USSR

USHAKOV, A., Rabochaya Gazeta, 14 Feb 74, p 4

obtained from the analysis of radio-communications with a crew of the spaceship. Such a comparison helps to make these or other conclusions about deviations from the normal in the state of members of the crew. It is not yet possible to con- nect shifts in acoustic parameters of the speech with the concrete state, but we can already appraise deviations from the normal.

3/3

USSR

GERASIMOV, V. V. and USHAKOV, A. N.   UDC: 621.375:621.396.62:621.391.84

"Passage of Unequal Harmonic Signals Through a Common Nonlinear Amplifier"

Translation: The amplification of unequal signals in an element with a nonlinear amplitude characteristic is examined. Formulas are obtained for the ratio of the signal power levels and the products of third-order nonlinearity for a change in the mutual signal levels. Resume

1/1

USSR

10

KAKURIN, L. I., PURAKHIN, YU. N., GEORGYEVSKIY, V. S., KATKOVSKIY, B. S.,
VYSOTSKIY, V. G., CHEREPAKHIN, M. A., USHAKOV, A. S., LARICHEVA, K. A.,
PETUKHOV, B. N., IVANOV, P. P., MACHINSKIY, G. V., MIKHAYLOV, V. M., POMETOV,
YU. D., and SMIRNOVA, G. I.

"Locomotor Activity of Man Kept on a Reduced Food Ration"

Abstract: The combination of drastic limitation in locomotor activity with
reduction to a low-caloric diet (down to basal metabolism) was studied in six
healthy men 24-35 years of age who were confined to bed for a number of days
under conditions of hypokinesia. Pronounced changes were observed in the func-
tions of the cardiovascular, respiratory, nervous, and muscular systems of the
body. Tabular data were collected on physiological tremor of closed eyes,
maximum physical work fitness, muscle tone dynamics, and the cardiovascular
system in the orthostatic position. Asthenia of the nervous system and a
slowing down of the biopotentials in the cerebral cortex were observed. Like-
wise, it was noted that hypokinesia caused disturbances in body coordination
and statics. The pulse rate increased and the arterial pulse pressure was
1/2

.SR

KAKURIN, L. I., Voprosy Pitaniya, No 3, May/Jun 1971, pp 7-12

reduced in persons subjected to the orthostatic test. Three persons reached
a state of near collapse. These changes were attributed to a significant
reduction in the compensating actions of the blood circulation. It was found
that after about 10 days, the observed changes gradually decreased in the test
subjects. This regression was largely of a functional character and was linked
to the "detraining" of the various systems of the body. The authors believe
that the severity of the changes in the body functions is directly proportional
to the degree of hyperkinesia to which the tested persons were subjected. It
is proposed that maintenance of homeostasis requires a certain level of motor
activity even with a low-calorie ration.

2/2

USSR

USHAKOV, A. V., Leningrad Institute of Precision Mechanics and
Optics

UDC 621.332

"Digital Modeling of a Nonlinear Two-Dimensional System"

Leningrad, Priborostroyeniye, No 10, 1972, pp 48-52

Abstract: A two-dimensional automatic system with nonlinearity in
the "overall tract" as well as cross connections and nonidentical
channels is considered as the digital model in this paper. A dia-
gram of the system is given; it shows two input signals fed simul-
taneously into two nonlinear blocks in series, with the output of
the final block split between two parallel circuits, each contain-
ing a synchronous detector and a block representing the channel
transfer function arranged in series, the outputs of the transfer
function blocks being fed back to the signal inputs. Such a sys-
tem is typical of a broad class of photoelectric and radar two-
dimensional systems using synchronous detection. The makeup of the
system adapts it to two modes -- tracking and capture. To avoid
difficulties introduced by the nonlinearity and the cross connec-
tions, z-transformation is applied to each channel, thus changing
1/2

USSR

USHAKOV, A. V., Priborostroyeniye, No 10, 1972, pp 48-52

the system into a two-dimensional automatic control system.
Equations are derived from this new system and used as the basis
of a computing algorithm. The author notes that this algorithm
can be adapted to algorithmic language machines.

2/2

USSR

USHAKOV, A. V., Leningrad Institute of Precision Mechanics and Optics

Abstract: The relation between the frequency characteristics and weight function of a two-dimensional automatic system is analyzed in this paper. The case of arbitrary use of the channels and cross couplings is considered. The results presented in the article were obtained on the basis of introducing the apparatus of frequency characteristics with respect to two counter-rotating components of the elliptic output coordinate. This apparatus, by complete analogy with the methods of the theory of one-dimensional systems, makes it possible to solve the problems of quality studies of the two-dimensional system without restrictions on the nature of use of the channels and couplings.

1/2

USSR

USHAKOV, A.V., Leningrad, Izvestiya Vysshikh Uchebnykh Zavedeniy -- Priborostro-
yeniye, Vol XIV, No 2, 1971, pp 38-42

The specific nature of two-dimensionality is exhibited in the fact that the qual-
ity of the system must be studied with respect to the transient response with
the most unfavorable (in some sense) direction of application of the complex
step input.

2/2

Graphite

USSR

USHAKOV, B. F., ZAGRYAZKIN, V. N., PANOV, A. S.

"Interaction of Graphite with Titanium and Zirconium"

Abstract: Specimens of remelted iodide titanium and zirconium 99.9 wt.% pure and spectrally pure graphite were tableted. Diffusion annealing was performed in a vacuum at 1,200-1,900°C. Metallographic and x-ray studies indicated that TiC and ZrC layers were formed on the Ti and Zr. The diffusion layers grow evenly on the Ti; the carbide front is smooth. The diffusion layer on the Zr is uneven. The mechanism of formation and growth of the carbide layers on the titanium and zirconium was studied in detail at 1,200-1,400°C. The reaction diffusion factors were determined. It was shown that at 1,200°C and below, the process of formation and growth of the carbide layers is determined by boundary reactions. At higher temperatures, the determining stage of the process is diffusion. Equations are produced for the temperature dependences of reaction diffusion coefficients of carbon in the carbides TiC and ZrC.

1/1

USSR

UDC 595.373.31.:578.088.6

USHAKOV, B. P. and PASHKOVA, I. M., Institute of Cytology, Academy of Sciences, USSR, Leningrad

"Dynamics of Individual Variation in Heat Resistance of Woodlouse Muscle Tissue During Heat Acclimation"

Abstract: A woodlouse (Asellus aquaticus L.) population was kept in a cold chamber at 2 to 3°C (close to the natural temperature), after which the extremities were removed and immersed in Bowler's solution heated to 36°. Heat resistance of the muscle tissue was evaluated from the length of time it took for the muscles to become refractory to an electric current. Two types of change in tissue resistance during acclimation were noted. In about one-fourth of the individuals, an initial decrease was followed by an increase and plateau which gave way to a phase of secondary decrease. In the others, the reaction started directly with an increase in resistance and ended with a decrease. The process of temperature acclimation can be divided into two distinct stages: (a) primary acclimation when the level of tissue resistance undergoes changes and (b) secondary acclimation when the cells return to the original or basal level. The latter indicates that the process of adaptation to a new temperature regime has been completed.
1/1

USSR

USHAKOV, B. P., and GLUSHANKOVA, M. A., Laboratory of Comparative Cytology, Institute of Cytology, Academy of Sciences USSR, Leningrad

UDC 612.014.43:612.744

"The Thermostability of Muscle Tissue and Proteins of Bombina bombina During Acclimatization to Cold"

Leningrad, Tsitologia, Vol 12, No 4, 1970, pp 510-515

Abstract: The thermostability of muscle tissue and proteins was studied in toads from the Kiev region. Experiments were performed on freshly caught specimens, and on toads kept in a cooler at 5-8°C for a few days or a few weeks. The thermostability of proteins was tested in muscle-tissue preparations of homogenized specimens and in extracts.

Results of tests with intact muscle show a marked decrease of thermostability in the gastrocnemius after cooling (the maximum after cooling at 5-8°C for 6-9 days). The decrease was less in the rectus abdominis muscle, and least in the myocardium. Tests with various protein fractions derived from homogenized specimens showed almost no change in thermostability. No significant changes on enzymatic activity or transphosphorylation were demonstrated.

1/1

USSR   Glass and Ceramics

USHAKOV, D. F., KUZNETSOV, A. I., and MILYUKOV, YE. M., Leningrad
Technological Institute imeni Lensovet

"Effect of Microliquation on Mechanical Strength of Glass"

Moscow, Neorganicheskiye Materialy, Vol 6, No 11, Nov 70,
pp 2035-2037

Abstract: The effect of microliquation on the mechanical
strength of a series of glass compositions was investigated.
Moldings 6 mm in diameter served as test specimens. The test
for mechanical strength involved transverse bending. Study of
one glass specimen showed that microliquation occurs in the 500-
560° C range, while at higher temperatures bulk crystallization
of solid solutions of beta-eucryptite -- silica -- takes place.
Microliquation was observed at temperatures higher than 670° C.
The heat treatment lasted for 4 hrs in all cases. The investi-
gation showed that the mechanical strength of liquating glasses
in increased at all initial stages of microliquation. Composi-
tions of the liquating phases have only a slight effect on the
strengthening of glass in the initial stages of microliquation.
An increase in the size of microliquation regions and separation
in the bulk of multialkali glass of crustals with a low coeffi-
cietn of thermal expansion deteriorates the mechanical characteris-
tics of the glasses tested. 1/1

USSR

KARNAUKHOV, YE. N., GUL'DIN, I. T., SOBOL', I. I., and USHAKOV, D. I.

UDC 669.713.7

"On the Selection of Optimum Electrolyte Composition for Aluminum Production"

Moscow, Tsvetnaya Metally, No 1, Jan 74, pp 35-38

Abstract: The most effective way of intensifying the production of aluminum is to change the electrolyte composition by introducing different salt additions. The electrolyte guaranteeing the lowest temperature of the process is considered optimum, as its temperature in the final analysis determines the current efficiency as well as the yield of energy and the efficiency of the electrolyzer. Factors which determine the overheating of the electrolyte and, therefore, the temperature of the process, are discussed and ways to decrease the ohmic resistance on the anode-metal section are indicated. A readily fusible electrolyte with raised electroconductivity and fluidity must be used to decrease the temperature of the process. The most effective addition is LiF; all other additions affect the properties of the cryolite-alumina melt in very different ways. The selection of optimum compositions of the multicomponent electrolyte for aluminum production must be based on experimental studies of the physico-chemical properties of melts and their industrial tests. 1/2

- 3 -

USSR

KARNAUKHOV, YE. N., et al., Tsvetnyye Metally, No 1, Jan 74, pp 35-38

Chlorides of alkaline earth metals have the greatest effect on electrocon-
ductivity, viscosity, and fusibility of the melt. The quantity of additions
of the multicomponent electrolyte must not exceed 8-10%. Eight bibliographic
references.

2/2

USHAKOV, G. K.

Health

PATTERNS OF PERSONALITY FORMATION AND SCHOOL AGE

There is probably no nobler task than to raise comprehensively developed members of society, spiritually rich builders of the most human community in society.

This problem is being solved, already in our times, through the many achievements in psychology, pedagogics, psychohygiene, which consistently developed on the basis of Marxist-Leninist philosophy. However, in teaching this extremely difficult goal, much remains unorganized, unknown, and indefinite. One of the chief special tasks is to investigate the consistent tendencies of postnatal ontogeny of the psyche, and especially its most turbulent periods, childhood, adolescence, and youth. Such investigations are not an end in themselves. Their results permit development of the general and special criteria of age-related psychohygiene which make it possible to institute rational and purposeful correction of transient and stable anomalies in development of the personality. To provide for harmonious formation of the psyche of children and adolescents is a guarantee not only for intensification and improving the effectiveness of educational and upbringing measures but, what is equally important, harmonious development is the chief criterion in prevention of diseases. It is the chief condition of primary prophylaxis.

Temperament, character, and personality are the chief levels involved, disclosing qualitatively different properties of human individuality. Development of any new level of individual in postnatal ontogeny occurs on the basis of the past and in close association with it. Formation of individuality, whose biological basis is the organism's genetic template, is a regular process that occurs only in human groups, only in society. A man's specific traits are the product, first of all, of social (interpersonal, group) relations, so that even in small, so-called microsocial groups, such relations are determined by the distinctions of the social structure of the society.

Acc. Nr.: _AT0046707_

Ref. Code: _UR014_

USSR

USHAKOV, L. I.

UDC 621.374

"Magneto-Optic Pulse Multiplication Technique"

Magnitoopticheskiy sposob umnozheniya impul'sov (cf. English above), Leningrad, Izvestiya Vysshikh Uchebnykh Zavedeniy, Priborostroyeniye, 1970, No 1, pp 112-113

Translation:

Briefly described is a pulse multiplication technique based on the Faraday effect in certain glasses under the influence of pulsed magnetic fields of a definite intensity. This technique has fast response, good reliability, and the possibility of obtaining different multiplication factors using the same working element.

Reel/Frame
19730010

17

USSR   UDC 512.25/.26+519.3:330.115

USHAKOV, I. M., BULATOV, B. G.

"Study of One Method of Solution of a Problem in Nonlinear Programming"

Sb. Nauch. tr. Chelyabinsk. Politekhn. In-ta [Collected Scientific Works of
Chelyabinsk Polytechnical Institute], No 80, 1970, pp 16-23, (Translated
from Referativnyy Zhurnal, Kibernetika, No 10, 1971, Abstract No 10 B688,
unsigned).

Translation: Modeling of the gradient method on an analog computer.

1/1

Steels

USSR

UDC 669.15-194.2:669.046.542

ALEKSEYEV, V. I., BOGOLYUBSKIY, S. D., USHAKOV, I. S., and
SHVARTSMAN, L. A., Moscow

"Activity of Carbon in Low-Alloy Steels and Their Tendency to Hydrogen
Corrosion"

Moscow, Izvestiya Akademii Nauk SSSR, Metally, No 1, Jan 71, pp 134-141

Abstract: A circulation method is used to study the equilibrium of
H_2-CH_4 mixtures with the carbon in steels. Steels studied included
carbon steel, types 15KhM, 30KhMA, and 40Kh, in the 550-900°C tempera-
ture interval. The temperature dependence of thermodynamic activity
of carbon was determined. In low-alloy steels types 15KhM, 30KhMA, and
40Kh (0.38 wt. %C) at temperatures below the eutectoid, the activity of
carbon is significantly less than in Fe-C alloys in the two-phase
α + graphite area. Therefore, graphitization of these steels at these
temperatures is impossible. The presence of a correlation between the

1/2

USSR

ALEKSEYEV, V. I., et al., Izvestiya Akademii Nauk SSSR, Metally,
No 1, Jan 71, pp 134-141

activity of carbon and the tendency of steels to hydrogen corrosion
is demonstrated.

2/2

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USSR

UDC: 620.193.55

ALEKSEYEV, V. I., BOGOLYUBSKIY, S. D., USHAKOV, I. S., and SHVARTSMAN, L. A.,
Central Scientific Research Institute of Ferrous Metallurgy imeni I. P. Bardin

"Thermodynamic Evaluation of the Tendency of Steels to Hydrogen Corrosion"

Abstract: Forms of hydrogen corrosion, such as cracking along grain boundaries
and dehydrogenization, are caused primarily by the interaction of hydrogen with
the carbon of the steel to form methane, which produces high pressures in the
steel's micropores. Use was made of thermodynamic activities of carbon measured
by the circulation method of gas equilibria to calculate equilibrium pressures
of methane in the micropores of austenitic chromium-nickel steels Kh25N20S2,
4Kh25N20S2, Kh25N25G6V5MBAR, and Kh18N10T within 700--1000°C. By comparing the
strength characteristics of the steels with the methane pressure in the micro-
pores, it is possible to evaluate their tendency to failure. A correlation is
noted between hydrogen resistance (found by testing steel in hydrogen) and the
carbon activity, making it possible to determine the tendency of steels to hydro-
gen corrosion without having to resort to protracted and relatively inefficient
laboratory tests in hydrogen.

1/1

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USSR

USHAKOV, N. N.

"Multilayered Printed Circuit Assembly"

V sb. Entsiklopediya izmereniy kontrolya i avtomatiz. (Encyclopedia of Control and Automation Measurements--collection of works), Vyp. 14, Moscow, "Energiya", 1970, pp 11-14 (from RZh-Radiotekhnika, No 10, Oct 70, Abstract No 10V270)

Translation: The author gives the general characteristics of multilayered printed circuit assembly and its significance for the future development of microminiaturization of electronic devices. The principal differences in multiple-layer printed circuit board designs are in the methods of connection between layers, which are divided into two groups. The author discusses methods of the first group (continuous metallization of holes, pressing by pairs, sequential build-up of layers) and of the second group (the method of open contact areas, flexible lugs, connection by means of hollow rivets). Ten illustrations, bibliography of five titles. Resumé.

1/1

USSR   UDC 541.123 / 541.139

USHAKOV, O. I., SHERBAKOV, L. M., Tul'sk Polytechnical Institute

"The Effect of Magnetic Treatment on the Refractive Index of Water"

Abstract: Literature reports on the effect of magnetic treatment of water on its refractive index were analyzed and experiments were carried out to check the claims that magnetic treatment changes the refractive index of water. It was shown that with flow rates of up to 20-25 m/sec no effect of magnetic treatment on the refractive index could be seen. The reported phenomena may be due to water convection during mixing in the cuvettes, since the observed change in the refractive index of magnetically treated water disappears after a short period. It is stated that magnetic treatment of water may have possibly some effect on other structure sensitive properties -- it may affect the crystallization properties of various salts found in water.

1/1

USSR

UDC: 621.039.526

DOBROVOL'SKIY, V. F., ZHUKOV, A. V., SVIRIDENKO, YE. YA., SUBBOTIN, V. I. and USHAKOV, P. A.

"A Study of the Temperature Fields of Fuel Elements in Fast Reactors During Variable Energy Release with Respect to Zone Height"

Abstract: The authors experimentally determined the temperature fields of the central, lateral, and corner elements of a BOR /expansion unknown/-type reactor cassette model during cosinusoidal energy release along the height of the model. The results show that the heat flux varying with respect to length evokes deformation of the temperature profile in the channel because of the varying amount of heat supplied at each section of the channel. As a result of this, a change takes place in the numerical values of the heat-transfer coefficients along the channel. A reduction of the heat-transfer coefficients in the upper part of the active zone of a BOR-type reactor as the result of variable energy release does not present a danger to the operation of the fuel elements since the numerical values of the mean temperature difference for wall-fluid are small in the case of sodium heat-transfer agent. The maximum temperature nonuniformity of the fuel elements of a BOR-type reactor can be estimated with respect to the mean along the height of the heat flux zone starting with test data obtained for q = const.

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USSR u UDC: 621.039.526

SUBBOTIN, V. I., USHAKOV, P. A., ZHUKOV, A. V., and SVIRIDENKO, YE. YA.

"Temperature Fields of the Fuel Elements in the Active Zone of a BOR Reactor"

Moscow, Atomnaya energiya, Vol 28, No 6, Jun 70, pp 489-490

Abstract: The authors studied the temperature fields and heat emission in a cassette model of an experimental BOR /expansion unknown/-type reactor using fast neutrons with smooth and ribbed models of fuel elements and with and without displacers in the peripheral elements. The model consists of a hexagonal shell with 37 elements (fuel element models) arranged in a checkerboard-type lattice with $\frac{S}{2R} = 1.1$ where S is the distance between the element centers and R is the outer radius of the elements. Energy release along the height of the model was constant. The results show that the greatest variation in temperature of lateral elements is observed in the model with smooth elements without displacers. The addition of displacers to the peripheral cells reduces temperature variation. Winding the elements with spacing wire further reduces temperature nonuniformity. Formulas are given for the following: maximum temperature variation as a function of the Peclet number, for cassettes without displacers with smooth and ribbed fuel elements correspondingly, and temperature variation along the perimeter of the smooth central elements (this nonuniformity varies according to a cosinusoidal rule). The numerical values for nonuniformities are in agreement with data obtained using I. Kh. Ibragimov's and A. V. Zhukov's methodology. A formula is given for stabilized heat emission factors.
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USSR

BOGOROV, V. and USHAKOV, S.

"'Vityaz' in the Oceans"

Moscow, Vodnyy Transport, 3 April 1971, p 3

Abstract: Vladivostok ... Soon the expeditionary ship "Vityaz'" will leave Zolotoy Rog Bay and begin its 50th scientific research cruise. The ship will again sail on an extended voyage. In the present stage of the utilization of the ocean's food resources, great importance is attached to the problem of increasing its biological and economic productivity. This requires the development of a theory of control in the biological systems of the "deep continent." On the forthcoming voyage Soviet scientists will continue the work begun earlier by the "Vityaz'" on this urgent problem. Well-known oceanographers of many institutes of our country will participate in the expedition. The research program will be headed by Doctor of Biological Sciences Professor M. Vinogradov. The scientists' investigations will encompass a large area in the tropical regions of the Pacific Ocean.

1/1

1/4   027   UNCLASSIFIED   PROCESSING DATE--23OCT70
TITLE--GEOPHYSICAL INVESTIGATIONS OF THE DEEP STRUCTURE OF THE FLOOR OF
SEAS AND OCEANS -U-
AUTHOR-(03)-USHAKOV, S.A., GAYNANOV, A.G., FEDYNSKIY, V.V.

COUNTRY OF INFO--USSR, PACIFIC OCEAN

SOURCE--MOSCOW, VESTNIK MOSKOVSKOGO UNIVERSITETA, GEOLOGIYA, NR 2, 1970,
PP 125-138
DATE PUBLISHED-------70

SUBJECT AREAS--EARTH SCIENCES AND OCEANOGRAPHY

TOPIC TAGS--OCEAN BOTTOM TOPOGRAPHY, GRAVITATION FIELD, GRAVIMETER,
PENDULUM

CONTROL MARKING--NO RESTRICTIONS

DOCUMENT CLASS--UNCLASSIFIED
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CIRC ACCESSION NO--AP0128123
                    ------UNCLASSIFIED----

UNCLASSIFIED

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. THIS ARTICLE GIVES SOME RESULTS OF WORK BY SPECIALISTS OF THE GEOPHYSICS DEPARTMENT MOSCOW STATE UNIVERSITY IN THE FIELD OF MARINE GEOPHYSICAL INVESTIGATIONS PERTAINING TO DEEP STRUCTURE OF THE FLOOR OF THE WORLD OCEAN. THE GREATEST CONTRIBUTION HAS BEEN MADE TO STUDY AND ANALYSIS OF ITS GRAVITY FIELD. SURFACE GRAVITY MEASUREMENTS AT SEA ARE MADE WITH GRAVIMETERS AND PENDULUMS AND HAVE A LOW ACCURACY (MEAN SQUARE ERROR PLUS OR MINUS 5-10 MGAL) DUE TO THE INTERFERENCE CREATED BY WAVES AND THE CONSIDERABLE DURATION OF EXPEDITIONARY VOYAGES. EMPHASIS IN THIS REPORT IN ON THE MORPHOLOGY OF THE GRAVITY FIELD IN THE NORTHWESTERN PART OF THE PACIFIC OCEAN. THE MAP OF BOUGUER ANOMALIES (FIG. 1 IN THE TEXT) SHOWS THAT THEY ARE CHARACTERIZED BY ZONALITY. THREE ZONES CAN BE DISTINGUISHED: OCEANIC, WITH LARGE POSITIVE ANOMALIES UP TO PLUS 400-500 MGAL; TRANSITIONAL, EXTENDING FROM THE ABYSSAL KURILE TRENCH TO THE SHORES OF THE CONTINENT, CHARACTERIZED BY A MODERATE POSITIVE BACKGROUND; CONTINENTAL, WITH A PREDOMINANCE OF NEGATIVE ANOMALIES. THE ZONALITY OF GRAVITY ANOMALIES IS CAUSED NOT ONLY BY A DECREASE IN CRUSTAL THICKNESS FORM THE CONTINENT TO THE OCEAN, BUT ALSO BY NONUNIFORMITY OF THE UPPER MANTLE. IT REFLECTS CHANGES IN THE DENSITY OF MATTER TO A DEPTH OF HUNDREDS (NOT TENS) OF KILOMETERS. THE MOST COMPLEX MORPHOLOGY IS CHARACTERISTIC OF THE TRANSITIONAL ZONE WHICH OCCUPIES MOST OF THIS REGION. IN ITS GRAVITATIONAL CHARACTERISTICS IT DIFFERS CONSIDERABLY FROM ADJACENT PARTS OF THE ASIATIC CONTINENT.

UNCLASSIFIED

CIRC ACCESSION NO--AP0128123
ABSTRACT/EXTRACT--WHEREAS IN BRIMOR'YE AND IN THE NORTHEASTERN PART OF THE
CONTINENT POSITIVE GEOLOGICAL STRUCTURES AND RELIEF ARE USUALLY
ACCOMPANIED BY NEGATIVE BOUGUER ANOMALIES, ON SAKHALIN AND KAMCHATKA
THEY CORRESPOND TO POSITIVE ANOMALIES, SOMETIMES OF RATHER CONSIDERABLE
INTENSITY.   WITHIN THE TRANSITIONAL ZONE THERE ARE TOW SUBZONES,
SUBOCEANIC AND SUBCONTINENTAL.   IN THIS REGION IT IS COMMON TO OBSERVE
ZONES WITH HIGH GRADIENTS OF BOUGUER ANOMALIES (MORE THAN 4-5 MGAL-KM).
BY TRACING AND QUANTITATIVELY INTERPRETING SUCH ZONES IT IS POSSIBLE TO
DETECT MAJOR DEEP FAULTS ALONG WHICH SIGNIFICANT VERTICAL DISPLACEMENTS
OF THE PRINCIPAL CRUSTAL DISCONTINUITIES HAVE TAKEN PLACE.   FAYE
ANOMALIES INDICATE THAT THE ISLAND ARCS AND ADJACENT ABYSSAL TRENCHES
CONSTITUTE ZONES OF WELL EXPRESSED IMPAIRMENTS OF ISOSTATIC EQUILIBRIUM.
OVER ISLAND ARCS THERE ARE STRONG POSITIVE FAYE ANOMALIES; OVER
TRENCHES THEY ARE NEGATIVE.   THESE ANOMALIES INDICATE THAT: 1) THE
OUTER EDGE OF THE TRANSITION ZONE, BOUNDING THE OCEANIC ZONE, IS A FRONT
OF PRESENT DAY TECTONIC ACTIVITY; 2) ISLAND ARCS AND ABYSSAL TRENCHES
ARE THE YOUNGEST GEOLOGICAL FORMATIONS IN THIS REGION; 3) IN THIS REGION
THE EARTH'S GRAVITY FIELD HAS NOT YET SUCCEEDED IN ADAPTING THE
STRUCTURE OF THE INTERNAL LAYERS OF THE CRUST TO EQUILIBRIUM CONDITIONS;
4) THE TECTONIC FORCES ACTING AND DOMINATING HERE ARE OPERATING AGAINST
GRAVITATIONAL ISOSTATIC FORCES.

UNCLASSIFIED

CIRC ACCESSION NO--AP0128123

ABSTRACT/EXTRACT--(FURTHER DISCUSSION IN THE TEXT CENTERS ON FIG. 3, A MAP OF FAVE ANOMALIES; FIG. 4, A MAP OF ISOSTATIC ANOMLIES IN FAR EASTERN SEAS; FIG. 5, A MAP OF MAGNETIC ANOMALIES IN THE NORTHERN PART OF THE PACIFIC OCEAN; FIG 6, A CROSS SECTION OF THE CRUST THROUGH THE CENTRAL AND SOUTHERN INDIAN OCEAN.

UNCLASSIFIED

USSR

UDC 669.18.046.558

USHAKOV, S. T., CHERNYAKOV, V. A., VOINOV, S. G., KEYS, N. V., and PRONICHKIN, A. A., Chelyabinsk Metallurgical Plant and Central Scientific Research Institute of Ferrous Metallurgy imeni I. P. Bardin

"Improving the Properties of Kh18N10T Steel From 100-ton Electric Furnaces by Refining the Steel in the Ladle with Liquid Synthetic Slag"

Abstract: Two variants of refining 100-ton melts of Kh18N10T stainless steel with liquid synthetic aluminaceous-lime slag were tested at the Chelyabinsk Metallurgical Plant: 1) Simulateneously with titanium alloying (in the form of 70% ferrotitanium on sponge titanium briquettes), and 2) After alloying, introduction of 30% or 70% ferrotitanium into the furnace. The contents of O, N, S, and nonmetallic inclusions in the steel, the degree of Ti-adaption in the alloying process, and some technological properties of the metal were investigated. The experimental metal of the first variant possessed higher anticorrosive and plastic properties, and is characterized by lower S- and O-contents and lower nonmetallic inclusions. The introduction of the first variant into industrial production contributed to an increase of technological plasticity and to an improvement of the surface quality of slabs, tubes, and sheets. Three figures, one table, two bibliographic references.

1/1

USSR $\mathcal{U}$ UDC 669.187.2

USHAKOV, S. T., TULIN, N. A., PRONICHKIN, A. A., and KEYS, N. V., Chelyabinsk Metallurgical Plant

"Stainless Steel Decarburization During Melting in a 100-Ton Electric Furnace"

Moscow, Stal', No 10, Oct 70, pp 907-909

Translation: In a 100-ton electric furnace the stable and high indicators of decarburization are attained at an oxygen pressure above 9 atm and an ultimate consumption of 30 m^3/hr for 1 t of steel. A further increase in the intensity of oxygen feed leads generally to a higher oxidation of chrome rather than carbon. The rate of chrome oxidation does not depend on the oxygen pressure and increases proportionally to the intensity of oxygen feed, while remaining at the same level over the entire period of blowing. Exhaustion of the regime of oxidation of the molten bath during melting of stainless steel makes it possible to obtain a ready metal with lower and more stable carbon content, to reduce the period of blowing, to reduce chrome oxidation, and to considerably increase the technological effectiveness of the process.

1/1

Molecular Physics

POPOV, A. V., USHAKOV, V. A., CHISTYAKOV, YU. D., IVANOVSKIY, G. F.

"The Effect of Carbon Dioxide on the Growth Mechanism of Autoepitaxial Layers of Silicon Under Vacuum Deposition"

Translation: The effect of CO_2, which is one of the basic components making up residual gases in a vacuum chamber, on surface morphology and the structure of autoepitaxial layers of Si during condensation from a molecular beam in a vacuum is explained. The admission of CO_2 up to a pressure of $10^{-4} - 10^{-6}$ mm Hg (the vacuum was 10^{-8} mm Hg before admission) in the process of deposition of auto-epitaxial layers at a substrate temperature $t_n = 950°C$ onto the surface of a substrate preliminarily treated in a vacuum of $10^{-7} - 2 \cdot 10^{-8}$ mm Hg at $t_n = 125°C$ for 10 min led to the formation of layers with a smooth surface and not containing

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POPOV, A. V., et al, Sb. nauchn. tr. po probl. midroelektron. Mosk. in-t elektron. tekhn., 1969, No 4, pp 109-112

packing defects. If the thermal treatment of the substrate at t_n = 1100-1150°C for 8 min at a pressure of $3 \cdot 10^{-8}$ mm Hg concluded with retention at t_n = 1250-1350°C (1-3 min) with simultaneous admission of CO_2 (P_{CO_2} = 10^{-5} mm Hg) and subsequent deposition of autoepitaxial layers was carried out at t_n = 950-1000°C with or without admission of CO_2, the surface of the Si was strongly distinguished by a developed relief and ripple and these were greater the longer the admission of CO_2 was continued. The density of the packing defects of these layers fluctuated from 10^2 cm^{-2} to 10^5 cm^{-2}. The highest quality layers upon admission of CO_2 during annealing were obtained under the following mode : annealing of the substrate at 1250-1300° (10 min), admission of CO_2 up to 10^{-5} mm Hg (1-3 min), deposition of the autoepitaxial layer at t_n = 950-1100°C at $2.5 \cdot 10^{-8}$ mm Hg. This is probably explained by the formation of a continuous hydrogenous film of the liquid phase which assists the flow of the process in the order vapor-liquid-autoepitaxial layer. A. Darevskiy.

2/2

USSR

USHAKOV, V. B., PETROV, G. M., KAZENNOV, G. G.

"Prospects for Development of Third Generation Analog Computer Equipment"

Analogovaya i Analogo-Tsifr. Vychisl. Tekhn. [Analog and Analog-Digital Computer Equipment -- Collection of Works], No 5, Moscow, Sov. Radio Press, 1973, pp 3-19 (Translated from Referativnyy Zhurnal Kibernetika, No 6, 1973, Abstract No 6V640, by the authors).

Translation: A study is made of the characteristic features of third genera-tion analog computers, related to changes in the technological base and the introduction of linear integrated circuits, as well as the use of a new principle of construction of these structural plans of systems, machines and computer units. The most important problems involved in the develop-ment of the software for future machines are indicated. 19 biblio. refs.

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USSR   UDC: 681.3

USHAKOV, V. B., Editor

"Analog and Analog-Digital Computer Technology--collection of works"

Analogovaya i analogo-tsifrovaya tekhnika. Sb. statey (cf. English
above), vyp. 4, Moscow, "Sov. radio", 1971, 312 pp, ill. 98 k. (from
RZh-Kibernetika, No 9, Sep 71, Abstract No 9V553 K)

[No abstract]

1/1

UNCLASSIFIED

TITLE--ADOPTION OF A FOUNDRY COMPLEX FOR REFINING AND TEEMING MAGNESIUM   PROCESSING DATE--02OCT70
-U-

AUTHOR-(05)-VYATKIN, I.P., KANAYEV, I.YE., MUSHKOV, S.V., USHAKOV, V.D., BRANDMAN, O.I.

COUNTRY OF INFO--USSR

SOURCE--TSVET. METAL. 1970, 43(1) 53-4

DATE PUBLISHED-------70

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

TOPIC TAGS--METAL REFINING, MAGNESIUM, METALLURGIC FURNACE, ELECTROLYTE, MAGNESIUM CHLORIDE, POTASSIUM CHLORIDE, SODIUM CHLORIDE, MAGNESIUM OXIDE, ECONOMICS

CONTROL MARKING--NO RESTRICTIONS

DOCUMENT CLASS--UNCLASSIFIED

PROXY REEL/FRAME--1989/0748   STEP NO--UR/0136/70/043/001/0053/0054

CIRC ACCESSION NO--AP0107290
                         UNCLASSIFIED

CIRC ACCESSION NO--AP0107290

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. A TEEMING COMPLEX HAS BEEN ADOPTED FOR PRODUCTION OF PIG MG, INCLUDING A CONTINUOUSLY OPERATING FURNACE WITH SALT HEATING, ELECTROMAGNETIC CONDUCTION PUMP, AND A TEEMING CONVEYER OF DOMESTIC CONSTRUCTION. THESE PARTS ARE DESCRIBED. THE CONSTRUCTION OF THE FURNACE PRECLUDES MG FROM BEING IN CONTACT WITH THE LINING AND THE ATM., PROVIDES FOR FAST AND UNIFORM HEATING OF MG TO THE REQUIRED TEMP., AND MAKES IT POSSIBLE TO MAINTAIN THAT TEMP. WITH A MIN. OF ENERGY LOSSES. AS COMPARED TO THE LAB. FURNACE, THE COM. PROTOTYPE COULD TAKE 1.5 TIMES AS MUCH MG. THE OPERATING TEMP. OF THE ELECTROLYTE AND MG IS 700-10DEGREES; THE CURRENT IS 5 KA, AND THE VOLTAGE IS 30-40 V; THE CAPACITY FO THE HOPPER IS 6 TONS, AND THE AMT. OF THE ELECTROLYTE (MGCL USB2 10, KCL 60-70, NACL 10-15, AND BA CL SUB2 5-10PERCENT) IN THE FURNACE IS 13 TONS. THE TEEMING OF THE REFINED MG CAN BE CARRIED OUT DURING THE PURING IN OF THE MG RAW MATERIAL. THE ESSENCE OF THE REFINING OPERATION CONSISTS IN SETTLING DOWN OF THE FREE, OR COMBINED WITH MGO, CHLORIDE PARTICLES. IN THE REFINED MG THERE IS LESS THAN 0.003PERCENT CL PRIME NEGATIVE. DURING THE SETTLING DOWN, THE EXCESS MAT. OF FE, RELATIVE TO THE EQUIL. AMT., ALSO SETTLES DOWN. THE ADOPTION OF THE TEEMING COMPLEX MADE IT POSSIBLE TO REDUCE THE SP. CONSUMPTION OF ELEC. ENERGY BY 2.5 TIMES; IT ALSO MADE IT POSSIBLE TO REDUCE THE WASTE OF THE METAL AS WELL AS OF LABOR.

UNCLASSIFIED

1/2   009
TITLE--PURIFICATION OF POLYMERIC MATERIALS --U--

UNCLASSIFIED

PROCESSING DATE--30OCT70

AUTHOR-(04)-TIME, A.V., USHAKOV, V.G., MARTINOVSKIY, G.A., PAPKO, V.V.

CCUNTRY OF INFO--USSR

SOURCE--USSR 264,690
REFERENCE--OTKRYTIYA, IZOBRET., PROM. OBRAZTSY, TOVARNYE ZNAKI 1970,
DATE PUBLISHED--03MAR70

SUBJECT AREAS--MATERIALS

TOPIC TAGS--SYNTHETIC RUBBER, CHEMICAL PURIFICATION, CHEMICAL PATENT,
EMULSION, ELECTRIC FIELD

CONTROL MARKING--NO RESTRICTIONS

DOCUMENT CLASS--UNCLASSIFIED
PROXY REEL/FRAME--3002/1469

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

CIRC ACCESSION NO--AA0128868

UNCLASSIFIED

CIRC ACCESSION NO—AA0128868   UNCLASSIFIED   PROCESSING DATE—30OCT70

ABSTRACT/EXTRACT—(U) GP-0- ABSTRACT. POLYMERIC MATERISL, E. G. SYNTHETIC RUBBERS, ARE PURIFIED FROM ZIEGLER NATTA CATALYST RESIDUES BY TREATING THE HYDROCARBCN SOLNS. OF POLYMERS WITH H SUB2 O, WITH THEIR SUBSEQUENT REMOVAL FROM THE FORMED H SUB2 O HYDROCARBON EMULSION. THE EMULSION IS ACTED UPON BY AN ELEC. FIELD OF INDUSTRIAL FREQUENCY AND HIGH VOLTAGE.

UNCLASSIFIED

TITLE--MECHANICAL PROPERTIES OF STRUCTURAL STEELS AFTER NORMAL HARDENING
    AND AUSTEMPERING -U-
AUTHOR--USHAKOV, V.G., GONCHAR, V.N., SHILKOVA, T.S., SHTEYNBERG, M.M.,
    FILATOV, V.I.
COUNTRY OF INFO--USSR

SOURCE--METALLOVED. TERM. OBRAB. METAL. 1970, (2) 2-5

DATE PUBLISHED-------70

SUBJECT AREAS--MATERIALS

TOPIC TAGS--MECHANICAL PROPERTY, ISOTHERMAL TRANSFORMATION, METAL
    HARDENING, ALLOY DESIGNATION, LOW ALLOY STEEL, STRUCTURAL STEEL, CRACK
    PROPAGATION, METAL HEAT TREATMENT, AUSTENITE, BRITTLE
    FRACTURE/(U)30KHGSN2A LOW ALLOY STEEL, (U)30KHGSNMA LOW ALLOY STEEL,
    (U)30KHGSN2MA LOW ALLOY STEEL

CONTROL MARKING--NO RESTRICTIONS

DOCUMENT CLASS--UNCLASSIFIED
PROXY REEL/FRAME--1988/1307   STEP NO--UR/0129/70/000/002/0002/0005

CIRC ACCESSION NO--AP0106084
                        UNCLASSIFIED

CIRC ACCESSION NO--AP0106084   UNCLASSIFIED   PROCESSING DATE--11SEP70

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. THE KINETICS OF ISOTHERMAL
DECOMPN. OF SUPERCOOLED AUSTENITE WAS STUDIED TO ESTABLISH THE OPTIMAL
AREA OF ISOTHERMAL HARDENING FOR STEELS 30KHGSN2A, 30KHGSNMA, AND
30KHGSN2MA.   THE MECH. PROPERTIES OF THE STEELS, PREPD. UNDER
INDUSTRIAL CONDITIONS, WERE STUDIED WITH DEPENDENCE ON TEMP. AND THE
TIME HELD IN THE HOT MEDIUM AS WELL AS THE TEMP. OF THE SUBSEQUENT
ANNEAL.   THE MECH. PROPERTIES FOLLOWING ISOTHERMAL HARDENING WERE
COMPARED WITH THE PROPERTIES FOLLOWING NORMAL HARDENING AND ANNEAL.
UNDER SIMILAR CONDITIONS, STRENGTH PROPERTIES OF THE 3 STEELS,
ISOTHERMALLY HARDENED, SHOW LESS TENDENCY TO BRITTLE FRACTURE THAN
FOLLOWING NORMAL HARDENING AND ANNEAL, SINCE IN THE LATTER INSTANCE,
ANNEAL COINCIDES WITH DEVELOPMENT OF BRITTLENESS. ISOTHERMAL HARDENING
OF THE STUDIED STEELS INCREASES THE FUNCTION OF CRACK PROPAGATION AS
COMPARED WITH NORMAL TEMPER AND ANNEAL AT SIMILAR STRENGTHS.

UNCLASSIFIED

USSR

USHAKOV, V. G.

UDC 536.24:532.526

"Heat Transfer Between Three Fluids Wetting the Ends and Side Surface of a Bar"

Translation: The heat transfer process between three fluids surrounding the ends and later al surface of a prismatic bar is examined. It is assumed that the fluid temperatures and heat transfer coefficient, cross section area, perimeter and length of the bar, and also the thermal conductivity of the bar material are given. It is also assumed that the heat transfer regime is stationary; the thermophysical properties of the fluids and of the bar material are independent of temperature; the temperature of the fluid wetting the side of the bar is constant along the bar length; the bar temperature varies only along its length. Formulas are obtained for finding the amount of heat transmitted and the temperature distribution along the bar in dimensional and criterial form, describing the most common case of steady state heat transfer through the bar.

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E. Namsarayev

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USSR

UDC 66.045.5:621.51.001.24

USHAKOV, V. I., Candidate of Technical Sciences, SOPIN, B. N., Engineer, and GLUSHAKOV, A. A., Engineer

"Determination of the Heat-Exchange Surface of Terminal Cooler of Compressor"

Abstract: The article examines the question of air dehumidification, given certain ratios between the compressed-air and cooling-water temperatures and ambient temperature. A formula is given for determining the heat-exchange surface of the terminal cooler. The compressor station at the Kursk Portable Unit Plant is equipped with four VP20/8 reciprocating compressors with KKh-20 terminal coolers, the heat-exchange surface for each of which is 6.3 sq m. The cooling water temperature is no higher than 10° C and the consumption about 16 liters/min. Such a heat-exchange surface, even with maximum water consumption, is insufficient in order for the compressed air temperature at the cooler outlet to become less than the ambient temperature. According to the suggested formula, at an ambient temperature of 22° C the heat-exchange surface of each cooler must be equal to 9.4 sq m. For design considerations and assembly conditions, the four coolers should be replaced with a single

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USSR

USHAKOV, V. I., et al., Khimicheskoye i Neftyanoye Mashinostroyeniye, No 10, Oct 72, pp 17-18

cooler with the appropriate heat-exchange surface. A four-pass heat exchanger with a heat-exchange surface of 45 sq m was installed. The water consumption was 65 liters/m. During the year and a half that this cooler has been in operation there has been no condensate at any point of the pneumatic system. The temperature of the air coming into the system has not exceeded 18° C. There has been an economic effect of about 20,000 rubles per year.

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USSR

USHAKOV, V. M., SILAKOVA, A. N., and FIKHMAN, B. A., Institute of Biochemistry and Physiology of Microorganisms, Academy of Sciences USSR

UDC 576.809.31

"Eccentric Vibrator for Mechanical Disintegration of Microorganisms"

Abstract: An eccentric vibrator designed for hyperfine grinding of powders was tested for potential application for disintegration of microorganisms. Test cultures of E. coli and Staph. aureus were used, and spheroidized silica sand powders added to the microbial suspension were used as abrasives. The effectiveness of disintegration was determined by the percentage of disintegrated cells, the amount of protein escaping from the cells, and changes in the catalyzing activity in homogenates. Test results demonstrated that the eccentric vibrator effectively disintegrates microorganism cells and can be used for disintegration of large volumes of biomass. Mechanical disintegration is accomplished under relatively gentle conditions, leaving subcellular structures intact.

1/1

USSR

KRASOVSKIY, N. N., Academician, SUBBOTIN, A. I., and USHAKOV, V. N., Institute of Mathematics and Mechanics of Ural Scientific Center, Academy of Sciences USSR, Sverdlovsk

"Minimax Differential Game"

Abstract: The article considers a conflict-controlled system whose motion is described by the equation

$$\dot{x} = f(t, x, u, v).$$

Here x is an n-dimensional phase vector; u and v are control vectors of players 1 and 2 which satisfy the constraints $u \in P$, $v \in Q$, where P and Q are certain compacta; $f(t, x, u, v)$ is a continuous function satisfying the Lipschitz condition with respect to x in each bounded region. It is assumed that the motions of the system can be continued for any finite time interval.

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USSR

The closed sets M and N are given in the space $\{ p = (t, x) \}$. A study is made of the guidance problem confronting player 1: using information on position $(t, x [t])$ being realized, player 1 must select a control $u [t]$ such that, without disturbing the phase constraint $(t, x [t]) \in N$, the point $(t, x [t])$ is brought onto set M. The opponent's behavior is constrained only by the constraint $v [t] \in Q$, and cases are not excluded where the selection of control $v [t]$ also rests on information about the control $u [t]$ which is being realized.

This is the essence of the problem to which the study of many differential games reduces. The article gives a mathematical formalization of the problem which fully reflects this essence. It is shown that the guidance

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USSR

problem is unsolvable in the proposed system of definitions and cannot have a solution under any positional method of forming the control u. A study of the solvability conditions of the guidance problem contains elements of a condition structive solution. There is no assumption as to the fulfillment of the condition

$$\min_{v \in Q} \max_{u \in P} s'f(t, x, u, v) = \max_{u \in P} \min_{v \in Q} s'f(t, x, u, v)$$

under which typical differential games possess equilibrium situations in a class of pure positional strategies.

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1/2   013   UNCLASSIFIED   PROCESSING DATE--11DEC70
TITLE--ACCELERATED METHOD OF DETERMINING COPPER AND NICKEL IN CYANIDE
    ELECTROLYTES -U-
AUTHOR-(02)-USHAKOV, V.N., KOZHEVNIKOVA, V.V.

COUNTRY OF INFO--USSR

SOURCE--ZAVOD. LAB., 1970, 36, (3), 278-279

DATE PUBLISHED--------70

SUBJECT AREAS--CHEMISTRY

TOPIC TAGS--CHEMICAL ANALYSIS, COPPER, NICKEL, ELECTROLYTE, CYANIDE

CONTROL MARKING--NO RESTRICTIONS

DOCUMENT CLASS--UNCLASSIFIED
PROXY REEL/FRAME--3004/0942   STEP NO--UR/0032/70/036/003/0278/0279

CIRC ACCESSION NO--AP0131527
                        UNCLASSIFIED

2/2   013

CIRC ACCESSION NO--AP0131527   UNCLASSIFIED   PROCESSING DATE--11DEC70

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. A PHOTOMETRIC METHOD OF
DETERMINING CU AND NI IN CYANIDE ELECTROLYTES WITHOUT PRELIMINARY
EVAPORATION OF THE ELECTROLYTE IS PROPOSED. THE CYANIDES ARE
DECCMPOSED WITH SMALL QUANTITIES OF PERHYDROL IN AN AMMONIACAL MEDIUM.
THE CU IS SUBSEQUENTLY DETERMINED BY REF. TO THE COLOUR OF A CU,NH_3
COMPLEX, AND THE NI IN THE FORM OF A COMPOUND WITH DIMETHYLGLYOXIME.

UNCLASSIFIED

USSR

ITIN, V. I., NAYBORODENKO, Yu. S., KOZLOV, Yu. I., USHAKOV, V. P.

UDC 536.46:533.6

"Gasless Combustion of a Mixture of Metal Powders"

V sb. Goreniye i vzryv (Combustion and Explosion -- Collection of Works), Moscow, "Nauka", 1972, pp 142-147 (from RZh-Mekhanika, No 3, Mar 73, Abstract No 3B962)

Translation: This paper is concerned with the study of the gasless combustion of mixtures of nickel-aluminum and copper-aluminum powders, the kinetics of reaction diffusion in these mixtures and the increase in volume of brickets due to the formation of new phases. Equations are obtained describing thermal and volume effects in a mixture of metal powders. Authors' abstract.

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USSR

USHAKOV, V. V.

UDC 538.4

"Propagation of an Ion Jet Along a Dielectric Surface at $R_E \ll 1$"

Sb. nauch. tr. Kiev. in-t inzh. grazhd. aviatsii (Collection of Scientific Works. Kiev Institute of Civilian Aviation Engineers), 1970, No. 6, pp 104-119 (from RZh-Mekhanika, No 9, Sep 71, Abstract No 9B46)

Translation: The propagation of an ion jet in a liquid dielectric close to the plane of the dielectric surface is solved. In the first of two cases considered the dielectric permeability of the liquid ε_1 is greater than the dielectric permeability of the surface ε_2 and in the second case $\varepsilon_1 < \varepsilon_2$. It is assumed in the first case the ions are repelled by the surface; the formation of surface charge on the wall due to the deposition of ions does not occur and in the second case a surface charge forms on the surface, the density of which is assumed to be given. The electric field strength on the surface is expressed in terms of the surface charge. An exact solution of the problem is obtained when the intrinsic field of space charges can be neglected; the problem is solved approximately considering the intrinsic field of space charges. The density distribution of

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USSR

USHAKOV, V. V., Sb. nauch. tr. Kiev. in-t inzh. grazhd. aviatsii, 1970, No. 6, pp 104-119

the space charge over a cross section of the jet is found. The problem of the electrohydrodynamic boundary layer on a dielectric wall when the charge density and electric field distribution in the boundary layer are given is solved by the method of moments. The effect of electric forces on the distribution of hydrodynamic parameters of the boundary layer is investigated. Conditions for the separation of the electrodynamic boundary layer on a curved surface are investigated. V. V. Gogosov.

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USSR

GIPPIUS, A. A., VAVILOV, V. S., PANASYAN, Zh. R. and USHAKOV, V. V.

"Exciton Luminescence Line Reversal and the Fine Structure of Exciton Absorption in CdTe"

Kratkiye Soobshcheniya po Fizike (Brief Communications in Physics), No. 7, July 1970, pp 8-14

Abstract: Detailed measurements were made of photoluminescence, cathode luminescence, and reflection spectra at temperatures between 4.2 and 77°K. Spectral resolution was 10^{-4} ev. The reflection data was processed on the BESM-4 digital computer of the Physics Institute of the USSR Academy of Sciences. The spectral dependence of the absorption coefficient and the refraction index, found with the aid of the Kramers-Kronig relation, were used to calculate the luminescence spectrum. Certain features of self-absorption which were formerly ignored are taken into account. A layer of approximately 10^{-4} cm is excited during photo- and cathode luminescence. At 77 and 4.2°K the absorption coefficient is 5×10^4 and 2×10^5 cm^{-1}. The optical density of the excited layer is therefore extremely large (5 to 20) and the luminescence intensity is greatly weakened by self-absorption. Conditions, therefore, exist for reversal of the exciton lines, and such reversal was obtained both theoretically and experimentally. The

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USSR

GIPPIUS, A. A., et al, Kratkiye Soobshcheniya po Fizike, No 7, July 1970, pp 8-14

reversal is slightly to one side of the center of the luminescence line, shifted in the direction of larger energies. The negative absorption observed at low temperature disappears at higher temperature. The temperature-dependent doublet structure observed in the absorption spectrum is not clearly understood. It is suggested that the observed features may be due to the fact that the Kramers-Kronig relation does not account for the spatial dispersion of optical constants and special boundary conditions at the crystal surfaces. An unknown new effect may be in operation. Comparison of absorption and emission spectra shows that both absorption maxima coincide with the emission minimum, and, thus, self-reversal appears to exist in this case as well. Orig. art. has 2 figs. and 7 refs.

2/2

USSR

TONKONOGOV, M. P.; USHAKOV, V. Ya.; KIM, S. V. (Tomsk Polytechnical Institute
im. S. M. Kirova, Karagandinskiy Polytechnical Institute)

"Determination of the Field Intensity and Current Density in a Liquid at the
Front of an Aperiodic Voltage Wave in the Pre-Discharge Period"

Tomsk, Izvestiya Vysshikh Uchebnykh Zavedeniy: Fizika; December, 1970; pp 62-5

ABSTRACT: An expression is found analytically for the variation with time of
the intensity of an electrical field and the current density in the pre-discharge
period in a liquid, taking into account the polarization relaxation. The prob-
lem is solved for that part of the exponential voltage wave which satisfies
Ohm's law.

There is one figure showing a photograph of the discharge and oscillograms
of the voltage and current. The article includes 10 equations. There are 10
references.

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USHAKOV, Yu. P.

JPRS 60639
27 November 1973

(2)

ANALYSIS OF THE CHARACTERISTICS OF CONDUCTION MAGNETOHYDRODYNAMIC PUMPS WITH SIMILARITY CRITERIA

[Abstract of a Paper by D. S. Kovner and Yu. P. Ushakov Given at the Magnetohydrodynamic Conference, p 144]

The system of similarity criteria obtained describes the operation of the conduction magnetohydrodynamic pump, the operation of the pump channel in a magnetic field of the excitation system and also the operation of the excitation system. Studies were made of the required simulation conditions in the general case and in the case of self-similar modes of flow by the ordinary Reynolds number, the magnetic Reynolds number and the relative magnetic permeability of the magnetic circuits.

Equations were obtained which describe the head and volt-flow characteristics of the channel in the similarity criteria considering the hydraulic losses and considering nonlinearity of the magnetization curve. From the formula for the efficiency, the condition was obtained which is necessary for the existence of a maximum efficiency of the pump of given configuration in the nonlinear section of the magnetization curve.

$$\varphi(j) + \frac{1}{j}\,\varphi(j) - \varphi, \ldots$$

where j is the dimensionless excitation current, and φ is the relative induction in the gap.

10,845
CSO: 8044/0655-H

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USHAKOV, Yu. P.

JPRS 60634
27 November 1973
(5)

EFFECT OF THE CURRENT LOAD ON THE THERMAL CONDITIONS OF A MAGNETOHYDRODYNAMIC MACHINE

For large current loads in magnetohydrodynamic machines and active heat exchange between the structural elements of the device and the external heat ment, nonlinear thermal effects can play a significant role.

In this paper an effort was made to calculate the nonlinear thermal losses Q in the current-carrying elements of the structure of the conduction pump for large current loads. Here, the temperature dependence of the conduction physical parameters of the material and the thermal radiation are taken into account.

The basic assumptions are the following: --the thermal losses are defined by the Joule's law in the form

$$Q = \int \frac{j^2}{\sigma(T)} \, dv,$$

where j is the intensity of the electric field in the conductor,

$\rho(T)$ is the specific electrical resistance of the material which depends on the temperature. For large current loads j, the linear approximation of Joule's law

$$Q = Q_0 j^2, \quad R = const$$ (1)

is not valid. The integral resistance R determining the energy dissipation in the current-conducting elements of the structure are calculated by the formula

$$R(J) = Q(J)/J^2.$$ (2)

The dependence of the losses on the current J is uniquely defined by the distri- bution of the temperature T inside the conducting body considering the specific heat transfer and heat exchange methods. The thermal radiation is subject to the Stefan-Boltzman law. (3)

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10,845
CSO: 8044/0653-H

1/2   036

UNCLASSIFIED

TITLE—SYNTHESIS OF MULTIBEAM ANNULAR ANTENNA ARRAYS WITH FULL CIRCULAR SYMMETRY —U—

AUTHOR—(02)—SAZONOV, D.M., USHAKOV, YU.S.

COUNTRY OF INFO—USSR

SOURCE—RADIOTEKHNIKA I ELEKTRONIKA, VOL. 15, MAY 1970, P. 897-904

PROCESSING DATE—30OCT70

DATE PUBLISHED——MAY70

SUBJECT AREAS—ELECTRONICS AND ELECTRICAL ENGR., PHYSICS

TOPIC TAGS—ANTENNA ARRAY, ANTENNA RADIATION PATTERN, MULTIPLE BEAM ARRAY

CONTROL MARKING—NO RESTRICTIONS

DOCUMENT CLASS—UNCLASSIFIED

PROXY REEL/FRAME—2000/0263

STEP NO—UR/0109/70/015/000/0897/0904

CIRC ACCESSION NO—AP0124025

UNCLASSIFIED

2/2   036

CIRC ACCESSION NO--AP0124025   UNCLASSIFIED

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. DESCRIPTION OF A METHOD FOR THE   PROCESSING DATE--30OCT70
SYNTHESIS OF AN AXISYMMETRIC MULTIBEAM ANNULAR ANTENNA ARRAY OF
INTERACTING RADIATING ELEMENTS BY CONSTRUCTING A SYSTEM OF PARTIAL
RADIATION PATTERNS WHICH ARE CHARACTERIZED BY THE LEAST MEAN SQUARE
DEVIATION FROM A GIVEN FORM. THE SOLUTION IS OBTAINED BY A MATRIX
METHOD, USING SPECTRAL DECOMPOSITION OF THE FIELD OF THE ARRAY.

UNCLASSIFIED

Infrared Rays

USSR

USHAKOV, YU.V.

"Effect Of Near Infrared Light On Electroluminescence Of Monocrystalline ZnS-Cu-Cl"

Translation: The paper studies the effect of continuous infrared brightening [podsvetka] (λ = 750--1100 nm) on the pulsed electroluminescence of crystals of ZnS (Cu,Cl) grown from the gaseous phase with a Cu content of $\sim 10^{-3}$ and Cl of $\sim 3 \cdot 10^{-3}$. It is discovered that infrared brightening decreases the amplitude of the primary and secondary waves of the luminance (the primary peak is decreased more intensely) which is the more significant the smaller the recurrence frequency of the exciting electroluminescence pulses. The spectral characteristics of electroluminescence quenching are determined. 3 ill. 7 ref. N.S.

1/1

Abstract: A good description of the function $N_{cr}(T)$ is a sufficiently reliable proof of the adequacy of the computational method and the judiciousness of the simplifications employed in it for describing the design of a reactor. Unfortunately, however, there are few experimental data on the effects of reactivity in reactors, and it is usually assumed that about a 20% accuracy in predicting the temperature effect of the reactivity is adequate. The integral nature of the critical experiments makes it possible to obtain only minimal data on each specific assembly. However, if enough such experiments are carried out, it may be possible to supplement these data on the micro-parameters or even perhaps to change them considerably.
    The authors describe the fuel elements and the test stands and provide a table showing the composition of the fuel in weight %. They include a section on the experimental procedure and cite the results from the tests.
1/2

USSR

BAT', G. A., et al., Atomnaya Energiya, Vol 30, No 4, Apr 71, pp 354-358

Five graphs are given which show the critical mass versus other factors.
The computational and the measured results agree satisfactorily.
The article contains 1 table, 5 figures, and a bibliography of 3
titles.

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ACC. NT. AP0050717 Abstracting Service:
CHEMICAL ABST. 5/70

Ref. Code
4R0368

105581e Effect of infrared radiation on the electrolumines-
cence of ZnS-Cu,Cl phosphors. Korsan, V. M.; Ushakov, Yu.
(USSR). Zh. Prikl. Spektrosk. 1970, 12(1), 113-16 (Russ).
The effects of ir activity on the photoluminescent brightness of
ZnS-Cu,Cl phosphors indicated that the quenching effective-
ness of the ir increased with its intensity. Max. quenching
was accomplished at ~0.8 μ.
J. Beller

REEL/FRAME
19810715

USSR

ARTEMENKO, V. D., NENASHEV, V. P., and USHAKOVA, A. A., Moscow Institute of
Vaccines and Sera imeni Mechnikov

"Immunogenic and Antigenic Characteristics of Purified, Concentrated, and
Sorbed Cl. oedematiens Toxoids Obtained From Concentrated Toxins"

Abstract: Although assaying toxoids in antigenic units makes it possible to
prepare fairly standardized sorbed preparations, nevertheless the basic index
of their quality is their immunogenicity as determined in direct tests on
animals. In this study, the immunogenic activity and the protein fraction of
type A strain No 79 Cl. oedematiens toxoids was investigated. Toxoids were
purified, concentrated, and sorbed and bioassayed on white mice. The results
revealed that the immunogenic activity of the preparations does not completely
correspond to their antigenic activity. The immunogenic activity largely de-
pends on the purity of the preparations. Differences in the immunogenic
activity of concentrated, purified toxoids are associated with the varying
protein compositions of the toxoids.

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USSR

USHAKOVA, A. P., LIKHTAREV, I. A., and MOISEYEV, A. A.

"'Population Dose' of Irradiation of the Population of the USSR from Global Cs^{137}"

Abstract: An assessment is presented of the "population dose" for the entire
Soviet people from incorporated global Cs^{137} ingested with food. The calculations
are based on a model suggested by Lindell and subsequently used by the U.N. Scien-
tific Committee on the Effects of Atomic Radiation to determine the amount of Sr^{90}
accumulated as a result of nuclear tests. It is concluded that the "population
dose" received in the Soviet Union is small as compared to the levels of back-
ground radiation. Hence, even a thorough examination of large groups of people
would not be likely to reveal a statistically significant increase in the number
of genetic and somatic effects due to incorporated Cs^{137}. It is noted that the
irradiation structure of a people may vary substantially in relation to the
specific development of individual subpopulations, traditional local diets, and
the presence or absence of so-called hot spots, i.e., regions with an unusual
cesium ecology which are characteristized by exceptionally high Cs^{137} concentra-
tions in foods of local origin and by the content of this radionuclide in the in-
digenous inhabitants.

1/1

USSR

UDC 541.182.2/3:628.511.4

USHAKOVA, E. N., KOZLOV, V. I., PETRYANOV, I. V., Physical Chemistry
Institute imeni L. Ya. Karpov

"Regularities of Aerosol Capture by FP Filtering Material"

Abstract: Experimental and calculated values for the dependence of the capture coefficient of stearic acid aerosols by FP filter material fibers on the average hydrodynamic radius (0.4-3.8 μm) of the fibers, filtration rate (0.5-10 cm/sec), and particle radius (0.16-0.4 μm) agreed when the interception parameter was greater than 0.1 and the Stokes number less than 0.2. With an interception parameter less than 0.5 and a Stokes number less than 0.2, the capture coefficient could be calculated from the fan filter model formulas.

1/1

- 2 -

USSR

UDC 911.3:616.988.25(47+57)

FILIPPOVA, N. A., USHAKOVA, G. V., and BELYAEV, V. G.

"Results in the Revision of Group I. persulcaltus Species in Native Foci of Tickborne Encephalitis"

V sb. Vtoroye Acarologicheskoye soveshchaniye. Ch. 2. Tezisy dokl. (Second Acarological Conference. Part 2. Theses of Reports -- collection of works) Kiev, "Nauk. dumka," 1970, pp 188-190 (from RZh-Meditsinskaya Geografiya, No 4, Apr 71, Abstract No 4.36.58)

[No abstract]

1/1

172   013

TITLE--EXISTENCE OF A QUASI LIQUID FILM ON THE SURFACE OF ICE -U-

UNCLASSIFIED

PROCESSING DATE--13NOV70

AUTHOR-(03)-KVLIVIDZE, V.I., KISELEV, V.F., USHAKOVA, L.A.

COUNTRY OF INFO--USSR

SOURCE--DOKL. AKAD. NAUK SSSR 1970, 191(5), 1088-90

DATE PUBLISHED-------70

SUBJECT AREAS--PHYSICS

TOPIC TAGS--NMR SPECTRUM, ICE, LINE INTENSITY, LINE WIDTH, SURFACE FILM, FLUID STATE

CONTROL MARKING--NO RESTRICTIONS

DOCUMENT CLASS--UNCLASSIFIED

PROXY REEL/FRAME--3003/1495

CIRC ACCESSION NO--AT0130424

STEP NO--UR/0020/70/191/005/0188/1090

UNCLASSIFIED

CIRC ACCESSION NO--AT0130424
ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. THE FROST FORMED BY LIQ. N ON THE
WALLS OF A DEWAR FLASK WAS INVESTIGATED BY NMR. THE SPECTRA THUS
OBTAINED CONSISTED OF 2 COMPONENTS: A WIDE AND A NARROW COMPONENT. THE
NARROW COMPONENT WAS CLEARLY DISCERNIBLE AT LARGER THAN OR EQUAL TO
268DEGREESK, AND ITS INTENSITY INCREASED WITH TEMP. A WEAK NARROW
COMPONENT WAS ALSO OBSD. IN NMR SPECTRA OBTAINED FROM POLYCRYST. ICE
PRODUCED BY FREEZING WATER IN AN AMPUL. THE WIDE COMPONENT OF THE
SPECTRUM IS PRODUCED BY RIGIDLY FIXED MOLS. IN THE CRYST. LATTICE OF
ICE, WHEREAS THE NARROW COMPONENT IS PRODUCED BY LABILE H SUB2 O MOLS.
OR PROTONS. THE CURVE DESCRIBING THE RELATION BETWEEN THE CONTENT OF
THE NARROW SPECTRUM COMPONENT AND TEMP. OBTAINED EXPTL. AGREES QUAL.
WITH THE THEORETICAL CURVE OF N. H. FLETCHER, 1963. THIS AGAIN
INDICATES THAT THE NARROW COMPONENT OF THE SPECTRUM OF HIGHLY DISPERSED
ICE IS DUE TO LABILE WATER MOLS. FORMING A QUASI LIQ. FILM ON THE SOLID
ICE CRYSTALS. A ROUGH EST. OF THE CORRELATION TIME TAU SUBC OF THE
LABILE MOLS. BY THE THEORY OF RELAXATION GIVES A VALUE OF TAU SUBC
SIMILAR TO 10 NEGATIVE PRIME8, WHEREAS FOR ICE IT IS SIMILAR TO 10
NEGATIVE PRIME4 AND FOR ORDINARY WATER SIMILAR TO 10 NEGATIVE PRIME11.
THIS VALUE OF TAU SUBC IS VERY NEAR THE VALUE FOR WATER ADSIRBED ON
SILICA GEL.
USSR.
            FACILITY: MOSK. GOS. UNIV. IM. LOMONOSOVA, MOSCOW,

UNCLASSIFIED

USSR

VAFIADI, V.G, USHAKOVA, N.A., SOKOLIK. A.I.

"Light Modulator Based On Optical Contact Of Glass And Plastic"

Vestn. Belorus. un-ta (Bulletin Of Belorussian University), 1971, Series 1, No 2, pp 83-84 (from RZh--Radiotekhnika, No 9, Sept 1971, Abstract No 9D358)

UDC 621.376:520.145:6

Translation: The circuit and the frequency and amplitude characteristics of a pulsed light modulator are presented. Plates of polystyrene with appropriate processing assure a contact at a 10 mm² area with the force of the pressure of the plates on a glass prism of 0.2 kg. Tests showed that the modulator passes square pulse with a duration of 0.5--30 microsecond with a depth of modulation of 75--80 percent and distortions of the pulse tops of 10--15 percent. 2 ill. 4 ref. V.Ch.

1/1

USHAKOVA, O.A.

Medical
Service

Prof. N.V. Volkov, Corresponding Member, Academy of Med. Sc. of the USSR

ERRORS AND COMPLICATIONS IN THE TREATMENT OF FRACTURES

USSR

UDC: 621.791.06:621.9-419

KOTEL'NIKOV, A. A., USHAKOVA, S. Ye., and IL'CHENKO, V. I., Kursk Polytechnical Institute

"Structure and Properties of the Transition Zone in Diffusion Welding of Steel 15 With AMts Alloy and AD1 Aluminum Through a Nickel Interlayer"

Abstract: The welding of aluminum and its alloys with steels presents difficulties due to marked differences in the physicochemical properties of these materials. Interaction of aluminum with iron produces inter-metallides $FeAl_3$, Fe_2Al_2, Fe_2Al_5, $FeAl_2$, $FeAl$ and others determining the brittleness of the weld. An attempt is described here to produce a quality weld of aluminum alloys with steel by diffusion welding in vacuum using a nickel interlayer. The latter was made by galvanic nickel plating of a steel strip with a copper backing so that the fusion zone became an iron-copper-nickel-aluminum system. Emphasis was placed on the problem as

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USSR

KOTEL'NIKOV, A. A., et al, Avtomaticheskaya Svarka, No 11, Nov 70, pp 27-29

to which intermetallide is determining the optimum mechanical properties
of the weld. The diffusion zone was studied by microstructural, local
x-ray spectral, and x-ray structural analyses; the microhardness was measured
and the mechanical properties were tested. It has been shown that the
determining factor in evaluating the strength of the weld is the presence
of the Al_3Ni_2 phase; the maximum width of this phase is 1 micron.

2/2

Thin Films

USSR

UDC 539.216.2:669.24.26

MOVCHAN, B. A., USHAKOVA, S. Ye., FAT'YANOV, V. M., and TRONOV, L. P.,
Kiev, Kursk

"Investigation of the Structure and Some Properties of Ni-Cr Vacuum Condensates"

Moscow, Fizika i Khimiya Obrabotki Materialov, No 6, Nov-Dec 72, pp 56-59

Abstract: Electron-beam-remelted NP-2 nickel and ERKh galvanic chromium were vaporized from water-cooled copper crucibles with their vapors condensed on glass samples suspended 250 mm above the crucibles. The condensates were then tested for microhardness, bonding strength, and electrical resistance. Test results showed that the structure of the vacuum-deposited condensates corresponds to the Ni-Cr phase diagram; specific resistance depends on chemical composition, condensate thickness, and substrate temperature; microhardness varies in relation to chemical composition and substrate temperature; the condensates have good thermal stability of electrical resistance at a substrate temperature of 500°C; and the condensate has satisfactory adhesion with the glass substrate at a substrate temperature 350-500°C. It was noted that the thicker the condensate the less adhesion it has with the substrate, and as substrate temperature is increased the condensate
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USSR

MOVCHAN, B. A., et al., Fizika i Khimiya Obrabotki Materialov, No 6,
Nov-Dec 72, pp 56-59

acquires better bondability and stability up to 500°C, after which the
magnitudes of the properties begin to drop off. Two figures, 8 bibliographic
references.

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USSR

USHAKOVA, S. Ye., and KOTEL'NIKOV, A. A., Kursk Polytechnical Institute

UDC 621.791.0 : 546.621

"Diffusion Welding of Steel 15 With AMts Alloy and AD1 Aluminum through a Nickel Layer in a Vacuum"

Kiev, Avtomaticheskaya Svarka, No 10, Oct 70, pp 53-54

Abstract: This article on the welding of aluminum and steel is connected with the need in the electronic and tool industries for joining parts made of different metals. The authors developed optimal modes for welding specimens in cylindrical form, 16 mm in diameter and 30 mm long, as well as sharpened steel specimens of steel free of grease and scoured in a bath of caustic soda for 2-3 minutes at 80° C. The welding was done on a diffusion machine made for parts of specific structure. Specimens were heated by a single-loop inductor energized by a type LZ-67 high-frequency oscillator. Four specimens were welded for each operation mode studied, three for stretch-testing and one for micro-study. The effects of pressure were investigated at four different pressure values at a temperature of 550° C. Curves are given showing the stability limit of the welds as functions of welding time, pressure, and welding temperature, for the various metals used. Photographs are given of the specimens after stretching tests and of the microstructure of the welds.
1/1

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USSR

USHAKOVA, Z. A.

UDC 911.3.616.988.25(571.61)

"The Distribution and Clinical Signs of Tickborne Encephalitis in Amur Oblast"

Zap. Amur. obl. muzeya kraeved (Reports of the Amur Oblast Museum of Regional Studies, 6, No 1, 1970, pp 115-118 (from RZh-36. Meditsinskaya Geografiya, No 1, Jan 71, Abstract No 1.36.92)

Translation: The distribution of tickborne encephalitis in Amur oblast has not received special study. It is apparently more widely distributed than evidence yet shows. A total of 82 cases were registered in the oblast during 1955-1967; some figures, broken down by rayon, are: Zeyskiy rayon -- 25 cases; Skovorodinskiy -- 15; and Arkharinskiy -- 13. Peaks occurred in the years 1957-1958 and 1965-1966. Rayons are indicated where no reliable figures exist for tickborne encephalitis.

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USSR

KUZ'MENKO, P. P., GALINA, G. A., and USHANKIN, YU. V., Kiev State University

UDC 539.21.536.421

"Relationship of Young's Modulus to the Degree of Close Ordering in Alloys of the Mg-Cd System"

Kiev, Metallofizika, No 40, 1972, pp 59-61

Abstract: It is shown that within the limits of error of the experimental parameters used, in Mg_3Cd and $MgCd$ alloys of the hexagonal system the change of Young's modulus during disordering is proportional to the degree of close ordering. 2 figures, 6 bibliographic references.

1/1

1/2   046
TITLE--SPECTRAL DEPENDENCE OF A CHANGE IN YOUNG'S MODULUS FOR GERMANIUM DURING IRRADIATION -U-

UNCLASSIFIED

PROCESSING DATE--16OCT70

AUTHOR-(02)-MAKSIMYUK, P.A., USHANKIN, YU.V.

COUNTRY OF INFO--USSR

SOURCE--FIZ. TEKH. POLUPROV. 1970, 4(2), 426-8

DATE PUBLISHED------70

SUBJECT AREAS--PHYSICS

TOPIC TAGS--YOUNG MODULUS, GERMANIUM SEMICONDUCTOR, PHOTOCONDUCTIVITY, RADIATION EFFECT, CARRIER DENSITY

CONTROL MARKING--NO RESTRICTIONS

DOCUMENT CLASS--UNCLASSIFIED

PROXY REEL/FRAME--1988/0280

CIRC ACCESSION NO--AP0105354

STEP NO--UR/0449/70/004/002/0426/0428

UNCLASSIFIED

2/2   046

CIRC ACCESSION NO--AP0105354   UNCLASSIFIED

ABSTRACT/EXTRACT--(U) GP-0-   ABSTRACT.   THE SPECTRAL RANGE WAS DETD. FOR
WHICH A CHANGE IS OBSD. IS YOUNG'S MODULUS, DELTA E IN N-GE DURING
ILLUMINATION, AND IT WAS COMPARED WITH THE SPECTRAL RANGE FOR NATURAL
PHOTOCOND.   AN APP. IS DESCRIBED WHICH ALLOWS THE CHANGE IN DELTA E AND
THE PHOTOCOND. TO BE DETD. ON THE SAME SAMPLE UNDER IDENTICAL
CONDITIONS.   DELTA E OCCURS IN THE SAME RANGE AS THE NATURAL PHOTOCOND.,
AND THE MAX. ON BOTH CURVES COINCIDE WITHIN THE LIMITS OF EXPTL. ERROR.
DELTA E IS DUE TO A CHANGE IN THE CONCN. OF FREE CHARGE CARRIERS.
FACILITY: KIEV. GOS. UNIV. IM. SHEVCHENKO, KIEV. USSR.

PROCESSING DATE--16OCT70

UNCLASSIFIED

USSR

KARGIN, YU. N., SMIRNOV, A. N., USHCHENKO, V. P., and KHARDIN, A. P.

UDC 547.26'118

"Synthesis of B-Hydroxyethyl Dialkyl(diaryl)phosphinates"

Abstract: The addition of ethylene oxide to dialkyl- or diarylphosphinic acid
goes easily without a catalyst forming the title product as follows:

$$\underset{R}{\overset{R}{\diagdown}}\text{POH} + CH_2{-}CH_2 \longrightarrow \underset{R}{\overset{R}{\diagdown}}\text{POCH}_2CH_2OH$$
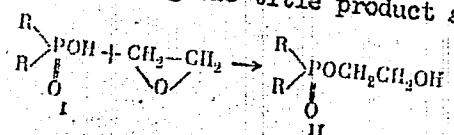
for R = CH$_3$, C$_2$H$_5$, C$_6$H$_5$. The reaction was carried out in tetrahydrofuran and
dioxane solutions and without a solvent. The structure of the product was con-
firmed by elemental analysis, optical rotation, and IR spectra.

1/1

1/2   021

TITLE--CATECHOLAMINE METABOLISM IN MANIAC DEPRESSIVE PSYCHOSIS -U-

UNCLASSIFIED

PROCESSING DATE--16OCT70

AUTHOR--USHERENKO, L.S.

COUNTRY OF INFO--USSR

SOURCE--FIZIOLOGICHNIY ZHURNAL, 1970, VOL 16, NR 3, PP 393-399

DATE PUBLISHED-------70

SUBJECT AREAS--BIOLOGICAL AND MEDICAL SCIENCES, BEHAVIORAL AND SOCIAL SCIENCES

TOPIC TAGS--PSYCHOSIS, CATECHOLAMINE, EPINEPHRINE, PSYCHIATRY

CONTROL MARKING--NO RESTRICTIONS

DOCUMENT CLASS--UNCLASSIFIED

PROXY REEL/FRAME--1994/1354

CIRC ACCESSION NO--AP0115328

STEP NO--UR/0238/70/016/003/0393/0399

UNCLASSIFIED

2/2   021
CIRC ACCESSION NO--AP0115328   UNCLASSIFIED
ABSTRACT/EXTRACT--(U) GP-0-   ABSTRACT.   IN PATIENTS WITH MANIAC DEPRESSIVE   PROCESSING DATE--16OCT70
PSYCHOSIS ESSENTIAL DISTURBANCES ARE OBSERVED IN CATECHOLAMINE
EXCRETION.   THEY CORRELATE WITH A DEGREE OF MANIFESTATION OF THE
AFFECTIVE DISTURBANCES AT DIFFERENT STAGES OF THE PATHOLOGICAL PROCESS.
THE MANIACAL STATE IS CHARACTERISED BY AN INCREASE OF A MEDIATOR AND
HORMONIC LINK.   SIMILAR CHANGES ARE NOTED DURING AFFECTIVE SATURATED
DEPRESSIONS.   THE DEPRESSION WITH A PRONOUNCED PSYCOMOTOR INHIBITION AND
ASTENIC DEPRESSION PROCEED AGAINST A BACKGROUND OF AN ESSENTIAL
INHIBITION OF A MEDIATOR LINK.   NORADRENALINE METABOLISM IN THE PATIENTS
DURING THE REMISSION IS THE CLOSEST TO NORM.   DISTURBANCES IN
CATECHOLAMINE METABOLISM ARE MOSTLY PRONOUNCED BEFORE THE ATTACK AND
CORRELATE WITH THE CHANGES IN METABOLIC AND OTHER SOMATO VEGETATIVE
INDICES.   THE DATA OBTAINED BROADEN THE IDEA OF THE DISORDER IN THE
SYMPATHICOADRENAL SYSTEM WITH MANIAC DEPRESSIVE PSYCOSIS, SIMILARITY AND
DIFFERENCE BETWEEN THE PHASES OF THE DESEASE BEING ESTABLISHED, WHICH IS
OF GREAT IMPORTANCE FOR DIFFERENTIAL DIAGNOSTICS AND PATHOGENITIC
THERAPEUTICS.   FACILITY: DEPARTMENT OF PATHOLOGY OF HIGHER
NERVOUS ACTIVITY, THE A. A. BOGOMOLETZ INSTITUTE OF PHYSIOLOGY, ACADEMY
OF SCIENCES, UKRAINIAN SSR, KIEV.

UNCLASSIFIED

USSR

USHEROVICH, B. G., MIRONOVICH, YU. R., GENKIN, I. M.

UDC 621.375.016.35(088.8)

"Stabilized Amplifier"

USSR Author's Certificate No 259163, Filed 25 Apr 68, Published 23 Apr 70 (from RZh-Radiotekhnika, No 9, Sep 70, Abstract No 9D133P)

Translation: This author's certificate introduces a stabilized amplifier containing a threshold element, filters and a DC amplifier. The amplifier is distinguished by the fact that in order to improve the reliability, a threshold element the output of which is connected to the input of the amplifier via another integrating circuit and an emitter repeater is connected to the output of the DC amplifier connected to the input of the level index via the integrating circuit.

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USSR

UDC: 621.375.024(088.8)

USHEROVICH, B. G., MIRONOVICH, Yu. R., GENKIN, I. M., Central Planning and Design Office for Mechanization and Automation

"A DC Amplifier"

USSR Author's Certificate No 251010, filed 25 Apr 68, published 5 Feb 70 (from RZh-Radiotekhnika, No 7, Jul 70, Abstract No 7D145 P)

Translation: The authors propose an amplifier which contains a threshold element made in the form of a Shmitt trigger. To reduce the drift voltage and provide self-tuning of the amplifier, its load impedance is shunted by series-connected semiconductor diodes and a capacitor. The input of the Shmitt trigger is connected in parallel with the load impedance.

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172   02E

TITLE--SOLVENT EFFECTS ON THE KINETICS OF BUTYRALDEHYDE OXIDATION BY
MOLECULAR OXYGEN -U-   UNCLASSIFIED

AUTHOR-(02)-USHKALOVA, V.N., KOLMAKIVA, E.F.

PROCESSING DATE--04DEC70

COUNTRY OF INFO--USSR

SOURCE--NEFTEKHIMIYA 1970, 10(2), 246-50

DATE PUBLISHED--------70

SUBJECT AREAS--CHEMISTRY

TOPIC TAGS--OXIDATION, ALDEHYDE, ORGANIC SOLVENT, REACTION KINETICS,
PEROXIDE, OXYGEN

CONTROL MARKING--NO RESTRICTIONS

DOCUMENT CLASS--UNCLASSIFIED

PROXY REEL/FRAME--3006/0961

CIRC ACCESSION NO--AP0134679   STEP NO--UR/0204/70/010/002/0246/0250

UNCLASSIFIED

CIRC ACCESSION NO--AP0134679   UNCLASSIFIED

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. THE OXIDN. KINETICS OF   PROCESSING DATE--04DEC70

BUTYRALDEHYDE IN SOLN. VARIED ACCORDING TO THE SOLVENT USED (C SUB6 H SUB6, C SUB6 H SUB 14, CCL SUB4, CHCL SUB3, S SUB2 H SUB4 SL SUB2, ME SUB2 CO). THE MOST CLEAR EFFECT OF THE SOLVENT APPEARED AT 30DEGREES. CHCL SUB3, C SUB2 H SUB4 CL SUB2, AND C SUB6 H SUB6 HAD A STABILIZING EFFECT ON THE INTERMEDIATE OXIDN. PRODUCT OF WHICH 60-70PERCENT, BASED ON THE ALDEHYDE, WAS ACCUMULATED AND AN INSIGNIFICANT AMT. WAS SPENT FOR ACID FORMATION. THE STABILIZATION OF THE PEROXIDIZED PRODUCT IN THE 3 SOLVENTS WAS DUE TO INTERMOL. REACTION WITH THEM. TYUMEN. IND. INST., TYUMEN, USSR.   FACILITY:

UNCLASSIFIED

USSR

PARSHIN, A. M., USHKOV, S. S., and YARMOLOVICH, I. I.

UDC 669.295:620.192.46

"Titanium Alloy Cracking During Aging"

Moscow, Metallovedeniye i Termicheskaya Obrabotka Metallov, No 4, Apr 73,
pp 43-46

Abstract: In a study of titanium alloy of the VT-22 type with varying alloy-
ing: 6% Al and 6.5% beta-stabilizing element (3.0% Mo, 2.5% Fe, 0.5% Cr,
and 0.5% Mn) it was observed that extrusions, 120 mm in diameter and 10-12
mm thick, quenched in water after one hour at 870°C, cracked during sub-
sequent aging. The most intensive cracking during aging after quenching from
870°C occurs at 400°C, where cracks are noted after 5-10 hours at the aging
temperature. Above 500°C and below 200°C the formation of cracks was not
detected, even after 2500 hours. Studies showed that the cracking during
aging was caused by the nucleation and development of cracks as a result
of structural stresses building up from the precipitation of both the alpha-
and beta-phases. To avoid crack development in VT-22 titanium alloys it
is recommended that rapid heating rates between 250 and 500 C be used and
that the aging process be performed above 500°C. Five figures, one table,
nine bibliographic references.

1/1

USSR

VILYUNOV, V. N., USHKOV, V. M., SHRAGER, E. R., Tomsk

UDC:536.468

"Ignition of a Cylindrical Channel of Condensed Material in a Semiclosed Volume"

Novosibirsk, Fizika Goreniya i Vzryva, Vol. 6, No. 3, Sep 70, pp. 311-317

Abstract: A simple statement of the problem of the variation of pressure in a channel of condensed medium burning stably in a semiclosed volume is studied. It is assumed that only a comparatively small portion of the condensed material is ignited. The subsequent combustion process is limited primarily by propagation of the flame along the material. Graphs are presented showing the change in pressure, local speed of sound and local flow rate.

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USSR

LENKOVA, R. I., USIK, S. V., and YAKOVLEV, N. N., Sector of Biochemistry,
Leningrad Scientific Research Institute of Physical Culture, Leningrad

UDC 612.766.1+577.105

"Changes in the Urea Content in the Blood and Tissues in Relation to the
Adaptation of the Organism"

Leningrad, Fiziologicheskiy Zhurnal SSSR imeni I. M. Sechenova, Vol 59,
No 7, Jul 73, pp 1,097-1,101

Abstract: The content of urea in the blood, liver, and muscles during rest
was the same for rats trained by swimming in water at 30-32° as for untrained
animals. However, the increase in the content of urea following muscular ef-
fort resulting in fatigue was smaller for trained than untrained animals,
while the restoration of the normal content of this substance was faster.
Intraperitoneal administration of sympatholytin increased the level of urea
both at rest and during muscular effort. This effect was less pronounced
for trained than untrained animals. The effect of sympatholytin was
associated with its action in reducing ATP formation.

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USSR

UDC: 621.372.826

USIK, V. Ya., ROZHKO, A. V., MIKHAYLOVSKIY, S. A., MARCHENKO, P. I.,
BURLAKOV, O. V., POLISHCHUK, Ya. L.

"A Single-Conductor Transmission Line"

USSR Author's Certificate No 259195, filed 19 Aug 68, published 28 Apr 70
(from RZh-Radiotekhnika, No 12, Dec 70, Abstract No 12B151 P)

Translation: The proposed single-conductor transmission line consists of a
section of metal wire with a dielectric coating, two coaxial-horn surface-
-wave exciters and a tension device of the winch type. To simplify connec-
tion of reception and transmitting equipment to the transmission line and
ensure tightening of the wire, this wire is seated loosely in a cylindrical
hole made through one of the exciters in the central conductor of the
branch of the angle connector which is coaxial with the horn. In the
tension device, the winding drum is connected to a hand crank through a
slip clutch. Five illustrations.

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USSR

UDC: 629.78.015: 533.68.685

KHOLYAVKO, V.I. and USIK, YU. F.

"Effect of Wind Tunnel Boundary Layer on Flow Around Low Aspect Ratio Wing"

Samoletostr., i tekhn. vozd. flota. Resp. mezhved. temat. nauch. - tekhn. sb. (Aircraft Building and Aviation Technology. Interagency Topical Scientific-Technical Symposium) 1972, vyp 28, pp 3-9 (from Referativnyy Zhurnal-Raketostroyeniye, No 7, 1972, Abstract No 7.41.173)

Translation: The flow past a thin, plane, low aspect ratio wing in a round test section of a wind tunnel is investigated. The analysis is based on general relations of the thin body theory and on relations obtained for the connected mass. Solutions are obtained, which make it possible to determine the corrections of the lift and center of pressure of the wing, taking into account the boundary layer of the round wind tunnel of both closed and open type (3 illustrations, 2 references, resume).

1/1

USSR

KHOLYAVKO, V. I., USIK, Yu. F.

"Torque Characteristics of a Short-Span Wing in a Limited Flow of a Non-viscous Fluid"

Translation: Based on the general dependences of the theory of a thin body and the approximate relationships produced for an attached mass, the torque characteristics of a thin, flat, short-span wing moving near a solid or free surface (hydrofoil) are studied. The influence of the shape of the wing in plan and its span on the position of the center of pressure of the wing is studied for various angles of attack with constant distance from the division boundary and with a change in the position of the center of pressure through the height of the wing over the surface of the division boundary with a con- stant angle of attack. The influence of the derivatives of the center of pressure with respect to the angle of attack and flying altitude on longitu- dinal static stability of a short-span wing is analyzed.

1/1

USSR

KHOLYAVKO, V. I., USIK, Yu. F.

UDC 533.69.01+533.662.013

"Effect of the Flow Boundaries of a Wind Tunnel on Flow Over a Wing of Low Aspect Ratio"

Samoletostr. i tekhn. vozd. flota. Resp. mezhved. temat. nauch.-tekhn. sb. (Aircraft Construction and Engineering Activities of the Air Force. Republic Interdepartmental Thematic Scientific-Technical Conference), 1972, No. 28, pp 3-9 (from RZh-Mekhanika, No 8, Aug 72, Abstract No 8B422)

Translation: Flow around a thin plane wing of low aspect ratio in a wind tunnel with a circular working area is discussed. The solution is obtained on the basis of general relationships of the theory of a thin body and relationships obtained for a connected mass. Solutions are obtained which make it possible to determine the magnitude of the errors in the coefficients of lift and the position of the center of pressure of the wing considering the effect of the flow boundaries of a wind tunnel of circular cross section with a closed and open working area. Authors abstract.

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USSR

USIKOV, A. Ya., TRUTEN', I. D., MOTORNENKO, A. P., BELOUSOV, Ye. V.

"On the Possibility of Using Microwave Ionization to Produce a Non-equilibrium Plasma in Magnetohydrodynamic Generators"

Translation: The authors show the possibility of obtaining extended volumes of cold plasma with a charged particle concentration comparable to the concentration in a DC arc by using the ionizing radiation of electromagnetic fields in the superhigh-frequency band. A microwave plasma in argon without additives of alkali metals is produced with a conductivity exceeding 100 mho/m and conditions are determined for further increasing conductivity. Calculations are done to evaluate the effectiveness of using such a preionizer in MHD devices. Four illus-trations, one table, bibliography of twenty-one titles. [Institute of Radio Physics and Electronics. Academy of Sciences of the UkrSSR. Khar'kov]. Authors' abstract.

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TITLE--UHF DEVICES WITH HARMONIZED ELECTRON FLOW -U-

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AUTHOR-(02)-PUSPELOV, L.A., USIKOV, A.YA.

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SUBJECT AREAS--ELECTRONICS AND ELECTRICAL ENGR., PHYSICS

TOPIC TAGS--KLYSTRON, TRAVELING WAVE TUBE, MAGNETRON, CYCLOTRON RESONANCE, MASER, SUBMILLIMETER WAVE, ELECTRON FLOW, UHF OSCILLATOR

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CIRC ACCESSION NO--AP0133701   UNCLASSIFIED
ABSTRACT/EXTRACT--(U) GP-0-   ABSTRACT.   SPECULATIONS ARE PUT FORWARD ON
THE POSSIBILITY OF CREATING A SERIES OF NEW DEVICES BASED ON USING   PROCESSING DATE--13NOV70
HARMONIZED ELECTRON FLOW.   THE EQUIPMENT OF THIS TYPE MAY BE PERFORMED
ON THE BASIS OF CONVENTIONAL DESIGNS OF A KLYSTRON, TRAVELLING WAVE
TUBE, BACKWARD WAVE TUBE, MAGNETRON, MASER ON A CYCLOTRON RESONANCE AND
VARIOUS MODIFICATIONS OF THE ABOVE MENTIONED DEVICES.   IT SEEMS PROBABLE
THAT THESE THEORETICAL AND EXPERIMENTAL STUDIES MAY LEAD TO DESIGNING
EFFECTIVE OSCILLATORS, AMPLIFIERS AND HIGH STABLE MULTIPILERS FOR
MILLIMETER AND SUBMILLIMETER RANGES WHICH HAVE A LOT OF ENERGETIC,
RUNNING AND TECHNOLOGICAL POSITIVE QUALITIES AS COMPARED WITH
CONVENTIONAL DESIGNS.   (12 REFS.).

UNCLASSIFIED

Acc. Nr: AP0044599

PRIMARY SOURCE: Klinicheskaya Meditsina, 1970, Vol 48,
Nr 2, pp 74-79

INTENSIFICATION OF THE CLINICAL EFFECTIVENESS OF PARENTERAL NUTRITION

R. M. Glants, Yu. M. Orlenko, F. F. Usikov

S u m m a r y

During clinical investigations conducted in 89 patients with gastroduodenal ulcers the authors established that during resection of the stomach in the postoperative period there occur a rise of catabolism of nitrogen with its intensified excretion increase of metabolism and function of the cortical part of the adrenals, etc. These metabolic disturbances limit the volume of utilization of introduced nutritive substances. For intensification of the effect of parenteral nutrition it is necessary to combine the introduced with metabolic regulators: in the administration of carbohydrates — insulin, in the introduction of pro- teins — anabolic steroids, vitamins. This significantly enhances the assimilation of the substances introduced, normalizes metabolic disturbances, significantly reduces the quantity of required water and, thus, augments the effectiveness of parenteral nutrition.

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USSR

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and Central Scientific Research Institute of Ferrous Metallurgy imeni I. P.
Bardin

"Change of Dislocation Structure of a Heat-Resistant Alloy in the Process of
Creep"

Sverdlovsk, Fizika Metallov i Metallovedeniye, Vol 36, No 3, 1973, pp 574-582

Abstract: The dislocation structure of alloy ZhS6KP was electronmicro-
scopically studied for structures being formed in the different stages of
creep (at T = 900°C and TS = 27 kG/mm²). It was shown that plastic
deformation in the unsteady-state stage of creep is accomplished by means
of intersection by dislocations of ordered, coherently bonded particles
of the gamma-prime phase with matrix and the formation of complex super-
structural deductive/interstitial stacking faults. Plastic deformation in
the steady-state stage of creep proceeds as a result of dislocation movement
in the solid solution (by means of slip and creepover) and is accompanied
by the formation of stable configurations (dislocation walls and lattices)
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