abyssal trench in the region of contact of the Japanese and Kurile-Kamchatka island arcs east of the Sangar Strait.

The work of the Japanese geophysical expedition in August 1968 was accomplished at sea on the vessels "Fumi-Maru" and "Kofu-Maru".

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Soviet scientists V. M. Kovylin (Institute of Oceanology imeni P. P. Shirshov of the AS USSR) and Ye. K. Lassevskiy (Institute of Geophysics of the AS Ukrainian SSR) participated in the observations of ground seismic stations on the island of Hokkaido, and A. F. Beresnev and A. M. Sagalevich (Institute of Oceanology imeni P. P. Shirshov of the AS USSR) in work on the continuous seismic profiling on the "Fumi-Maru". Investigations on the "Fumi-Maru" were led on the whole by S. Asano (Institute of the Study of Earthquakes of Tokyo University) and the continuous seismic profiling by K. Hori (Geophysical Institute of Hokkaido University). Soviet scientists obtained the possibility of becoming acquainted with the methods of investigations and of conducting observations using original Japanese apparatus.

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19571448

USSR

UDILOV, V. V.

UDC: 533.652/.661.013

"Stabilizing the Coordinates of a Flexible Aircraft Flying in a Turbulent Atmosphere"

Tr. 3-go Vses. soveshchaniya po teorii invariantnosti i yeye primeneniyu v sistemakh avtomat. upr. T. 2. Primeneniye invariantn. avtomat. upr. (Works of the Third All-Union Conference on the Theory of Invariance and Its Application to Automatic Control Systems) Moscow, "Nauka," 1970, pp 227-231 (from RZh-Mekhanika, No. 8, Aug 70, Abstract No. 8B461)

Translation: The problem is considered of automatically controlling aircraft altitude and pitch angle in the "duck" system. The aircraft dynamics is described by a system of linear differential equations with constant coefficients: three equations of motion of the center of gravity and rotation of the aircraft as a solid body, and a combination of equations for the flexible oscillations of an elastic fuselage in the plane of longitudinal symmetry. It is assumed that the autopilot acts on the flaps in changing the pitch

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USSR

UDILOV, V. V., Tr. 3-go Vses. soveshchaniya po teorii invariantnosti i yeye primeneniyu v sistemakh avtomat. upr. T.2. Primeneniye invariantn. avtomat. upr, 1970, pp 227-231

and attack angles, the generalized coordinates characterizing the bending oscillations of the fuselage, and the nose-controlling surface, as well as in changing the slope of the trajectory. By excluding two variables from the system of equations for the closed aircraft-autopilot system (the deviation angles of both controlling surfaces) the conditions are found for the invariance of the trajectory and pitch deviation angles relative to the external turbulence -- the increase in the attack angle under the action of the wind velocity vertical component. The absolute invariance can be attained when the control channels for each guidance system setting the attack angle and the generalized coordinates are inertialess. Bibliography of four. G. S. Aronin

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USSR

Agriculture

USSR

UDINTSOV, P. S., director of the Central Forecast Laboratory, Ministry of
Agriculture USSR

"Forecast for 1973"

Moscow, Zashchita Rasteniy, No 1, 1973, pp 44-46

Abstract: The cold, snow-poor winter of 1972 has had bad effects on winter wheat and rye as well as fruit trees and berry bushes. The exceptionally dry summer has curbed the spread of grain rust but promoted proliferation of the meadow butterfly. On the whole, however, the agricultural situation is improving as a result of proper chemical treatment applied and other agrarian measures taken in the past. In 1973, chemicals against crop pests and diseases are to be applied on about 67 million hectares. Some 70% of the total work will concern combating gophers, marine rodents, butterflies, mites, and bugs. Treatment against the gopher alone will be performed on some 8 million ha, and about 5 million ha will be treated against grain pests. Commercial crops, such as sugar beets, cotton, flax, and tobacco are more endangered than in the past and therefore need more attention. Because of massive proliferation of the Colorado beetle in the past summer, a large area of potato fields will have to be treated chemically. About 1.4 million ha will be treated against vegetable diseases and parasites.

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Hydraulic and Pneumatic

UDC 532.516

USSR

TSEPILEVICH, V. G., UDLER, E. I., MISHCHENKO, L. A.

"Hydrodynamic Boundary Layer at an Enclosed Oscillating Plane"

Sb. nauch. tr. Tomsk. inzh.-stroit. in-t (Collection of Scientific Works of Tomsk Structural Engineering Institute), 1971, Vol. 17, pp 116-124 (from RZh-Mekhanika, No 3, Mar 72, Abstract No 3B673)

Translation: The second Stokes problem on the motion of a viscous liquid close to an unbounded plane wall and making rectilinear harmonic oscillations in its plane is extended to the case when another plane wall makes harmonic oscillations of a different frequency than amplitude not coinciding in phase in a parallel plane at a certain distance. The solution of the Navier-Stokes equation for a layer of viscous liquid between the oscillating plane walls is sought by the Fourier method. It is shown that the presence of a parallel plane surrounding the flow does not change the phase shift in comparison with the case of an unenclosed flow; however the velocity attenuates across the cross section more intensively, especially when the parallel plane walls oscillate in counter-phase. Ya. S. Khodorkovskiy.

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1/2 C19 UNCLASSIFIED PROCESSING DATE--20NOV70
TITLE--THIOL BLOOD GROUPS IN PATIENTS SUFFERING FROM HYPOTHYROIDISM -U-
AUTHOR--(02)-LEOD, V.M., LIKHODDY, S.S.
COUNTRY OF INFO--USSR
SOURCE--PROG ENDOCRINOL 15(1): 12-14, 1970
DATE PUBLISHED-----70
SUBJECT AREAS--BIOLOGICAL AND MEDICAL SCIENCES
TOPIC TAGS--THIOL, BLOOD PROTEIN, BLOOD SERUM, AMPEROMETRIC TITRATION,
THYROID GLAND
CONTROL MARKING--NO RESTRICTIONS
DOCUMENT CLASS--UNCLASSIFIED
PROXY REEL/FRA--3006/C258 STEP NO--UR/0502/70/016/001/0012/0014
CIRC ACCESSION NO--AP0134063
UNCLASSIFIED

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UNCLASSIFIED

PROCESSING DATE--20NOV70

CIRC ACCESSION: NJ--AP0134083

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. THE AMPEROMETRIC TITRATION METHOD WAS APPLIED TO EXAMINATION OF THE CONCENTRATION OF PROTEIN THIOL GROUPS IN THE BLOOD SERUM OF 29 PATIENTS SUFFERING FROM HYPOTHYROIDISM. THE CONTENT OF FREE SULFHYDRYL GROUPS IN THE BLOOD SERUM WAS ELEVATED (BY 30.3PERCENT ON THE AVERAGE) IN COMPARISON WITH HEALTHY INDIVIDUALS. THE RISE IN THE CONCENTRATION OF SULFHYDRYL GROUPS WAS PROPORTIONAL TO THE SEVERITY OF HYPOTHYROIDISM. FACILITY: DEP. BIOCHEM., TSELINGGRAD MED. INST., TSELINGGRAD, USSR.

UNCLASSIFIED

1/2 035 UNCLASSIFIED PROCESSING DATE--27NOV70
TITLE--COLLOIDAL COLOR CENTERS IN POTASSIUM CHLORIDE, POTASSIUM BROMIDE,
AND POTASSIUM IODIDE CRYSTALS -U-
AUTHOR--(02)-RADCHENKO, I.S., UOOD, V.V.
COUNTRY OF INFO--USSR
SOURCE--FIZ. TVERD. TELA 1970, 12(5), 1511-14
DATE PUBLISHED-----70

SUBJECT AREAS--CHEMISTRY, PHYSICS

TOPIC TAGS--OPTIC PROPERTY, ABSORPTION SPECTRUM, CRYSTAL STRUCTURE,
MATHEMATIC EXPRESSION, COLLOID, POTASSIUM BROMIDE, POTASSIUM CHLORIDE,
POTASSIUM IODIDE, ELECTRON STRUCTURE, ELECTROMAGNETIC RADIATION

CONTROL MARKING--NO RESTRICTIONS

DOCUMENT CLASS--UNCLASSIFIED
PROXY REEL/FRA--3003/0160

STEP NO--UR/0181/70/012/005/1511/1514

CIRC ACCESSION NO--AP0129416

UNCLASSIFIED

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UNCLASSIFIED

PROCESSING DATE--27NOV70

CIRC ACCESSION NO--AP0129416

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. THE PROCESS WAS INVESTIGATED OF PHOTOCHEM. TRANSFORMATION OF F CENTERS INTO LARGER AGGREGATES OF THE X CENTER TYPE. BY USING THE MIE FORMULA, CALC. WAS MADE OF THE COEFFS. OF WEAKENING (K_{SUB0}), SCATTERING (K_{SUBP}), AND ABSORPTION (K_{SUBA}) OF ELECTROMAGNETIC RADIATION BY SOME ALKALI HALIDE CRYSTALS CONTG. K IN THE COLLOIDAL STATE. IN THE CALC. OF THE ABOVE COEFFS., DIFFUSE REFLECTION WAS CONSIDERED OF CONDUCTION ELECTRONS ON THE COLLOID PARTICLE CRYSTAL BOUNDARY AND THE PRESENCE OF TAMM LEVELS. FOR THE SYSTEM KCL,K, A DETAILED COMPARISON WAS MADE OF THE CALCD. CURVES K_{SUB0} WITH THE EXPTL. VALUES. MAX. ON THE CALCD. CURVES COINCIDE WITH THOSE OBSD. WHEN THE RATIO OF THE NO. OF FREE ELECTRONS PER UNIT VOL. OF COLLOID PARTICLE TO THE NO. OF FREE ELECTRONS PER UNIT VOL. OF MASSIVE K IS SIMILAR TO 0.93.
FACILITY: KRIVORDZH. GOS. PEDAGOG. INST., KRIVOI ROG, USSR.

UNCLASSIFIED

1/2 022
UNCLASSIFIED
TITLE--ABSORPTION SPECTRA AND SIZE OF COLLOIDAL CENTERS IN SODIUM AND
POTASSIUM CHLORIDE CRYSTALS -U-
PROCESSING DATE--18SEP70
AUTHOR--(05)-SHVARTS, K., EKMANIS, YU.A., UDOD, V.V., LYUSHINA, A.F.,
TILIKS, YU.YE.
COUNTRY OF INFO--USSR
SOURCE--FIZ. TVERD. TELA 1970, 12(4) 879-84
DATE PUBLISHED-----70
SUBJECT AREAS--PHYSICS, ELECTRONICS AND ELECTRICAL ENGR.
TOPIC TAGS--ABSORPTION SPECTRUM, SODIUM CHLORIDE, POTASSIUM CHLORIDE,
OPTIC PROPERTY, CRYSTAL STRUCTURE
CONTROL MARKING--NO RESTRICTIONS
DOCUMENT CLASS--UNCLASSIFIED
PROXY REEL/FRA--1988/0580
STEP NO--UR/0181/70/012/003/0879/0884
CIRC ACCESSION NO--AP0105563
UNCLASSIFIED

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UNCLASSIFIED

PROCESSING DATE--18SEP70

CIRC ACCESSION NO--AP0105563

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. COLLOIDAL CENTERS WERE INVESTIGATED IN ELECTROLYTICALLY COLORED NaCl AND KCl CRYSTALS WITH THE APPLICATION OF OPTICAL, ELECTRON MICROSCOPIC, AND CHEM. METHODS. COMPARISON OF THE EXPTL. ABSORPTION SPECTRA OF COLLOIDAL PARTICLES WITH THOSE CALCD. BY THE MIE THEORY WITH THE ACCOUNT OF EXPTL. DISTRIBUTION OF THE PARTICLES OVER DIMENSIONS FOR NaCl AND KCl CRYSTALS GAVE A GOOD COINCIDENCE. THIS IS A DIRECT PROOF OF THE VALIDITY OF THE MIE THEORY FOR THE DESCRIPTION OF OPTICAL PROPERTIES OF COLLOIDAL PARTICLES IN IONIC CRYSTALS. THE COLLOIDAL CENTERS WITH RADIUS GREATER THAN 600 ANGSTROM ARE REPRESENTED WEAKLY IN THE OPTICAL SPECTRUM, THOUGH SUCH PARTICLES IN ELECTRON MICROSCOPIC INVESTIGATION WERE OBSD. IN ALL CRYSTALS. COLLOIDAL PARTICLES ARE QUITE UNIFORMLY DISTRIBUTED OVER THE CRYSTAL, AND MORE SO IN NaCl THAN IN KCl CRYSTALS.

UNCLASSIFIED

USSR

UDC 681.121.842

MEDVEDEV, V. F., UDODOV, A. G.

"Measurement of Flow Rates of Gas-Liquid Mixtures by Standard Diaphragms"

Tr. Metrol. In-tov SSSR [Works of Metrology Institutes, USSR], 1972, No 135 (195), pp 93-97, (Translated from Referativnyy Zhurnal, Metrologiya i Izmeritel'naya Tekhnika, 1972, No 5, Abstract No 5.32.730).

Translation: The flow of air-water mixtures was studied through standard diaphragms with various moduli in the interval of Reynolds numbers $Re = 10^4 - 10^5$ throughout the entire range of change of gas content of the mixture. It was found that the dependence of flow factor on Re number is manifested more strongly, the lower Re , the flow factor increasing with decreasing Re . As Re increases, this dependence becomes less clear, and with sufficiently high Re , the flow factor can be considered constant. The influence of diaphragm modulus and volumetric content of gas with the mixture on flow factor is demonstrated. 3 Figures; 3 Biblio. Refs.

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USSR

ALEKSANDROV, V. I., VORON'KO, YU. K., MIKHALEVICH, V. G., OSIKO, V. V.,
PROKHOROV, A. M., Academician, TATARINTSEV, V. M., UDOVENCHIK, V. T., and
SHIPULO, G. P., Physics Institute imeni P. N. Lebedev, USSR Academy of
Sciences, Moscow

"Spectroscopic Properties and Generation of Nd^{3+} in Crystals of ZnO_2 and HfO_2 "
Doklady Akademii Nauk SSSR, Vol 199, No 6, 1971, pp 1282-1283

Abstract: The spectroscopic properties of Nd^{3+} are known in various crystals and glasses. Materials such as crystals of $V_3Al_5O_{12}$ and silicate glasses activated with neodymium have been widely used in lasers. The authors of this article first describe the spectroscopic properties and generation of Nd^{3+} in cubic crystals of ZrO_2 and HfO_2 . These materials have a fluorite type crystal lattice in which the Nd^{3+} ions replace the tetravalent ions of zirconium or hafnium. In addition to the Nd^{3+} the crystals contained impurities of CaO or V_2O_3 for the purpose of stabilizing the cubic structure of the ZrO_2 and HfO_2 . The authors describe the experiment and give 1 figure and 1 table to illustrate the results. The figure graphically shows the optical spectra of HfO_2-Nd^{3+} crystals, including the spectrum of absorption, the

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USSR

ALEKSANDROV, V. I., et al., Doklady Akademii Nauk SSSR, Vol 199, No 6, 1971, pp 1282-1283

absorption group, and the spectrum of luminescence transition. The table gives two structural types of crystals with their properties. The article contains 1 figure, 1 table, and 9 bibliographic entries.

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USSR

UDC:539.3

MIL'MAN, Yu. V., TREFILOV, V. I., ~~UDOVENKO, A. A.~~, Kiev

"Specifics of the Mechanism of Plastic Deformation of Niobium"

Kiev, Problemy Prochnosti, No. 12, Dec 70, pp. 45-50

Abstract: The change in the dislocation structure and mechanical properties of polycrystalline niobium resulting from plastic deformation and annealing is studied. The differences in the mechanism of plastic deformation of niobium from that of molybdenum and other body centered cubic metals in group VIA are related to the decreased rigidity (directivity) of the interatomic bond and the increased value of activity volume V in niobium.

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USSR

UDC 666.113.431.47.32-31.28

BLINGV, V. A., UDOVENKO, N. G., NIKULIN, V. KH., PRUSAKOVA, L. M.,
SOKOLINSKIY, A. G., ORLOV, V. N., VYSOTSKAYA, Z. I., and CHERNYSHEV, A. V.

"Glass for Ultrasonic Delay Lines"

USSR Author's Certificate No 366156, Filed 26 Jun 70, Published 16 Jan 73
(from Otkrytiya, Izobreteniya, Promyshlennyye Obratzsy, Tovarnyye Znaki, No 7,
Mar (a) 73, Claim No 1453164/29-33)

Translation: A glass for ultrasonic delay lines, including SiO_2 , ZnO , BaO ,
 K_2O , is distinguished by the fact that, in order to obtain stable acoustic
properties it contains the above components in the following amounts, weight
%: SiO_2 49-65; ZnO 5-25, BaO 10.5-30; K_2O 6-25, and furthermore Sb_2O_3 0.05-3.

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USSR

DERKACH, V. F., UDOVENKO, S. A.

UDC 539.376+532.135

"On the Possibility of Using the Time Characteristics Method for Solving Applied Problems on the Bending of Three-Layer Plates Considering Creep of the Materials"

Samoletost. i tekhn. vozd. flota. Resp. mezhved. temat. nauch.-tekhn. sb.
(Aircraft Construction and Engineering of the Air Force. Republic Inter-departmental Thematic Scientific-Technical Collection), 1972, No. 27, pp 79-85 (from RZh-Mekhanika, No 6, Aug 72, Abstract No 8V423)

Translation: An approximation method for calculating three-layer plates on a plastic base considering creep of materials of the layer is discussed from assumptions of the theory of aging. An approximation method based on the use of time characteristics was proposed for solving the problem in the linear formulation. A large number of examples are solved to evaluate the effect of the basic factors on the stress-deformation state of a three-layer plate. The thickness of the outer and inner layers, the magnitude of the moduli for instantaneous deformation of the layers, the magnitude and form of creep measures and the Poisson coefficients were varied in solving the examples. The change in the σ curve with time obtained by solving the

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USSR

DERKACH, V. F., UDOVENKO, S. A., Samoletostr. i tekhn. vozd. flota. Resp. mezhved. temat. nauch.-tekhn. sb., 1972, No. 27, pp. 79-85

examples can be of practical help to builders in selecting optimal solutions for three-layer plates. 9 ref. Authors abstract.

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- 90 -

USSR

UDC: 539.22

VINTAYKIN, YE. Z., LITVIN, D. F. and UDOVENKO, V. A., Institute of General Metallurgy and Physics of Metals, Central Scientific Research Institute of Ferrous Metallurgy imeni I. P. Bardin

"Certain Characteristic Features of Phase Transformations in Nickel-Manganese Alloys"

Sverdlovsk, Fizika metallov i metallovedeniye, Vol 33, No 1, Jan 72, pp 77-85

Abstract: Neutron diffraction and narrow-angle scattering studies of phase transformation in nickel-manganese alloys are described. The five alloys involved were of various compositions with 22.7 to 38 at. % Mn at 400-535°C. All specimens exhibited concentrated lamination. The critical ordering temperature and the comparison of the ordering kinetics with that of lamination of the alloy of a composition close to the stoichiometry of Ni_3Mn within the testing temperatures suggests the metastable nature of the ordered Ni_3Mn phase. The transformation of a hardened solid solution in the process of low-temperature annealing proceeds along two sides, one conforming to $L1_2$ -type ordering and the other -- to the separation of

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USSR

VINTAYKIN, YE. Z., et al, Fizika metallov i metallovedeniye, Vol 33, No 1, Jan 72, pp 77-85

Ni₃Mn intermetallide. Annealing for ordering produces a complex fine Ni₃Mn structure which may explain the rather uncommon magnetic and other physical properties of these alloys. The study involved the use of "UNSA" and "Rawar" neutron diffractometers. (6 illustrations, 14 bibliographic references).

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USSR

UDC 621.892:546.77'22:621.793

KURILOV, G. V., UDOVENKO, V. F., YUKHNO, T. P., SENTRYURIKHINA,
L. N., and LYUBARSKIY, I. M., Physicotechnical Institute of
Low Temperatures of the Academy of Sciences UkrSSR, Char'kov

"Method for Investigation of Solid Lubrication Coats on
MoS₂ Base"

Moscow, Zavodskaya Laboratoriya, Vol 39, No 1, 1973, pp 48-50

Abstract: A method was developed for the investigation of solid
lubrication coats on MoS₂ base (All-Union Scientific Research
Institute of the Petroleum Industry, VNII NP -209, -212, -213,
-229, and -230) on friction under atmospheric conditions and
in deep vacuum at low (-90-196 °C) and room temperatures. The
gaseous products separating on friction were analyzed on the
MSKh-3A mass-spectrometer located in the vacuum chamber. The

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KURILOV, G. V., et al., Zavodskaya Laboratoriya, Vol 39, No 1, 1973, pp 48-50

longevity of VNII NP -212 coat was found to remain unchanged in deep vacuum at room and low temperatures and its friction process is accompanied by separation of the same masses as at +25 °C. On friction of the VNII NP -212 coat with carbamide resin, close mass-spectrograms at low and room temperatures resulted. Two figures, one table, six bibliographic references.

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USSR

UDC 620.178.16:669.973

PRESNYAKOVA, G. N., LYUBARSKIY, I. M., UDOVENKO, V. F., MAR'YAK-HINA, YE. I., CHERNYAK, S. S., Physico Technical Institute of Low Temperatures, Academy of Sciences Ukrainian SSR

"Friction and Wear at Low Temperatures"

Moscow, Metallovedeniye i Termicheskaya Obrabotka Metallov, No 3, 1971, pp 9-12

Abstract: The friction and wear of G13L steel with respect to 40Kh steel were investigated in a high vacuum ($5 \cdot 10^{-7}$ mm Hg) and in air at room temperature and at -190°C . Low-temperature vacuum manipulators made it possible to cool the samples to cryogenic temperatures, create normal loading, and transmit data to a measuring system outside the chamber. It was found that in the presence of friction in air and in a vacuum, low temperatures had no effect on wear for the indenters (steel G13L). For a ring (steel 40Kh), lowering the temperature in the atmosphere does not change the wear, but lowering the temperature with friction in a vacuum increases the wear sharply. The friction coefficient increases on lowering the test temperature in a vacuum; when testing in air, it is less than in a vacuum and is 1/2

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PRESNYAKOVA, G. N., et al., Metallovedeniye i Termicheskaya
Obrabotka Metallov, No 3, 1971, pp 9-12

independent of the temperature. The surface layer was strained
in the presence of friction more intensely in a vacuum than in
air.

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Lubricants and Lubrication

USSR

UDC 669.36

SENTYURIKHINA, L. N., LYUBARSKIY, I. M., KURILOV, G. V., UDOVENKO, V. F., and
RUBTSOVA, Z. S., Physico-Technical Institute of Low Temperatures, Academy of
Sciences, Ukrainian SSR, Khar'kov

"Study of the Efficiency and Antifrictional Properties of Hard Lubricating
Coatings in Atmospheric Conditions and in High Vacuum With Simultaneous Study
of Gas Composition"

Kiev, Fiziko-Khimicheskaya Mekhanika Materialov, Vol 6, No 4, 1970, pp 21-25

Abstract: Solid lubricants synthesized from MoS_2 and various film-forming agents
were studied in atmospheric conditions and in high vacuum. It was shown that the
efficiency of antifrictional properties of these materials depends to a large
degree on air humidity and the depth of vacuum. The life expectancy of these
coatings both in air and in vacuum depends on their chemical composition.
Coatings with organic film forming agents -- urea-formaldehyde and epoxy resins
-- performed for the longest period in air and in vacuum. Less durable were coat-
ings from silicon-organic polymers, while coatings with inorganic binder were
found to be more efficient in vacuum than under atmospheric conditions. The com-
position of the gas evolving during the friction also depends on the chemical com-
position of the film-forming agents.

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Acc. Nr: **AP0055909**

Abstracting Service: **0-70**
INTERNAT. AEROSPACE ABST.

Ref. Code:

UR 0065

A70-25943 # Investigation of the efficiency of the VNII NP-213 solid lubricating coating (Issledovanie rabotosposobnosti tverdogo smazochnogo pokrytiia VNII NP-213). G. V. Kurilov, L. N. Sentiurikhina, I. M. Liubarskii, and V. F. Udovenko (Vsesoiuznyi Nauchno-Issledovatel'skii Institut ~~Neftrianoi~~ Promyshlennosti, Moscow, USSR; Akademiia Nauk Ukrainiskoi SSR, Fiziko-Tekhnicheskii Institut Nizkikh Temperatur, Kharkov, Ukrainian SSR). *Khimiia i Tekhnologiia Topliv i Masel*, vol. 15, no. 3, 1970, p. 49-53. 12 refs. In Russian.

Experimental investigation of the service life and friction coefficient of a solid lubricating coating (not further specified, but appearing to contain molybdenum disulfide and silicon) as a function of the load, sliding rate and vacuum level. Tests were performed with a film (20 microns) deposited on the surfaces of a sliding contact at a pressure of 2 atm. The efficiency of the coating at high temperatures in air was also studied. It is found that the friction coefficient decreases with increasing load both in dry and humid air and in vacuum. At high sliding rates and high loads, the temperature and friction coefficient increase and the service life decreases. In vacuum, the service life is 4 to 6 hr at a relative humidity of 50 to 70 percent and 13 to 14 hr in dry air.

V.P.

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Acc. Nr:

AP0034209

Abstracting Service:
CHEMICAL ABST. 4-70

Ref. Code:
UR 0078

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71274q Stability of complexes of zinc and cadmium with ethanalamines in aqueous solutions. ~~Udovchenko, V. V.; Reiter, L. G.; Potaskalova, N. I. (Kiev. Politekh. Inst., Kiev, USSR). Zh. Neorg. Khim. 1970, 15(1), 97-102 (Russ). Complex formation of Zn(II) and Cd(II) with $\text{HOCH}_2\text{CH}_2\text{NH}_2$ (L), $(\text{HOCH}_2)_2\text{CHNH}_2$ (L'), and $(\text{HOCH}_2)_3\text{CN}$ (L'') was studied by pH-potentiometry in aq. solus. The instability const. (pK_1) of Zn complexes were 2.62, 2.38, and 2.56 and of Cd complexes 2.67, 2.46, and 3.15 for L, L', and L'' complexes, resp. It is assumed that the investigated ligands coordinate via O along with the coordination via N atom. The metal-O bond becomes stronger in the order of ligand: $\text{L} < \text{L}' < \text{L}''$. HMJR~~

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TIMOFEYEV, A. V., UDOVICHENKO, S. P., KHARICHEV, V. V., SHMIDT, A. A.

"Full and Continuous Systems of Invariants in a Pattern Recognition Problem"

Vestn. Leningr. Un-ta [Herald of Leningrad University], 1972, No 19, pp 143-144 (Translated from Referativnyy Zhurnal Kibernetika, No 4, 1973, Abstract No 4V700, by the authors).

Translation: A problem of recognition of classes of images which are invariant relative to groups of transforms is studied. Definitions are presented and full and continuous systems of invariants of the group of shifts, rotations and similarity transforms frequently encountered in applied pattern recognition problems are constructed.

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ELECTRONICS
Amplifiers

USSR

UDC 621.375.2.029.63

LEONT'YEV, N. I., TIMOSHENKO, A. P., ~~UDOVICHENKO, Yu. K.~~

"On the Problem of Developing a Power Amplifier Based on Plasma-Beam System"

Moscow, Radiotekhnika i Elektronika, Vol 16, No 7, Ju! 71, pp 1298-1299

Abstract: A system based on interaction between a plasma and an electron beam is considered. It is shown that such a system can be used as the basis for a power amplifier on frequencies of 1150-1550 MHz. In order to increase the frequency range of an amplifier based on interaction between a modulated electron beam and a plasma, the plasma parameters must be changed in such a way that the system with unmodulated beam has a wide natural emission band. This can be achieved by changing the diameter of the electron beam, the geometry of the system and the parameters of the plasma. The authors thank V. G. Moshichenko and N. V. Aleksandrov for making the modulator attachment.

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None

LEONT'YEV, N. I., TIMOSHENKO, A. P., and UDOVICHENKO, Yu. K.

"Nonlinear Stabilization of Beam Disturbances"

Moscow, Zhurnal Eksperimental'noy i Teoreticheskoy Fiziki, Vol. 59, No. 9, 1970, pp 649-653

Abstract: The degree of stabilization of an electron beam and the electron distribution function in the dynamics of a high-frequency oscillation attenuation process are investigated. The experimental apparatus was described in an earlier article by the same authors (ZhTF, 40, 1970, p 942). A beam of electrons with an energy of 10 kev and a current of up to 4 a was introduced into a plasma chamber 40 cm long and 3.7 cm in diameter in a uniformly constant magnetic field intensity of 2500 oersteds. The diameter of the beam was 1 cm and the duration of the current pulse 7.5 μ s. The plasma density, allowed to vary from zero to $10^{12}/\text{cm}^3$, was measured with two electric probes and by the charge-space wave

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LEONT'YEV, N. I., et al, Zhurnal Eksperimental'noy i Teoreticheskoy Fiziki,
Vol 59, No. 9, 1970, pp 649-653

method. Concluding that the attenuation of the oscillations in the electron beam and its consequent stabilization are explained by pair collisions and nonlinear effects, in the framework of the existing theory, the authors express their gratitude to V. N. Tsytovich and V. G. Makhan'kov for their valuable comments.

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USSR

UDC 621.375.018.756

ARAKCHEYEVA, I. A., DOMIN, L. P., YEREMIN, S. A., NIKISHIN, V. I., OSTAPENKO, G. S., PETROV, L. N., TKACHEV, A. I., UDOLIK, A. P.

"A Differential Amplifier"

Moscow, Otkrytiya, Izobreteniya, Promyshlennyye Obratzys, Tovarnyye Znaki, No 4, Feb 72, Author's Certificate No 326704, Division H, filed 19 Jan 70, published 19 Jan 72, p 208

Translation: This Author's Certificate introduces a differential amplifier which contains two emitter-followers, two amplification stages with dynamic load and a common source of direct current. As a distinguishing feature of the patent, the amplification factor is increased and the thermal compensation is improved by basing the dynamic load on a reverse conductivity transistor, and by connecting in each branch of the amplifier a transistor of the same conductivity as that of the amplification stage, and a diode biased in the forward direction. The emitter of the amplification stage is connected to the DC source and to the emitter of the transistor with the same conductivity. The base of this transistor is connected through a diode to the centertap of the supply source, and the collector is connected to the base of the dynamic load transistor.

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USSR

UDC: 621.396.6-181.5

ZOLOTAREV, T. V., OSTAPENKO, G. S., PETROV, L. N., UDOVIK, A. P.,
ARAKCHEYEVA, I. A., NIKISHIN, V. I., and ALEKSENEO, A. G.

"Effect of Distributed Capacitance and Geometric Dimensions of
Monolithic Circuit Resistors on Their Frequency Characteristics"

Kiev, Izvestiya VUZ--Radioelektronika, Vol. 13, No. 10, pp 1272-1275

Abstract: This brief communication deals with parasitic effects in integrated circuits manufactured by the planar-epitaxial process, with the elements separated by p-n junctions. The resistors in such a circuit are inserted by diffusion methods, and are thus especially subject to parasitic elements including a distributed transistor and distributed capacitances of p-n junctions. As proof, the cross section of an integrated circuit with its diffusion resistor is shown, and with it the equivalent circuit. From this circuit, the authors conclude that the frequency effect of the resistor is inversely proportional to the width of the resistor -- at least up to the practical limit of resistor width, which is about 10 μ . Nomograms are shown which can be used for determining the geometric dimensions and limiting frequency of the monolithic resistors from the known resistance values, or the reverse. A plot of the frequency characteristics of two monolithic resistors is also given.

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USSR

UDC 547.944/945 + 541.138

UDOVIKO, YE. A., POKHAEIKINA, S. A., and PETRENKO, V. V., Zaporozhe State Medical Institute

"Electrochemical Extraction of Tropan Alkaloids From the Plant Material"

Tashkent, Khimiya Prirodnikh Soyedineniy, No 3, 1972, pp 334-336

Abstract: Electrochemical method was used for isolation of tropane group of alkaloids from *Atropa Belladonna* (Z.), *Datura Stramonium* (Z.), and *Scopolia Carniolica* (obreru). During electrolysis of these extracts tropane alkaloids accumulate in the liquid around the cathode, the area becomes alkaline, the pH changing from 6 to 11, retarding the accumulation of alkaloids. Therefore the medium has to be acidified, to get complete extraction. No accumulation of the alkaloid is observed in the liquid around the cathode without the application of current (by dialysis alone). The alkaloid content in the cathode liquid depends on the duration of the electrolysis - increasing with time - and is inversely proportional to current density; the optimal current densities for the process are rather low, ranging from 10 to 30 a/m^2 .

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UNCLASSIFIED
TITLE--SYNTHESIS AND ANTIMICROBIAL ACTIVITY OF AMMONIUM DERIVATIVES OF
CYCLOHEXANE -U-
AUTHOR--(04)-UDOVITSKAYA, V.V., LOPUSHANSKIY, A.I., PALIY, G.K., BURDENYUK,
I.P.
COUNTRY OF INFO--USSR
SOURCE--KHIM.-FARM. ZH. 1970, 4(1), 17-20
DATE PUBLISHED-----70
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TOPIC TAGS--BACTERIOSTASIS, AMMONIUM COMPOUND, CYCLOHEXANE, CHEMICAL
SYNTHESIS, STAPHYLOCOCCUS AUREUS, ESCHERICHIA COLI
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UNCLASSIFIED

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UNCLASSIFIED

PROCESSING DATE--16OCT70

CIRC ACCESSION NO--AP0113242

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. HALOACETATES (IA) OF SUBSTITUTED
CYCLOHEXANOLS, XCH SUB2 CO SUB2 R, WERE PREPD. BY THE METHOD OF CONRAD
(1877) AS FOLLOWS (R, X, B.P.-MM, PERCENT YIELD, N PRIME20 SUBD, AND D
PRIME20 REPORTED): (SHOWN ON MICROFICHE). ALL THE QUATERNARY SALTS
PREPD. WERE TESTED IN VITRO AGAINST STAPHYLOCOCCUS AUREUS AND
ESCHERICHIA COLI. FACILITY: CHERNOVITS. MED. INST., CHERNOVTSY,
USSR.

UNCLASSIFIED

Graphite

USSR

UDC:539.4

UDOVSKIY, A. L. and GUSMAN, N. O., Moscow

"The Problem of the Temperature Dependence of Tensile Strength of Certain Carbon-Graphite Materials"

Kiev, Problemy Prochnosti, No 2, Feb 74, pp 41-45

Abstract: Analysis of experimental and theoretical data is used as a basis for the production of a model explaining the hardening of carbon-graphite materials with increasing test temperature. Dependences are produced which can be used to calculate the temperature curves of ultimate strength and arbitrary yield point in the area of the test temperature, where the value of yield point cannot be determined. It is determined that carbon-graphite materials differ from metallic materials only in the displacement of the temperature range in which intensive increase in the rupture viscosity is accompanied by a decrease in the arbitrary yield point in the area of higher test temperatures.

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