USSR

The problem in the present methodological investigation was comparing the two types of SE: with a small (0.6 mm) interelectrode distance (electrode 13K14 of the "Diz" firm, Fig. 1 A) and the so-called "two-trunk" electrode (TE), whose broad stimulating surfaces are set up on both sides of the conducting path. The comparison is done primarily in physiological experiments involving stimulation of the optic tract (OT) in a cat by recording the responses of neurons in the external geniculate body (EGB).

The 13K14 electrode was introduced at the point with the coordinates $x = 4$, $y = 13$, $z = +4$, while the TE was oriented such that its trunks were on either side of the OT and passed through the line $y = 13$. The accuracy of the stereotaxic contact was controlled by electrophysiological methods. The OT was stimulated by electrical pulses 50 μs in duration, applied through an insulating attachment with an output resistance of 4.3 kohm (voltage stimulation).

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USSR

BLAYVAS, A. S., Fiziologicheskiy zhurnal SSSR imeni I. M. Sechenova, No 10, vol 58, 1972, pp 1633-1636

In stimulation of the OT by the 13K14 electrode, the threshold of the EP response had an average value of 5.1 volts; with oscillations of 3.6 to 0.9 volts, the number of neurons in the EGB responding to the current was small (less than 10%) the neuron threshold being very high. In stimulation of the OT by the two-trunk electrode, on the other hand, the EP threshold in the visual cortex turned out to be lower: 1.7 volts, with oscillations of 0.6 to 4.8 volts. The number of neurons responding in the EGB to current stimulation of the OT increased sharply (more than 80%).

In view of the fact that in modern literature devoted to the physiological aspects and technical realization of electrical stimulation (/1,3,6,8,11/ and others) very little light is shed on the effect of the spatial parameters of the SE on the condition of the response of the individual nervous system elements, we consider it important enough to be investigated in detail.

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USSR

We naturally assume that the stimulation action on the membranes of the OT fibers is directly proportional to the potential gradient ($\nabla\varphi$) (the intensity of the field (E)); i.e., it is directly proportional to the specific density of the electric field lines of force in the conducting medium surrounding the axon. It is known that in a conducting medium the trajectories of the charge carriers (the lines of the current) coincide with the electric field (EF) lines of force. Hence, the distribution of the current lines (their specific density in space) may be described by using the stationary EF as a model.

Let us consider the spatial distribution of the EF lines of force for an electrode of the 13K14 type. Bearing in mind that the dimensions of the OT are at least 3-7 times the distance between the centers of the stimulated surfaces, we can consider the source of the emf to be a dipole in this case. As we know /5/ the EF intensity of a dipole source varies (falls off with the distance from the dipole) with the cube of the distance. In the case of the TE, however, the intensity distribution between the poles is

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USSR

similar to the distribution between the plates of a plane capacitor and is approximately uniform. We consider such a simple analytic picture of the EF to be useful in both cases, but as a rough approximation. The single-trunk TE may only conditionally be considered a dipole, and the same is true of the replacement of the TE by an ideal plane capacitor with infinite plates. The picture of the EF is also distorted by dielectric parts (insulating surfaces) and metals (the body of the electrode) which introduce end effects complicating the analytic computations.

A more accurate distribution of the current lines is provided by modeling the EF of both electrodes with electrically conducting paper. Such a method is widely used in the solution of many types of problems in physics and hydrodynamics /4/ as well as in electrophysiology /2/. Holes were cut from a sheet of the conducting paper measuring 32X45 cm, with a resistivity of 24 ohms·cm at a point sufficiently distant from the ends, and metal-surface contacts were attached for the purpose of creating a more

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USSR

exact replica of the SE (on the scale of 40:1) since they would appear to the observer as if sectioned by the planes shown in Fig. 1 (planes a and b).

A voltage of 5 V is applied to the contacts of the SE from a source with a low output resistance; the polarity is shown in the drawing. The negative electrode is grounded, i.e., it is in common with the measuring instrument, the VK7-9 voltmeter. The equipotential lines are drawn in steps of 0.5 V.

Figure 2 A shows the equipotential lines for the 13K14 electrode and the lines of force drawn at right angles to them. The transverse cross section of the OT is shown in the same scale. It can be seen that the EF of electrode 13K14 is radically nonuniform, with the greatest bunching of the force and equipotential lines at the contact surfaces and the least bunching at the periphery. The nonuniformity of the field is well illustrated by the potential gradient curve (Fig. 2 B) plotted along the force line

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USSR

drawn in the sketch as the dashed line with crosses. By the potential gradient, in this case, is meant the ratio $|\Delta U / \Delta \underline{l}|$ rather than the theoretical gradient, where ΔU is the voltage drop at the ends of a sufficiently small segment $\Delta \underline{l}$ oriented along the EF lines of force. Here, $\Delta \underline{l}$ is 3 mm. Outside the area of the model, bounded by the outer dashed line, the potential gradient and consequently the EF (with an accuracy up to our unit of measurement) vanish.

Figure 2 B shows the distribution of force and equipotential lines for the two-trunk electrode. Since the EF is symmetrical relative to the equipotential line of 2.5 V, only half the OT is shown with one side electrode. The curve for the potential gradient measured along the force line (dashes and crosses) (the second axis of symmetry of the EF) is shown in Fig. 2 D.

For the characteristic of EF heterogeneity in both cases, it is convenient to use the relationship

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USSR

BLAYVAS, A. S., Fiziologicheskiy zhurnal SSSR imeni I. M. Sechenova, No 10, vol 58, 1972, pp 1633-1636

$$\frac{E_{max}}{E_{av}} = \frac{E_{max}}{\frac{1}{L}\int_0^L f(\underline{l})d\underline{l}},$$

and E_{max}/E_{min}. The integration and computation made from the curves (Fig 2 B and D) gave the results:

1) for the TE: $E_{av} = 0.026$ V/mm; $E_{max}/E_{av} = 5$; $E_{max}/E_{min} = 11$;

2) for the SE 13K14: $E_{av} = 0.0113$ V/mm; $E_{max}/E_{av} = 20.4$.

The value of E_{max}/E_{min} could not be measured because of the vanishingly small magnitude of E_{min} at the end of the interval L (16 cm in the model, corresponding to 4 mm in the brain).

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BLAYVAS, A. S., Fiziologicheskiy zhurnal SSSR imeni I. M. Sechenova, No 10, vol 58, 1972, pp 1633-1636

To solve the problem of whether the possibility of stimulating structures far from the TE is real, we measured the potential gradient on the equipotential line for 2.5 V at a sufficient distance from the central line of force (16 cm). It turned out to be less than 0.001 V/mm. Taking the resistivity of the white material of the brain tissue to be 800 ohm·cm /9/, it is easy to calculate, from the differential form of Ohm's Law, that the current density at this point is $125 \cdot 10^{-7}$ A/cm², which proves that at that point flows a current of less than $1.25 \cdot 10^{-11}$ A through an element of area of 100 square microns, a value comparable with the input current of a good cathode follower used for recording the pulse activity of neurons. This measurement shows that, at a distance at which one might expect an artifactual stimulation of nearby structures (for example, EGB or the retina) the intensity of the field is negligibly small.

It should be noted that with such modeling, only qualitative results can be obtained. Hence, the anisotropy of the electrically
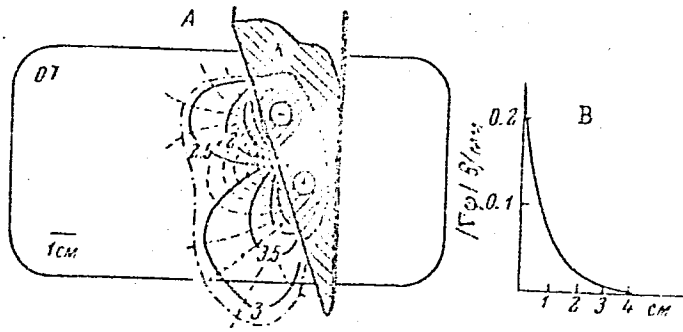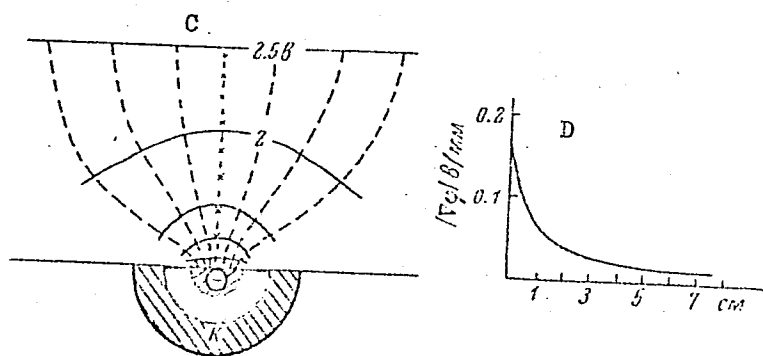
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USSR

conducting paper, the end effects arising due to the limits of the area of the paper itself, and other factors leading particularly to some deformation of the field in the model of the 13K14 electrode, were not taken into account although simple physical considerations dictated that the field should be symmetrical.

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USSR

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Fig. 2. Picture of the Force (Dashed Lines) and Equipotential Lines (Solid Lines) Obtained by Modeling the Electric Field of the Stimulating Electrodes.

The figures in the breaks in the solid lines are the potentials of that line in volts; K are the contact metal surfaces modeling the edge effects created by the casings and contacts of the electrodes. A calibration of 1 cm sets the scale to be introduced by the photograph of the model. B and D are curves of the potential gradient plotted from the lines of force pictured in A and C by the dashed and crossed lines. Other explanations are given in the text.

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USSR

Thus, an electrode of the dipole type (13K14) sets up a
radically heterogeneous field, and the intensity around the elec-
trode is one hundred times the field intensity a distance from it,
but within the limits of the structure to be stimulated, that must
be excited. Hence, the fibers far from the SE can be excited only
by a voltage that may prove to be too strong for fibers close to
the SE. Our experiments showed that the greater part of the cat's
OT fibers cannot in general be excited by the 13K14 electrode.
The TE sets up a more uniform electric field with an approximately
uniform distribution of the intensity across the stimulated path.
With correct placement of the TE, apparently, practically all the
OT axons can be excited. The TE creates no real danger of stimula-
tion to structures near the OT nor to structures around OT at a
sufficient distance from the TE.

14/14

USSR

BLAZHIN, V. D.; SELIVANENKO, A. S. (Lebedev Physics Institute, USSR Academy of Sciences, Moscow)

"Superconductivity of Semiconductor Crystals Placed in the Beam of a Laser"

Leningrad, Solid State Physics; November, 1970; pp 3229-33

ABSTRACT: The model of a highly alloyed semiconductor with a complex conduction band is studied theoretically. Electron scattering in the conduction band as a consequence of Coulomb interaction with electrons of the valence band, at the same time taking into account the effect of a light beam, is calculated. It is shown that under given conditions such scattering can lead to the occurrence of superconductivity at temperatures $T \sim 100°K$.

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UNCLASSIFIED   PROCESSING DATE--23OCT70

TITLE--EFFECT OF HIGH POWER LASER LIGHT ON ELECTRON PHONON AND ELECTRON IMPURITY INTERACTIONS IN SEMICONDUCTORS -U-

AUTHOR-(02)-BLAZHIN, V.D., SELIVANENKO, A.S.

COUNTRY OF INFO--USSR

SOURCE--FIZ. TEKH. POLUPROV. 1970, 4(2), 233-6

DATE PUBLISHED-------70

SUBJECT AREAS--PHYSICS

TOPIC TAGS--LASER BEAM, ELECTRON PHONON INTERACTION, SEMICONDUCTOR IMPURITY, SEMICONDUCTOR CONDUCTIVITY

CONTROL MARKING--NO RESTRICTIONS

DOCUMENT CLASS--UNCLASSIFIED

PROXY REEL/FRAME--1987/1987

STEP NO--UR/0449/70/004/002/0233/0236

CIRC ACCESSION NO--AP0105061

UNCLASSIFIED

CIRC ACCESSION NO--AP0105061   UNCLASSIFIED   PROCESSING DATE--23OCT70

ABSTRACT/EXTRACT--(U) GP-O- ABSTRACT. THE EFFECT OF A STRONG LIGHT FIELD ON THE INTERACTION OF ELECTRONS WITH OPTICAL PHONONS AND WITH IONIZED IMPURITIES IS CONSIDERED. EXPRESSIONS ARE OBTAINED FOR THE PROBABILITIES OF THE RESP. PROCESSES, AND THE RESISTANCE OF SEMICONDUCTORS AS DETD. BY SUCH MECHANISMS IS CALCD. ONLY THE CONDUCTION BAND IS TAKEN INTO ACCOUNT IN THE CALCNS.   FACILITY: FIZ. INST. IM. LEBEDEVA, MOSCOW, USSR.

UNCLASSIFIED

USSR

BLAZHKEVICH, B. I., MIKHAYLOVA, Ye. D., L'vov

"The 'Svitanok' Specialized Mathematical Machine"

Kiev, Otbor i Peredacha Informatsii, No 31, 1972, pp 108-115.

Abstract: A description is presented of the Svitanok mathematical machine, designed to solve systems of linear equations up to tenth order by analyzing the determinants of the matrix and searching for great trees in the graph, the values of elements and arcs of which are written in the form of literal symbols. A block diagram and the method of programming problems to be solved on the machine are presented. A number of combinatorial problems which can be solved on the machine are indicated. Technical data on the machine are presented. The machine is built on the modular principle. The maximum number of points on the first graph of a great tree is ten. The speed of the machine is 10,000 operations per second.

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USSR

UDC 681.325.65

BLAZHKEVICH, B. I., VOROBKEVICH, V. Yu., MASLOV, V. S., SOLOMCHAK, V. P., and YATSUN, I. A.

"An Analog-Digital Measurement Converter"

Translation: The authors consider a servo-type analog-digital converter designed for remote measurement of a slowly varying component of the output voltage of a static electric field strength pickup within limits of ± 640 mV with an error no greater than 0.025% for a transmission channel error of up to 1%. The converter consists of a measurement amplifier, a device for automatic selection of subranges, a control unit, and a power supply. The given measurement range is broken down into 128 partially overlapping sub-ranges; selection of subranges is accomplished by automatic comparison of the input quantity with a discretely variable voltage formed by a code-analog converter from a reference voltage source. One illustration, bibliography of nine titles. L. P.

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USSR

UDC 681.335

BLAZHKEVICH, B. I., VOROBKEVICH, V. Yu., MASLOV, V. S., SOLOMCHAK, V. P., and YATSUN, I. A.

"Analogous-Code Measuring Transformer"

Translation: An analogous-code measuring transformer of tracking action with an input impedance $\geq 10^9$ ohm is discussed. The transformer is designated for remote measuring the slowly changing component of the output voltage of the statical transducer of the electric field intensity in the ± 640 mv range with an error not exceeding 0.025%, at an transmission channel error up to 1%. One illustration, nine bibliographical references.

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USSR

UDC   621.376.33

BLAZHKEVICH, B. I., KOREPANOV, V. Ye., L'vov

"Frequency Detectors With Monotonic Voltage-Frequency Charac-
teristic"

Kiev, Otbor i Peredacha Informatsii, Resp. Mezhved. Sb.,
No 28, 1971, pp 69-73

Abstract: Two new frequency detector circuits are considered
which are fairly simple and have a monotonic transfer charac-
teristic. Experimental studies of these circuits show that
the characteristics of the detectors are monotonic over a wide
frequency range. Four illustrations, bibliography of three
titles.

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USSR

UDC 51:621.391

BLAZHKEVICH, B. I., VOROBKEVICH, A. Yu., MIKHAYLOVA, Ye. D.

"Use of Logical Algebra Together with the Method of Directed Graphs for Synthesis of Tripolar Subcircuits"

Teor. Elektrotekhnika. Resp. Mezhved. Nauchno-tekhn. Sb. [Theory of Electronics, Republic Interdepartmental Scientific and Technical Collection], No 10, 1970, pp 56-68, (Translated from Referativnyy Zhurnal, Kibernetika, No 6, 1971, Abstract No 6 V437).

NO ABSTRACT.

1/1

Computers: Equipment

USSR

UDC 681.32.31

BLAZHKEVICH, B. I., MIKHAYLOVA. Ye.D.

"Device for Finding Elementary Paths in a Directed Graph"

Translation: The device suggested is designed for automatic solution of one of the primary topological problems -- the search for elementary paths in a directed graph with fixed beginning and end of paths. A number of practically important problems in the area of network planning, transport, queueing, etc. can be reduced to this topological problem.   The problem is encountered in analysis of linear electric circuits by topological methods as well. A well-known device which searches for elementary paths in directed graphs contains commutation switches; ballast resistors; AND and NOT logic circuits; a power supply; a counting pulse generator; a ones pulse generator; a stepping switch; controlled switches corresponding to arcs of the graphs not ending at the origin and not starting from the beginning of the paths, with "on" indicators and flip-flops

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USSR

UDC 681.32.31

BLAZHKEVICH. B.I.. MIKHAYLOVA. Ye.D., USSR Author's Certificate No. 250547, Filed 12/07/67, Published 4/06/70.

controlling those switches corresponding to the points of the graphs which are neither the beginning nor the end of a path; and buffer flip-flops. The control flip-flops corresponding to the lines of the graph entering one point and the buffer flip-flop corresponding to this same point are connected to circular commutators, the first of which is connected to the output of the first logic AND circuit, while the last is connected to the output of the last flip-flop of the preceding commutator. The device also contains a search and flip-flop, the input of which is connected to the output of the last flip-flop in the last circular commutator, while the output is connected to an individual input of the first logic AND circuit; a distributor, consisting of vertical busses corresponding to the individual points of the graph, with each bus connected through a ballast resistor to the ungrounded terminal of the power supply, and through a commutation switch with normally open contacts to the grounded terminals of the power supply; pairs of horizontal busses, the working vertical and horizontal busses corresponding to the same point on the graph being connected together. The device suggested differs from the known device as follows: It also contains exclusive NOR logic

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USSR

UDC 681.32.31

BLAZHKEVICH, B.I., MIKHAYLOVA, Ye.D., USSR Author's Certificate No. 250547, Filed 12/07/67, Published 4/06/70.

circuits corresponding to the individual points of the graph, the inputs of which are connected to the vertical busses of the distributor corresponding to these same points, while the outputs are connected to the individual inputs of a second logic AND circuit, the output of this circuit being connected through a logic NOT circuit to one input of a third logic AND circuit, the second input of which is connected to the output of the counting pulse generator, while the output is connected to a nonmoving contact of the stepping switch; a second nonmoving contact of this switch is connected to the output of the ones pulse generator, while moving contact is connected to the second input of the first logic AND circuit. The working vertical bus corresponding to the beginning of the paths and supplementary vertical bus corresponding to the end of the paths are connected through the corresponding commutation switches with closed contacts to the grounded terminal of the power supply. The control switches corresponding to the individual lines of the graph contain two pairs of contacts connecting the pair of vertical busses corresponding to the point of the graph from which the line begins, with the

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pair of horizontal busses corresponding to the point of the graph at which the line
ends; the second pair of horizontal busses of the distributor is connected to the
grounded terminal of the power supply. 8 figs.

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USSR   UDC: 681.327

BLAZHKO, S. S., ZASLAVSKIY, R. I., KALAYDA, Ye. I., MASHBITS, R. Ya.,
KUKHARCHUK, A. G., NIKITIN, A. I., Institute of Cybernetics of the
Academy of Sciences of the UkrSSR, and Electronic Computer and Control
Computer Plant

"A Device for Data Transmission From the Input Unit to the Memory in
a Digital Computer"

Translation: This Author's Certificate introduces a device for data
transmission from the input unit to the memory in a digital computer.
The device contains a data address counter and a symbol register. As
a distinguishing feature of the patent, program processing of words is
simplified by including a balance circuit, a word symbol counter, a
pattern address counter, an initial pattern address register, a space
symbol decoder, and a zero decoder for the word symbol counter. The
first output of the balance circuit is connected to the input of the
data address counter, the second output is connected to the input of
1/2

USSR

BLAZHKO, S. S. et al, Otkrytiya, Izobreteniya, Promyshlennyye
Obraztsy, Tovarnyye Znaki, No 30, Oct 71

the word symbol counter, and the third output is connected to one input
of the pattern address counter. Connected to the other input of the
pattern address counter is the output of the initial pattern address
register. The first input of the balance circuit is connected to the
output of the space symbol decoder, whose input is connected to the
output of the symbol register. The second input of the balance circuit
is connected to the output of the word symbol counter, and the third
input of the balance circuit is connected to the output of the zero
decoder for the word symbol counter. The zero decoder input is connected
to the output of the word symbol counter.

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USSR

SIDORENKO, V. P., BLAZHKOV, A. L.

"A Ferrite Rectifier"

USSR Author's Certificate No 255383, Filed 7 Jun 68, Published 8 Apr 70 (from RZh-Radiotekhnika, No 10, Oct 70, Abstract No 10B171 P)

Translation: The proposed ferrite rectifier, based on a strip line, contains a central conductor in the form of a rectangular helix, a ferrite element and a magnetic system. The working frequency band is extended and the overall dimensions are reduced by making the ferrite element in the form of a ring in which a permanent magnet is placed. The operating principle of the rectifier is based on the phenomenon of ferromagnetic resonance. One illustration.

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BLAZHKOV, A. Ye.

Lutkov, A. I., B. K. Zymov, and V. I. Volga.
The relationship between thermal and electrical
conductivities of graphite. I-FZh, V. 22, no. 5,
1972, 932. (Annotation).

An attempt to correlate thermal conductivity λ with
electric resistivity δ of graphite at high temperatures is described.
Many researchers previously noted that the λ x δ product is
constant to a certain degree, but only at room temperature.

Experimental λ and δ data in the range 80 - 2,500°K
range are given and the (λx δ) values are calculated for artificial
graphites with 1.0 - 2.26 g/cm³ specific weights. At a low tempera-
ture, the (λ x δ) of individual graphites varied significantly. At
room temperature, (λx δ) was nearly the same for the graphites
studied. At T > 1,500°K, (λx δ)= 0.34 - 0.38 V²/degree and is
independent of temperature for all graphites studied with the exception
of those with lowest (1.0 g/cm³) and highest (2.26 g/cm³) specific
weights.

Voronin, V. I., and A. Ye. Blazhkov.
Thermal boundary layer on a noniso-
thermal plate. IVUZ Aviatsionnaya
tekhnika, no. 1, 1972, 119-123.

The equation of energy of a compressible laminar
boundary layer on a semi-finite plate with different local boundary
conditions is analyzed. It is assumed that the 0 ≤ ξ ≤ 1 area of the
leading edge, where ξ = ξ /ℓ and ξ is the longitudinal coordinate,
is cooled to a constant temperature T_wo, and its equation of energy
is solved by the known Crocco integral. Using this integral and a

USSR

UDC 629.78.018.1

BLAZIIKOV, A. Ye.

"Experimental Study of Thermal Protection of a Surface by Sectors with Heat Exchange in Laminar Boundary Layer"

Stroit. Mekh., Gazo-aerodinamika i Proiz-vo Letatel'n. Apparatov. Vyp. 1 [Structural Mechanics, Gas-Aerodynamics and Production of Flight Vehicles, No 1 -- Collection of Works], Voronezh, 1970, pp 131-134, (Translated from Referativnyy Zhurnal, Raketostroyeniye, No 4, 1972, Abstract No 4.41.163 from the Resume).

Translation: Results are presented from experiments on determination of the effectiveness of thermal protection of sectors with heat exchange, on the surface of which the heat flux is maintained proportional to the tangential friction stress. 1 Figure; 7 Biblio. Refs.

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A70-23867 #   The question regarding the boundary layer at a
heat-insulated plate (K voprosu o pogranichnom sloe na teploizioliro-
vannoi plastine). V. I. Voronin and A. E. Blazhkov (Voronezhskii
Politekhnicheskii Institut, Voronezh, USSR). Inzhenerno-Fizicheskii
Zhurnal, vol. 18, Jan. 1970, p. 39-44. In Russian.

A general solution to energy equations of a compressible
boundary layer on a plate without heat transfer is presented. New
approximate solutions expressed in terms of hypergeometric func-
tions are obtained for energy equations.   (Author)

REEL/FRAME
19810436

USSR   UDC 621.317.255

BLAZOVESHCHENSKIY, A. S., BORISOV, V. V., Leningrad State University

"Incidence of a Plane Electromagnetic Wave on a Moving Density Jump of an Ionized Gas"

Abstract: A study was made of problems connected with the movement of an ionization front — a pulse of ionizing radiation then an absorbing medium — using simplified models leading to the study of electromagnetic oscillations behind the front of the variation of the parameters of the medium (the density jump of the charged particles), the speed of which v as a function of the conditions of the absorption of the ionizing radiation and braking of the "fast" electrons formed is greater than the speed of light c. The problems of incidence of a plane electromagnetic wave on the electron density jump moving with a velocity v < c and v = c were investigated previously [V. I. Semenova, Izv. vyssh. uch. zav. Radiofizika, Vol 10, No 8, 1077, 1967; V. V. Borisov, Izv. vyssh. uch. zav. Radiofizika, Vol 14, No 1, 54, 1971].
    The equations representing the problem are reduced to the Cauchy problem. The cases are considered where the incident electromagnetic wave has a time function in the form of the inclusion function, that is, $I(\xi_2) u\ (\xi_2/\omega_0) = E_0 I(\xi_2)$
1/2

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USSR

BLAZOVESHCHENSKIY, A. S., et al., Izvestiya vysshikh uchebnykh zavedeniy, Radio-fizika, Vol XV, No 9,1972, pp 1314-1319

where the plane wave incident on the moving boundary has the time function $E_y = E_0 I(\xi_2 0 \cos (\omega/\omega_0))$, ξ_2 are the cosine oscillations with frequency ω and phase equal to zero at the front. The results coincide with those obtained previously [V. V. Borisov, Izv. vyssh. uch. zav., Radiofizika, Vol 14, No 1, 54, 1971].

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172   009   UNCLASSIFIED   PROCESSING DATE--13NOV70
TITLE--MECHANISM UNDERLYING THE EXTRACTION OF PALLADIUM WITH
   TRI,N,OCTYL,PHOSPHINE SULPHIDE -U-
AUTHOR-(04)-BLEDNOV, B.P., PAVLENKO, A.F., KONOVALOVA, L.A., DULNEVA,
   V.YE.
COUNTRY OF INFO--USSR

SOURCE--IZVEST. V.U.Z., TSVETNAYA MET., 1970, (1), 60-64

DATE PUBLISHED-------70

SUBJECT AREAS--CHEMISTRY, MATERIALS

TOPIC TAGS--PALLADIUM, CHLORIDE, EXTRACTIVE METALLURGY

CONTROL MARKING--NO RESTRICTIONS

DOCUMENT CLASS--UNCLASSIFIED
PROXY REEL/FRAME--2000/0552   STEP NO--UR/0149/70/000/001/0060/0064

CIRC ACCESSION NO--AP0124247
                        UNCLASSIFIED

CIRC ACCESSION NO--AP0124247
ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. THE EXTRACTION OF PD FROM CHLORIDE
  SOLUTIONS BY MEANS OF TRI,N,OCTYL PHOSPHINE SULPHIDE, (C SUB6 H SUB17)
  SUB3 PS, WAS STUDIED, USING A GRAPHICAL METHOD.   THE SOLVATION COEFF.
  THUS DETERMINED EQUALLED UNITY.   WITH INCREASING CONCENTRATION OF CL
  PRIME NEGATIVE IONS IN THE ORIGINAL AQUEOUS SOLUTION THE EXTRACTION OF
  PD BY THE REAGENT DIMINISHED.   ANALYSIS OF THESE RESULTS SUGGESTED THAT
  THE EXTRACTION OF PD BY TRI,N,OCTYL PHOSPHINE SULPHIDE TOOK PLACE BY WAY
  OF AN INTERNAL SUBSTITUTION MECHANISM WITH THE FORMATION OF THE
  MONOSULVATE IN THE ORGANIC PHASE.

UNCLASSIFIED

Mechanical Properties

USSR

UDC: 621.771.0

ZAYKOV, M. A., and BLEDNOVA, ZH. M., Krasnodar Polytechnical Institute

"Coefficient of Lateral Strain in Elastic-Plastic Forming"

Abstract: Most practical problems in the theory of plasticity are solved under the assumption of the incompressibility of the material, basically due to the lack of knowledge of the nature of changes in the lateral deformation factor in the elastic-plastic region as a function of strain and stress. This study describes an attempt to determine the lateral deformation factor in the elastic-plastic region for a group of carbon steels and M1 copper as a function of lateral deformation and the dimensionless parameter σ/σ_s (apparent stress to shear strength) in cases of ordinary

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USSR

ZAYKOV, M. A., and BLEDNOVA, ZH. M., Izvestiya Vysshikh Uchebnykh Zavedeniy, Chernaya Metallurgiya, No 1, 1971, pp 75-79

stretching tests. Use was made of a TsDM multi-purpose tensile testing machine and resistance sensors. The experimental data derived in terms of a suggested equation show a slight discrepancy. A significant change in the lateral deformation factor was found to occur in deformations to stresses $\frac{\sigma}{\sigma} \approx 2.$

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1/2   009   UNCLASSIFIED   PROCESSING DATE--13NOV70
TITLE--SELECTIVE REDUCTION OF ORGANOCHLOROSILANES -U-

AUTHOR-(03)-ANTIPIN, L.M., BLEKH, L.M., MIRONOV, V.F.

COUNTRY OF INFO--USSR

SOURCE--ZH. OBSHCH. KHIM. 1970, 40(4), 812-14

DATE PUBLISHED-------70

SUBJECT AREAS--CHEMISTRY

TOPIC TAGS--ORGANOSILICON COMPOUND, ORGANIC SILANE, CHLORINATED ORGANIC
  COMPOUND, CHEMICAL REDUCTION

CONTROL MARKING--NO RESTRICTIONS

DOCUMENT CLASS--UNCLASSIFIED
PROXY REEL/FRAME--3002/1101   STEP NO--UR/0079/70/040/004/0812/0814

CIRC ACCESSION NO--AP0123528
                        UNCLASSIFIED

CIRC ACCESSION NO--AP0128528
ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. THROUGHOUT REACTIONS WERE RUN IN
DRY ARGON ATM. MIXING 0.27 MOLE ET $SUB2$ SICL $SUB2$ WITH 0.068 MOLE ALCL
$SUB3$ AND 0.075 MOLE NAH GRADUALLY AT REFLUX GAVE 69.3PERCENT ET $SUB2$
SIHCL; WITH 0.067, 0.067 AND 0.085 MOLE OF REACTANTS, THE YIELD WAS
32.3PERCENT. SIMILARLY WERE PREPD. 31.9PERCENT MEPRSIHCL, 11-17PERCENT
ME $SUB2$ SCHCL, AND 1.5PERCENT ETSIHCL $SUB2$. SINCE THE REACTION IS
VIGOROUS, IT MUST BE CONTROLLED BY USING EXCESS REAGENT SILANE OR A
DILUENT SUCH AS VASELINE OIL. NO R $SUB2$ SIH $SUB2$ WERE FOUND. MEPHSICL
$SUB2$ IN THIS REACTION UNDERWENT RAPID DISPROPORTIONATION AND GAVE ME
$SUB2$ SICL $SUB2$ AND PH $SUB2$ SICL $SUB2$, WHICH THEN UNDERWENT PARTIAL REDN.
IF NAH IS REPLACED BY NACL THE DISPROPORTIONATION IS INHIBITED, BUT
EVEN IN THIS CASE PHSICL $SUB3$ GAVE 4-7PERCENT PH $SUB2$ SICL $SUB2$ AND
0.3PERCENT PH $SUB3$ SICL. ATTEMPTED REDN. OF R $SUB3$ SICL GAVE R $SUB2$ SIH
$SUB2$, R $SUB2$ SIHCL, R $SUB3$ SIH, AND R $SUB3$ SICL RESIDUE.

UNCLASSIFIED

USSR   UDC 576.895.42 576.852.2 1

BLAGODARNYY, YA. A., Professor, MAKAREVICH, N. M., Candidate of Medical
Sciences, and BLEKHMAN, I. M., Kazakh Scientific Research Institute of
Tuberculosis, and Central Institute of Tuberculosis, Ministry of Health USSR

"Isolation of Atypical Mycobacteria From Spontaneously Infected Argas persicus
Mites"

Moscow, Problemy Tuberkuleza, No 6, 1971, pp 74-75

Abstract: Twenty-four Mycobacterium strains were isolated from argasid mites
taken from chickens on Southern Kazakhstan poultry farms infected with tuber-
culosis. Sixteen of the strains were identified as typical Mycobacterium
avium, while the other eight were regarded as atypical. The morphology
of the cultures was variable, the microorganisms ranged from short acid-
resistant coccoid forms to granular mycobacteria. All the cultures were
resistant to streptomycin, isoniazid, and tibon. Only one of the atypical
strains was pathogenic for guinea pigs. None of the eight strains produced
any symptoms of the disease in rabbits or mice. Intratesticular inoculation
of guinea pigs previously sensitized with horse serum resulted in infection.

1/1

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Wood Chemistry

USSR

UDC 547.548.81+66.093.8

BLESHINSKIY, S. V., VINOGRADOV, V. P., Institute of Inorganic and Physical Chemistry, Academy of Sciences of the Kirgiz SSR

"Superheated Water as an Active Hydrolyzing Agent"

Abstract: The authors examined the action of superheated water on cellulose, a component of the tissues of plants, peat, and partly converted coal deposits which are extensively processed to obtain organic materials and to extract valuable inorganic components (rare elements). It is shown that thermal destruction in the presence of water may lead to intensive hydrolysis of cellulose to glucose. It is calculated that the process of conversion of cellulose to glucose anhydride is accompanied by absorption of 5670 calories per mole of levoglucosan formed. It is found that the maximum yield of glucose and formation of levoglucosan take place at the critical temperature of water ($374°C$). This indicates that the process of high-temperature acid-free hydrolysis of cellulose goes through a stage of radical
1/2

USSR

BLESHINSKIY, S. V., et al, <u>IAN Kirgizskoy SSR</u>, No 3, May/Jun 71, pp 47-51

formation. Recombination of radicals in a liquid solution is limited by the diffusion process. Three possible mechanisms of radical recombination are considered: interaction of free radicals, rearrangement of hydrogen atoms, and recombination of two biradicals.

CSO: 1841-W   - END -

2/2

BLETSKAN, D. I.

JPRS 59268

c. 73

3

- 118 -

VIII-12. INTERRELATION BETWEEN THE GROWTH CONDITIONS, THE MORPHOLOGY AND
CERTAIN ELECTROPHYSICAL PROPERTIES OF BiI3 SINGLE CRYSTALS

Single BiI3 crystals were obtained from the gas phase under various temperature conditions. Depending on the manufacturing conditions, differences in their morphology and electrophysical properties are clearly observed in the investigated crystals.

A study was also made of the effect of various impurities (Bi, I, Te) on the growth conditions of the crystals and some of their electrophysical parameters.

The morphology of the crystals was investigated using metallographic and electron microscopes. Among the electrophysical properties of BiI3 crystals studied were the conductivity, the thermally stimulated conductivity, photo conductivity and photoluminescence.

A defined correlation was established between the growth conditions of the real structure of the crystals and some of their electrophysical properties which offers the possibility of growing crystals with properties given in advance.

BLETSKAN, N. I

III-6. GROWTH OF DISLOCATIONLESS SINGLE CRYSTALS OF SILICON

The conditions of obtaining dislocationless single crystals oriented in sector structure are discussed. The magnitude of the growth angle and the drawing rate of single crystals without dislocation are found experimentally.

The description of the forms of the crystallization front and the external attributes of the dislocationless single crystals is presented. It is demonstrated that the dislocationless single crystals always grow with exit of the (111) face to the interface. This leads to the complex form of interface.

The growth conditions of dislocationless single crystals at high rates insuring dispersion of the specific resistance with respect to the volume of the bar less than 1 10 percent are discussed. The effect of the exit of the (111) face on the scattering of the specific resistance with respect to the transverse cross section and with respect to the volume of the bar is demonstrated.

A study is made of the conditions insuring prevention of the dislocation-less single crystal from damage by dislocation slip lines on separation of it from the melt and also leading to the formation of macroplleups of the dislo-cations on transition from the dislocationless section to the section with dislocations.

Data are presented on the effect of the orientation of the single crystal on the capture of oxygen from the melt and the magnitude of the lifetime of the minority charge carriers.

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1/2   017   UNCLASSIFIED   PROCESSING DATE--30OCT70
TITLE--CHEMISTRY OF ENYNE ETHERS. II. SYNTHESIS OF PYRAZOLES -U-

AUTHOR-(03)-LISITSYN, YE.A., BLEYAYEVA, A.N., MALEYEVA, A.K.

COUNTRY OF INFO--USSR

SOURCE--ZH. ORG. KHIM. 1970, 6(3), 439-42

DATE PUBLISHED-------70

SUBJECT AREAS--CHEMISTRY

TOPIC TAGS--CHEMICAL SYNTHESIS, CHEMICAL REACTION MECHANISM, SULFONATE,
    AMINE DERIVATIVE, ACETYLENE, PYRAZOLE

CONTROL MARKING--NO RESTRICTIONS

DOCUMENT CLASS--UNCLASSIFIED
PROXY REEL/FRAME--1992/1683   STEP NO--UR/0366/70/006/003/0439/0442

CIRC ACCESSION NO--AP0112677
                        UNCLASSIFIED

CIRC ACCESSION NO--AP0112677
ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. THE REACTION OF ROCH:CHC TRIPLE
  BOND CH (R EQUALS ME OR ET) WITH MENHNH SUB2 .H SUB2 SO SUB4 GAVE A
  2.5:2 MIXT. OF 1,3,DIMETHYL PYRAZOLE WITH 1,5,DIMETHYLPYRAZOLE OR A 2:3
  MIXT. OF THE CORRESPONDING DIETHYLPYRAZOLES.   THE MECHANISM OF THIS
  REACTION IS DISCUSSED.   FACILITY: LENINGRAD. TEKHNOL. INST. IM.
  LENSOVETA, LENINGRAD, USSR.

UNCLASSIFIED

1/2   015   UNCLASSIFIED   PROCESSING DATE--13NOV70
TITLE--CRYSTALLOGRAPHIC PARAMETERS OF 1,ORGANYLGERMATRANES -U-

AUTHOR-(02)-BLEIDELIS, J., KEMME, A.

COUNTRY OF INFO--USSR

SOURCE--KHIM. GETEROTSIKL. SOEDIN. 1970, (3), 332-4

DATE PUBLISHED-------70

SUBJECT AREAS--CHEMISTRY

TOPIC TAGS--X RAY DIFFRACTION STUDY, PARAMETER, CRYSTAL, ORGANOGERMANIUM
   COMPOUND

CONTROL MARKING--NO RESTRICTIONS

DOCUMENT CLASS--UNCLASSIFIED
PROXY REEL/FRAME--2000/1681   STEP NO--UR/0409/70/000/003/0332/0334

CIRC ACCESSION NO--AP0125302
                              UNCLASSIFIED

UNCLASSIFIED   PROCESSING DATE--13NOV70
CIRC ACCESSION NO--AP0125302
ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. I WITH R EQUALS ME, ET, PH, AND
  ALPHA-C SUB10 H SUB7 ARE CRYSTALLOGRAPHICALLY DESCRIBED WITH THE AID OF
  X RAY DIFFRACTION. THE MONOCLINIC ANGLE IS BETA EQUALS 122DEGREES FOR I
  (R EQUALS ME); OTHER I ARE ORTHORHOMBIC. OTHER CHARACTERISTIC
  PARAMETERS ARE ALSO GIVEN.   ·   FACILITY: INST. ORG. SIN., RIGA,
  USSR.

UNCLASSIFIED

USSR

BLEYKHER, V. M.

Eksperimental'no-Psikhologicheskoye Issledovaniye Psikhicheski Bol'nykh
(Experimental Psychological Research on the Psychologically Ill), Tashkent,
"Meditsina," 1971, 176 pp

Translation: Annotation: This book presents the basic principles of experi-
mental psychological investigation of the psychologically ill, describes the
experimental psychological methods most frequently used for this purpose, and
generalizes information on the special features discovered in investigating
persons ill with schizophrenia, oligophrenia, epilepsy, cerebral arterios-
clerosis, and senile psychoses. The significance of research results for
solving questions of differential diagnosis and in psychiatric consultation
is pointed out. Models of the tables and blanks needed for the investigation
are given in the appendix.

The book is intended for practicing psychiatrists, neuropathologists, neuro-
surgeons, psychologists working in pathological psychology laboratories at
psychiatric hospitals, and may also serve as a study aid for students
studying psychiatry and medical psychology.

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USSR

BLEYKHER, V. M., Eksperimental'no-Psikhologicheskoye Issledovaniye Psikhi-cheski Bol'nykh, Tashkent, "Meditsina," 1971, 176 pp

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USSR

BLEYKHER, V. M., Eksperimental'no-Psikhologicheskoye Issledovaniye Psikhi-
cheski Bol'nykh, Tashkent, "Meditsina," 1971, 176 pp

3/4

1/2   022   UNCLASSIFIED   PROCESSING DATE--02OCT70
TITLE--COMPLEXING IN A TITANIUM(IV),2,4,DIHYDROXYBENZOIC ACID SYSTEM -U-

AUTHOR-(04)-ASTAKHOV, A.I., KNYAZEVA, YE.N., BLEYKHER, YA.I., SHVAYDERMAN,
   S.YA.
COUNTRY OF INFO--USSR

SOURCE--ZH. OBSHCH. KHIM. 1970, 40(2), 347-52

DATE PUBLISHED-------70

SUBJECT AREAS--CHEMISTRY

TOPIC TAGS--SPECTROPHOTOMETRIC ANALYSIS, HYDROXIDE, BENZENE DERIVATIVE,
   CHEMICAL STABILITY, ORGANOTITANIUM COMPOUND, ORGANIC COMPLEX COMPOUND,
   METAL COMPLEX COMPOUND, TITANIUM

CONTROL MARKING--NO RESTRICTIONS

DOCUMENT CLASS--UNCLASSIFIED
PROXY REEL/FRAME--1993/0200   STEP NO--UR/0079/70/040/002/0347/0352

CIRC ACCESSION NO--AP0113139
                         UNCLASSIFIED

CIRC ACCESSION NO--AP0113139
ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT.   SPECTROPHOTOMETRIC DATA ARE
  PRESENTED FOR THE SYSTEM OF TI(IV) WITH 2,4,DIHYDROXYBENZOIC ACID (H
  SUB3 R).   THE COLORED COMPLEX FORMS BEST AT PH 3-6, THE PRODUCT HAVING
  A STRONG ABSORPTION BAND AT 355 M MU.   THIS APPEARS TO BE THE MA SUB2
  TYPE OF COMPLEX.   AT PH SMALLER THAN 3.3, THE REACTION IS: TIO PRIME2
  PLUS 2H SUB3 R IN EQUILIBRIUM TIO(H SUB2 R) SUB2 PLUS 2H PRIME POSITIVE,
  WHILE AT PH 3.3-6.5 IT IS: TIO PRIME2 POSITIVE PLUS 2H SUB2 R PRIME
  NEGATIVE IN EQUILIBRIUM TIO(H SUB2 R) SUB2.   THE MEAN VALUE OF THE
  INSTABILITY CONST. OF THE COMPLEX WAS CALCD. AS 5.93 TIMES 10 PRIME
  NEGATIVE7.

UNCLASSIFIED

Instrumentation and Equipment

USSR   UDC 621.9.048.4

ROZE, L. V., and BLEYKHMAN, B. I., Riga

"Investigation of Electromachining With Reduced Wear of the
Metallic Machining Electrode"

Kishinev. Elektronnaya Obrabotka Materialov, No 2, 1970, pp 10-14

Abstract: A study is made of the schematic of a proposed pulse
generator for electromachining which makes it possible to reduce
the wear of the metallic machining electrode in a number of
cases to practically zero at a machining rate of several hundreds
of mm^3/min. The physico-technical characteristics of the mach-
ining are presented and an analysis is made of the obtained
functions. Certain general conditions, which ensure wearless
machining with copper electrodes, are determined using quanti-
tative and qualitative methods. Determination is made of the
effect of correlation of energy and duration of work pulses on
the magnitude of electrode wear. Recommendations are given re-
garding the use of the generator.

1/1

USSR   UDC 621.385.6:681.3

BLEYVAS, I. M., LUKOSHOV, V. S., MIKHAYLUS, F. F., POBEDONOSTSEV, A. S., SAZONOV,
V. P., SILIN, R. A.

"Machine Methods of Planning Microwave Electrovacuum Devices -- Means of Increasing
the Efficiency of Development"

Translation: The basic problems of machine planning of microwave electrovacuum
devices are formulated, and some concrete examples of machine planning in the area
of electronics, electrodynamics, and electron optics are considered. Problems
are discussed of the creation of a system of procedure in machine planning and
problems in the area of machine planning of microwave electrovacuum devices.
55 ref. Summary.

1/1

- 331 -

1/2   011   UNCLASSIFIED   PROCESSING DATE--30OCT70
TITLE--COGRANULATICN OF RUBBERS -U-

AUTHOR-(04)-KALINICHENKO, V.N., BLIKH, G.A., SAPRONOV, V.A., OGNEVSKIY,
   L.A.
COUNTRY OF INFO--USSR

SOURCE--IZV. VYSSH. UCHEB. ZAVED., KHIM. KHIM. TEKHNOL. 1970, 13(1),
   113-15
DATE PUBLISHED-------70

SUBJECT AREAS--MATERIALS

TOPIC TAGS--GRANULE FORMATION, RUBBER PROCESSING PLANT, SYNTHETIC
   RUBBER/(U)SKD RUBBER, (U)BSK RUBBER

CONTROL MARKING--NO RESTRICTIONS

DOCUMENT CLASS--UNCLASSIFIED
PROXY REEL/FRAME--2000/0782   STEP NO--UR/0153/70/013/001/0113/0115

CIRC ACCESSICN NC--AP0124451
                        UNCLASSIFIED

CIRC ACCESSION NO--AP0124451
ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. COGRANULATION OF SKD RUBBER BSK
  RUBBER (IN A 1:1 RATIO) LED TO IMPROVED EXTRUDABILITY AND DRYING
  CONDITIONS OF RUBBER GRANULES. COGRANULATION WAS PRESUMABLY ACCOMPANED
  BY A CHEM. REACTION WHICH IMPROVED THE PHYSICO MECH. PROPERTIES OF THE
  RUBBERS.   FACILITY: DNEPROPETROVSK. KHIM. TEKHNOL. INST. IM.
  DZERZHINSKOGO, DNEPROPETROVSK, USSR.

UNCLASSIFIED

USSR   UDC 539.219.3

BLINKIN, A. M., OZHIGOV, L. S., MIROSHNICHENKO, YU. T., KHRIPKOV, YU. F., and
SEMENENKO, V. YE., Kharkov State University imeni A. M. Gor'kiy

"Diffusion in Composite Materials"

Sverdlovsk, Fizika Metallov i Metalloyedeniye, Vol 35, No 4, 1973, pp 870-872

Abstract: The effect of the fiber-matrix boundary interface and excess concen-
tration of non-equilibrium defects, formed in the reinforced metal due to
thermal stresses, on diffusion parameters in composite materials of the core-
shell type was investigated for Cu-W and Cu-Mo composites in which copper was
the core and tungsten and molybdenum were the shells. Tungsten wire with
diameters of 1.0, 1.5, and 2.0 mm was placed in the center of a crucible and
fused with copper of electron-beam purity. Sample diameter was 6 mm. The Cu-W
composite consisted of molybdenum shells 0.5 and 1.0 mm thick and an external
diameter of 9 mm, inside of which the copper was melted. A eutectic composi-
tion Al-Al$_3$Ni was produced by directed crystallization and drawing rates of
25, 40, 90, 360, and 720 mm/hr. The nickel and aluminum were added according
to a method described in a previous work of the authors. The ratios of diffusion
coefficients for nickel (D/D_{cu}) in the composites to the coefficient of diffusion
in pure copper were plotted against the volume content (in %) of the reinforcing
1/2

USSR

BLINKIN, A. M., et al, Sverdlovsk, Fizika Metallov i Metallovedeniye, Vol 35, No 4, 1973, pp 870-872

phase at 700°C. From the graph it was determined that the diffusion coefficient ratio increases with increased content of the reinforcing phase with the effect much more intense in the Cu-Mo composite. The diffusion activation energy for pure copper was 54.8 kcal/mole, while for copper, reinforced with molybdenum shells 0.5 and 1.0 mm thick, these energies were 43.3 and 35.2 kcal/mole, respectively. From experimental data it was found that the diffusion coefficients increase with decreased fiber diameter and are maximum in the composite produced at a drawing rate of 720 mm/hr. These results allowed the assumption to be made that the diffusion coefficients are increased with decreased fiber diameter (for one and the same content of reinforcing phase content) due to the increased length of the matrix-fiber boundary interface. 2 figures, 5 bibliographic references.

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BLINKIN, V. L.

JPRS 55582

30 March 1972

THEORY OF CAVITY REACTORS WITH COMPRESSIBLE FUEL

Selected articles from Russian-language journal by V. L. Blinkin
and V. M. Novikov: K Teorii Polostnykh Reaktorov so Szhimayemym
Goryuchim, TAE 7139 and 7140, 1971, Moscow.

CONTENTS

- a -

[I - USSR - L]

DYNAMIC CHARACTERISTICS WITH OSCILLATIONS IN FUEL DENSITY

§1. Introduction

The interest felt in reactors with a gas core and external moderator[1] is related to the possibility of their utilization for various special purposes (for example in MHD generators•[1], power installation [2], etc., [3], [4]). The static properties of these reactors have been studied both theoretically [5] and experimentally [6]. Significantly less is known concerning the dynamic properties of these systems, although certain peculiarities related to fuel compressibility may have a significant influence on the dynamic characteristics of these reactors.

It is known that when fuel density fluctuates in a reactor, an additional effective reactivity results, which is dynamic in nature [7]. The calculation of this reactivity was performed for a homogeneous reactor in [7], [8], [9].

As we know, in a reactor with an external moderator, which is a heterogeneous system, the dependence of dynamic reactivity on reactor parameters is generally different.

The study of the relationship of the breeding factor to the time-dependent effective boundary conditions at the surface of the core of a cavity reactor was the subject of [10]. The model studied in this work is applicable only for slow changes in core zone parameters, and the relationship of these parameters to the effective boundary conditions is not studied.

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[1] These reactors are sometimes called "cavity reactors."

- 1 -

DYNAMIC REACTIVITY AS A FUNCTION OF SYSTEM PARAMETERS

[Article by V. L. Blinkin, V. M. Novikov; Moscow, K. Teorii Polostnykh Reaktorov so ... Sryuchim, IAE 2140, Russian, 1971, pp 1-20].

§1. Introduction

In an earlier work [1], it was demonstrated that the dynamics of cavity reactors with fluctuations in fuel density can be fully described by two dynamic characteristics: Δk_{dyn} -- the dynamic reactivity and $\psi(\vec{r}, t)$ -- the variable component of neutron flux.

A general expression for Δk_{dyn} with an accuracy to terms on the order of $(\varepsilon\omega)^2$ has been produced by the method of the adiabatic theory of perturbations.[1]

$$\Delta k_{dyn}^i = -\frac{\varepsilon}{\tau}\int\int_0^{\tau}(i+\Lambda_0)d\tau - (\varepsilon\omega)^2\left[S_{oo}^{(i)}(\tau) + \sum_{n=1}^{n}\frac{S_{on}^{(i)}(\tau)S_{no}^{(i)}(\tau)}{e^{(-\Lambda_n)\tau} - 1}\right] \quad (1.1)$$

The purpose of this work is to study the dependence of the value and sign of Δk_{dyn}, as well as the variable component $\psi(\vec{r}, t)$ on the type of fluctuations in fuel density, moderator parameters and system geometry. In §2, we study centrally symmetrical (in a spherical cavity reactor) and axisymmetrical (in a cylindrical reactor) acoustical oscillations (type [II] oscilla-

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[1] Symbols used in this article are the same as in [1].

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USSR

ALEKSEYEV, V. V., BLINKOV, V. M., Department of Physics of the Ocean and
Inland Bodies of Water, Moscow State University

"Convective Motion of Liquid in a Two-Dimensional, Rectangular, Extended Reservoir Heated From Below"

Abstract: The authors study the relation between critical Grashof numbers
and the length of a two-dimensional rectangular tank which is heated from
below. It is shown that as the length of the reservoir increases, the lower
critical number approaches some positive limit, while the critical numbers
corresponding to secondary currents increase asymptotically as the fourth power
of the solution number.

1/1

USSR   UDC: 69.001.5:621.311.21.(282.251.2)

BLINKOV, V. V., SKLADNEV, M. F. and SHCHAVELEV, N. F., Candidates of Technical
Sciences, ROZANOV, N. S., Doctor of Technical Sciences, and KHLEBNIKOV, N. V.,
Engineer

"Scientific Research Work for the Krasnoyarsk Hydroelectric Power Plant"

Abstract: A great deal of scientific research work was done as the basis for
the plan and the construction of the Krasnoyarsk hydroelectric power station.
The organization of this research and introduction of its results, designed to
assure the reliability of structures and increase the technical and economic
indicators of the power plant, were possible due to the close, creative cooper-
ation between planners, constructors, scientists and operating personnel.
Many of the results of the studies performed are of significance not only for
the Krasnoyarsk power plant, but also for many large hydroelectric power plants
under construction, in planning or design. The Krasnoyarsk hydroelectric power
plant, the world's largest, is and remains one of the primary experimental
bases for Soviet water engineering science. Studies included both model-scale
studies and tensometric and other studies of the actual power plant during
various stages of construction.
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USSR   UDC 681.355

BELYAKOV, V. M., BLINKOV, Yu. B., LOMTEV, Ye. A., and SHLYANDIN, V. M.

"Time Interval-to-Digital Code Converter"

USSR Author's Certificate No 262514, Filed 1/07/68, Published 2/11/70
(Translated from Referativnyy Zhurnal Avtomatika, Telemekhanika i
Vychislitel'naya Tekhnika, No 5, 1971, Abstract No 5B485P)

Translation: A time interval-to-digital code converter is suggested, con-
taining forming flip-flops, a collector circuit, digital memory registers,
and a delay line with taps. The outputs of the delay line are connected to
the inputs of the collector circuit; the outputs of the collectors circuit
are connected to the first input of the forming flip-flop, the second input
of which is connected to the last delay line output; the inputs of the
digital memory registers are connected to the outputs of the delay line.
In order to simplify the converter, it contains coincidence circuits, a
pulse expander, and a shift register. The input of the delay line is
connected to the input of the shift register and the output of the coin-
cidence circuit; the input of the coincidence circuit is connected to the
output of the forming flip-flop, one input of which is connected to the
"clear" terminal, while the other is connected to the input of the delay
1/2

USSR

BELYAKOV, V. M., et al., USSR Author's Certificate No 262514, Filed 1/07/68, Published 2/11/70 (Translated from Referativnyy Zhurnal Avtomati a, Tele-mekhanika i Vychislitel'naya Tekhnika, No 5, 1971, Abstract No 5B485P)

line. The enabling inputs of the memory registers are connected to the first inputs of the digital coincidence circuits. The outputs of the coincidence circuits of the digits are connected to the output of the forming flip-flop of the collection circuit; the second inputs of the digital coincidence circuits are connected to the outputs of the shift register, while the input of the forming flip-flop of the collecting circuit is connected to the input of the pulse expander, the output of which is connected to the first input of the coincidence circuit. The second input of the coincidence circuit is connected to the last output of the shift register, and the output of the coincidence circuit is connected to the input of the delay line. 2 figs.

2/2

- 100 -

USSR

UDC: 622.375.122

LYADOV, B. N., BLINKOV, Yu. V., LOMTEV, Ye. A., SHLYANDIN, V. M., Penza
Polytechnical Institute

"A Multistage Amplifier"

Moscow, Otkrytiya, Izobreteniya, Promyshlennyye Obraztsy, Tovarnyye Znaki,
No 11, Apr 72, Author's Certificate No 333675, Division H, filed 3 Aug 70,
published 21 Mar 72, p 220

Translation: This Author's Certificate introduces a multistage amplifier
for AC signals based on transistors connected in a common-emitter circuit.
As a distinguishing feature of the patent, the operating stability of the
amplifier is improved with respect to direct current and the device is sim-
plified by joining together the emitters of all transistors in the odd stages
and the emitters of all transistors in even stages, and connecting them to
the common line of the amplifier through RC bias networks which are common
for the joined transistors. The collector of the transistor in each pre-
ceding stage is connected to the base of the transistor in each following
stage through a resistive divider.

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USSR

BERLOVICH, E. Ye., BLINNIKOV, Yu. S., VAYSHNIS, P. P., VITMAN, V. D., YELKIN,
Yu. V., IGNATENKO, Ye. I., PANTELEYEV, V. N., and TARASOV, V.K., B. P.
Konstantinov Nuclear Physics Institute

"Short-Lived Osmium Isotopes"

Abstract: The purpose of the experiments described in this paper is to
detect 175Os and to obtain information concerning gamma irradiation of
this and lighter osmium isotopes. The short-lived isotopes were obtained
in spallation reactions by irradiating mercury with 1-Gev protons in the synchro-
cyclotron of the*irradiation conditions vary, inasmuch as the proportion of the
different Os isotopes in the specimens depends on the mode of proton bombard-
ment. In the gamma irradiation, the gamma ray spectrum was measured by a Ge(Li)
detector, with a resolution of 3.5 kev for a line of 662 kev, and the spectra
were recorded by an electronic system including an AI-1024 analyzer, a control
block with timer, and the Minsk-22 computer to measure half-lives. Isotopes

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USSR

with half-lives of more than 2.5 minutes and less than 2.0 minutes were investigated, and tables of their gamma-radiation spectra are given. Results of the present paper are compared with those of earlier papers. An attempt was also made to find a genetic connection between short-lived osmium and rhenium isotopes, and a table for the gamma irradiation of ^{174}Re is also given.

*   Leningrad Institute of Nuclear Physics;

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UNCLASSIFIED

TITLE--ELECTROLYTIC CELL FOR THE ELECTROLYSIS OF A MOLTEN ELECTROLYTE --

PROCESSING DATE--13NOV70

AUTHOR-(05)-ADAEV, E.I., BLINOV, A.V., KAMARYAN, G.M., NOVOSELOV, V.A., SUCHKOV, V.N.

COUNTRY OF INFO--USSR

SOURCE--BRIT. 1,185,481

DATE PUBLISHED--25MAR70

SUBJECT AREAS--CHEMISTRY, ELECTRONICS AND ELECTRICAL ENGR.

TOPIC TAGS--SODIUM, ELECTROLYSIS, SODIUM CHLORIDE, ELECTROLYTE, CHLORINE, PATENT

CONTROL MARKING--NO RESTRICTIONS

DOCUMENT CLASS--UNCLASSIFIED

PROXY REEL/FRAME--1994/1972

STEP NO--UK/0000/70/000/000/0000/0000

CIRC ACCESSION NO--AA0115771

UNCLASSIFIED

CIRC ACCESSION NO--AA0115771

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. THE ELECTROLYTIC CELL FOR THE
  PRODUCTION OF METALLIC NA BY THE ELECTROLYSIS OF A FUSED SALT BATH
  CONTG. NACL COMPRISES A CENTRAL CYLINDRICAL ANODE BUILT UP OF GRAPHITE
  BARS, PROVIDED WITH WATER COOLING, AND SEALED IN THE BASE OF A STEEL
  SHELL, LINED WITH FIRE BRICK, WHICH CONTAINS THE MOLTEN SALT BATH. THE
  ANODE IS ENCIRCLED BY A CAST STEEL CATHODE SEPD. FROM THE ANODE BY AN FE
  OR ALLOY MESH SCREEN SUSPENDED FROM A COLLECTOR OR DOME TO PREVENT
  RECOMBINATION OF THE NA AND CL SUB2. THE NA EVOLVED AT THE CATHODE
  RISES INTO THE OUTER RING OF THE DOME AND THENCE TO A COLLECTOR, WHILE
  THE CL SUB2 GAS RISES THROUGH THE CENTRAL DOME TO A GAS COLLECTING
  SYSTEM.

UNCLASSIFIED

USSR   UDC 669.295.051

DENISOV, S. I., MOROZ, YU. A., and BLINOV, B. S.

"Technological Sampling of Iron-Titanium Concentrate of the Obukhovskiy
Deposit"

Sb. tr. Vses. n.-i. i proyektn. in-t titana (Collection of Works of the All-
Union Scientific Research and Design Institute of Titanium), 1970, 5, pp 7-14
(from RZh-Metallurgiya, No 11, Nov 70, Abstract No 11 G144)

Translation: According to its mineralogical composition, the kinetics of
reduction of Fe oxides, and other properties, the concentrate of the
Obukhovskiy deposit basically resembles that of the Samotkanskiy deposit. Much
more solid briquettes can be prepared from the Obukhovskiy concentrate than
from the Samotkanskiy, although, a large quantity of sulfide pulp alkali
is needed for this (14-15% as compared to 9-11% for the Samotkanskiy con-
centrate). Standard Ti-slags (TiO_2 80%) can be produced from the studied
concentrate. However, slag smelted from the concentrate of the Obukhovskiy
deposit contains large quantities of impurities (by 4.2%), and in addition, it
is leaner in TiO_2 (by 4.4%) content as compared to slag smelted from the
Samotkanskiy concentrate. 6 ill., 5 tables.   Author's abstract.
1/1

Titanium

USSR

UDC 669.295

DENISOV, S. I., BLINOV, B. S., SHAKHRAY, I. M., and TITOMER, B. P.

"Magnetic Separation of Titanium Slag"

Moscow, Metallurgiya i Khimiya Titana (Institut Titana), Metallurgiya
Publishing House, Vol 6, 1970, pp 7-12

Translation: An industrial electromagnetic separator was used in a study of
conditions for separating crushed titanium slag as a function of the magnetic
induction of the electromagnet, the magnitude of the slag particles, and the
height of the layer. It is shown that, under optimal conditions for separat-
ing slag, it is possible to remove 70-80% of all metallic iron from it into
the magnetic fraction and to obtain slag with a metal content of not more
than 0.4-0.5 %. The expediency is shown of separating large slag parts (of
a class greater than two millimeters), in which most of the metallic iron is
concentrated independently. Two illustrations, three tables, and four bib-
liographic entries.

1/1

BLINOV   B.S.

AA0047010⁻   _   UR 0482

Soviet Inventions Illustrated, Section III Mechanical and General,
Derwent, 1-70

242357   HAND WINCH as per No. 225404 differing
          in the pulley frame having an axis
with a pressure roller. This creates an axial
shift of the cable in the pulley groove and
presses the ends of the working cable to the
pulley. Between the pulley and the pressure
device on the upper branch of the cable a handle
is fitted. In the frame of the pulley there is
axis 11 with pressure roller 12. The pressure
roller presses the cable to the wall of the
pulley groove, creating a certain preliminary
tension in the cable, shortening the required
length of contact of the pulley groove with the
cable. The roller also serves as a guide
element for the cable onto the pulley and
provides and axial shifting force during rotation,
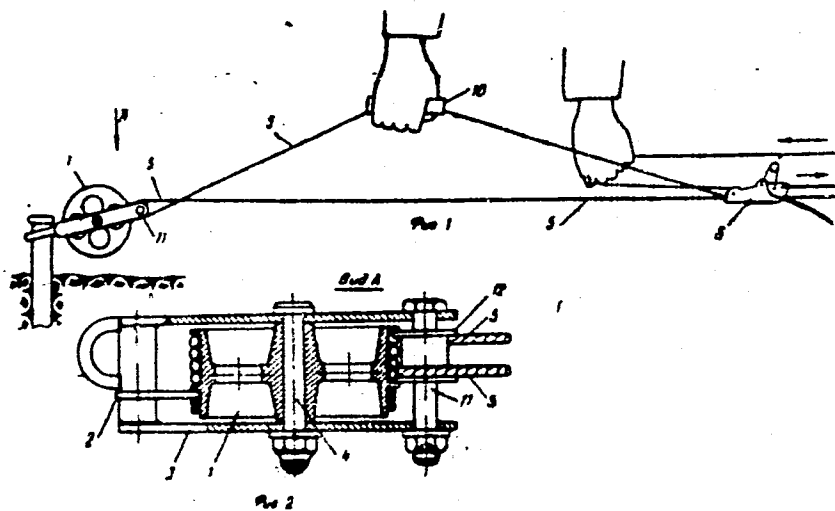pushing the cable on the pulley groove.

11.3.68. as 1226091/27-11,Add. to225404. BLINOV B.S.
(8.9.69) Bul. =5/25.4.69 Class 35c, Int.Cl. B 66d.

1/2

19790439

AA0047010

2/2

19790440

β S

USSR   UDC: 621.396.69:621.372.54(088.8)

BEL'MAN, M. Kh., BLINOV, B. V., KUKHAR', V. V., GOLOVIZNINA, N. V.,
RAZUMOVA, T. A.

"An Electromechanical Filter"

USSR Author's Certificate No 270125, filed 10 Dec 68, published 30 Jul 70
(from RZh-Radiotekhnika, No 1, Jan 71, Abstract No 1V345 P)

Translation: An electromechanical filter is proposed with a T-shaped
resonance element whose ends fit into gaps in magnetic systems of input
and output converters interconnected by two permanent magnets. To improve
the thermal stability of the filter, shunts of thermomagnetic alloy are
connected in parallel with the permanent magnets.

1/1

1/2   021   UNCLASSIFIED   PROCESSING DATE--13NOV70
TITLE--INSTALLATION OF SHIP DIESEL PLANTS -U-

AUTHOR-(02)-BLINOV, B.D., GALPEROVICH, L.G.

COUNTRY OF INFO--USSR

SOURCE--(MONTAZH SUDOVYKH DIZEL'NYKH USTANOVOK) LENINGRAD, SUDOSTROYENIYE,
    1970 366 PP
DATE PUBLISHED-------70

SUBJECT AREAS--MECH., IND., CIVIL AND MARINE ENGR, PROPULSION AND FUELS

TOPIC TAGS--SHIPBUILDING ENGINEERING, HANDBOOK, DESIGN HANDBOOK, DIESEL
    ENGINE

CONTROL MARKING--NO RESTRICTIONS

DOCUMENT CLASS--UNCLASSIFIED
PROXY REEL/FRAME--3003/1737   STEP NO--UR/0000/70/000/000/0001/0366

CIRC ACCESSION NO--AM0130588
                         UNCLASSIFIED

CIRC ACCESSION NO--AM0130588
ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. TABLE OF CONTENTS: PREFACE 3.
CHAPTER 1 PREPARATORY INSTALLATION OPERATIONS 7.   2 INSTALLATION OF
DIESELS 43.   3 INSTALLATION OF COUPLING BOXES 73.   4 OIL SYSTEMS
OF SHIP DIESELS 118.   5 WATER SYSTEMS OF SHIP DIESELS 180.   6 FUEL
SYSTEMS OF SHIP DIESELS 228.   7 STARTING AIR SYSTEMS OF SHIP DIESELS
255.   8 GAS EXHAUST SYSTEMS AND AIR SUPPLY SYSTEMS OF MAIN ENGINES
286.   9 HAWSER TESTS OF THE SHIP DIESEL PLANT 336.   10 RUN TESTS OF
THE SHIP DIESEL PLANT 336.   APPENDIX 357.   BIBLIOGRAPHY 367.

UNCLASSIFIED

USSR   UDC 622.233.051.7

BLINOV, G. A., and PONOMAREV, P. P., All-Union Scientific Research Institute
of Methods and Techniques of Exploration

"New Diamond Bits for Drilling Crumbling Rocks"

Abstract: Acceptance testing of the single-layer diamond bit with a reinforced
matrix AKU-1, designed for drilling poorly-abrasive and abrasive rock, showed
the AKU-1 to loose half as much diamond while drilling as the bits of the
01A3 and 01A4 series. The AKU-1 could also take an axial load 20 to 25%
larger. These results have been confirmed by experimental utilization in
various geological institutes. The AKU-1 usually wears more evenly than the
other bits, due to a more efficient diamond distribution.

1/1

USSR   UDC   621.391

BLINOV, I. G. and NIKOL'SKAYA, T. G.

"Solving the Problem of Object Classification"

Sb. nauch. tr. po probl. mikroelektron. Mosk. in-t elektron. tekhn. (Collected
Scientific Works on Problems of Microelectronics. Moscow Institute of Electronic
Technology), 1972, vyp. 10, pp 98-109 (from RZh-Radiotekhnika, No 11, Nov 72, Abstract
No 11 A22)

Translation: The authors study one of the methods for solving problems of object
classification. The method is represented by three procedures: generation of
varieties of characteristic criteria of classified objects, composition of sets from
the entire variety of characteristic criteria, and determining the criteria for type
of object (class). Resume.

1/1

USSR

UDC: 621.396.6-181.48

BLINOV, I. G., YEL'CHANINOV, Ye. I., KRASANOV, V. G., PANKRATOV, L. M., MELEKHIN, Yu. Ya.

"The UVN-73P-1 Installation for Vacuum Application of Metal Films"

Translation: The paper presents the basic results of development of an industrial installation for vacuum deposition of metal films. The particulars of design of the principal functional units are considered. Experimental results are given on the operational characteristics of the installation. Resumé.

1/1

B

"Cathode Vaporization of Thin Films of Tantalum"

Elektron. prom-st', Nauchno-tekhn. sb. (The Electronics Industry, Scientific and Technical Collection), 1970, No 1, pp 69-70 (from RZh-Radiotekhnika, No 10, Oct 70, Abstract No 107232)

Translation: A brief description is given of the Soviet UV-62P-1 device for producing tantalum films. The unit can be used to make films with surface resistance spread of less than 4% in a single batch, and less than 7% from batch to batch. Two illustrations. N. S.

1/1

USSR   UDC 669.184.244.66

BLINOV, K. A., VERBITSKIY, YA. D., AFANAS'YEV, S. G., KVITKO,
M. F., and FILATOV, YU. V.

"Study of the Interaction of the Gas Stream With the Liquid Bath
on Cold Models"

Proizvodstvo Chernykh Metallov (Production of Ferrous Metals-
Collection of Works,) No 75, Metallurgiya Press, 1970, pp 89-93

Translation: Problems of the formation and removal of spray
from the throat of a converter and along its height are discussed.
Experiments were performed using a cold model of a 10 T conver-
ter. The liquid modeling the metal was ordinary water.
    It was established that the nature of the change in spray transfer for all
types of heads studied was identical, although the rate of reduction of the
quantity of spray in the throat of the model was higher upon transition to
higher oxygen flow rates for a 13-nozzle tuyere than for other types. The
characteristics produced indicate that when the oxygen converter process is
intensified, tuyere designs should be used providing the maximum breakup of the
gas stream, in order to avoid splashing and loss of metal. 5 figures; 6 biblio.
refs.
1/1

USSR

UDC 669.184.244.66

BLINOV, K. A., VERBITSKIY, YA. D., AFANAS'YEV, S. G., KVITKO, M. F., and FILATOV, YU. V.

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Translation: Problems of the formation and removal of spray from the throat of a converter and along its height are discussed. Experiments were performed using a cold model of a 10 T conver- ter. The liquid modeling the metal was ordinary water. It was established that the nature of the change in spray transfer for all types of heads studied was identical, although the rate of reduction of the quantity of spray in the throat of the model was higher upon transition to higher oxygen flow rates for a 13-nozzle tuyere than for other types. The characteristics produced indicate that when the oxygen converter process is intensified, tuyere designs should be used providing the maximum breakup of the gas stream, in order to avoid splashing and loss of metal. 5 figures; 6 biblio. refs.

1/1

172   018   UNCLASSIFIED   PROCESSING DATE--18SEP70
TITLE--MIXING IN AN OXYGEN CONVERTER BATH -U-

AUTHOR-(03)-BLINOV, K.A., AFANASYEV, S.G., KVITKO, M.P.

COUNTRY OF INFO--USSR   *B*

SOURCE--IZV. VYSSH. UCHEB. ZAVED., CHERN. MER. 1970, 13(1) 39-42

DATE PUBLISHED-------70

SUBJECT AREAS--MATERIALS

TOPIC TAGS--OXYGEN, BLAST FURNACE, MOLTEN METAL, MATERIAL MIXING

CONTROL MARKING--NO RESTRICTIONS

DOCUMENT CLASS--UNCLASSIFIED
PROXY REEL/FRAME--1988/0948   STEP NO--UR/0148/70/013/001/0039/0042

CIRC ACCESSION NO--AT0105817
                        UNCLASSIFIED

CIRC ACCESSION NO--AT0105817
ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. THE EFFECT OF THE ENERGY OF O AND
   OF THE BOILING GAS BUBBLES ON THE MIXING INTENSITY IN THE METAL BATH IN
   A 10 TON CONVERTER WAS STUDIED DURING VARIOUS PERIODS OF CONVERTER
   OPERATION. AN EQUATION IS DERIVED FOR THE ENERGY (N) WHICH IS GIVEN UP
   BY THE O TO THE METAL BATH AT THE MOMENT OF THEIR CONTACT: N EQUALS
   0.385 RW PRIME3 D PRIME2, WHERE R IS THE D. OF THE O STREAM IN KG-M
   PRIME3, W IS THE RATE OF THE STREAM AT ITS AXIS IN M-SEC, AND D IS THE
   DIAM. OF THE GAS STREAM AT ITS CONTACT WITH THE METAL BATH IN M.
   ANOTHER EQUATION IS DERIVED FOR THE MIXING ENERGY ORIGINATING FROM GAS
   BUBBLES (N SUBC) AS WELL AS FOR THE MAX. DEPTH FROM WHICH THESE GAS
   BUBBLES RISE. THE CALCNS. SHOWED THAT DURING THE 1ST 20-5PERCENT OF THE
   BLAST TIME THE GAS BUBBLES FLOAT UP FROM A LEVEL 20PERCENT OF BATH
   DEPTH, WHILE DURING THE REMAINING TIME THE GAS BUBBLES RISE FROM THE
   BOTTOM OF THE BATH. IN EVALUATING THE MIXING EFFECT, IT IS NECESSARY TO
   TAKE INTO ACCOUNT THE ENERGY GIVEN UP BY THE GAS STREAM TO THE METAL
   BATH (ESP. IMPORTANT AT THE START OF THE BLAST OPERATION).

UNCLASSIFIED

BLINOV, L. A.

Medical education

FIRST RESULTS OF OPERATION OF PREPARATORY DEPARTMENTS AT MEDICAL INSTITUTES OF THE RUSSIAN FEDERATION

As mentioned in the Decree of the Central Committee of the CPSU and USSR Council of Ministers "On the organization of preparatory departments at higher educational establishments" (August 1969), "among VUZ students pursuing their studies on leave from industry, in many major cities there are still too few blue collar and collective farm employed young people." For this reason, problems pertaining to involvement of the best prepared young men and women in medical school studies from industry and rural areas have been repeatedly discussed at special meetings of VUZ vice-chancellors as well as secretaries of enrollment commissions. As a result of the vast work done by enrollment commissions, medical institutes have obtained a considerable increase in representation of rural youth in the student body (Table 1). This was aided, in many respects, by the instructions of the USSR Ministry of Higher and Secondary Specialized Education, which allowed medical VUZ in some cases to accept individuals who are permanent residents of rural areas and whose grades at the entrance examinations were 1 or 2 points lower than required for competitive enrollment into first-year classes.

However, even with 38-40 percent enrollment of rural residents in the first year classes, only a negligible number are referable to blue collar and farm workers, i.e. to individuals directly engaged in industry or agricultural work. As demonstrated by analysis of the social composition of students at the medical and pharmaceutical institutes of the RSFSR Ministry of health from 1966 through 1970, there was no increase in number of workers or their children enrolled in all years and it constituted 30.7 percent of the total student body in 1970, while the number of farmers or their children dropped to 7.4 percent in 1970 (Table 2).

One could hardly consider this situation to be satisfactory, since the social composition of students enrolled in medical institutes does not even approximately correspond to the structure of our society, the vast majority of which consists of blue collar or farm workers. Furthermore, in a number of cases, such a social structure of the student body in the medical schools of

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USSR   UDC 621.375.82

KOMPANETS, I. N., MOROZOV, V. N., NIKITIN, V. V., BLINOV, L. M.

"Controlled Transparency on a Liquid Crystal for Recording Holograms"

V sb. Kvant. elektronika (Quantum Electronics--collection of works), No 3,
Moscow, Soviet Radio, 1972, pp 79-81 (from RZh-Fizika, No 12, Dec 72,
Abstract No 12D1021)

Translation: A study was made of the effectiveness of using liquid crystals
as light switches. A matrix comprising glass-metal inserts, a liquid crystal,
and a transparent electrode controlled by an electric voltages permits re-
cording of holograms at a rate of more than 50 cycles/sec, insuring high
image contrast. Liquid crystals "with a memory" can be used to prepare
the information before input to an optical computer and for output from
the computer. The bibliography has 7 entries.

1/1

USSR

BASOV, N. G., BEREZIN, P. D., BLINOV, L. M., KOMPANETS, I. N., MOROZOV, V. N.,
and NIKITIN, V. V., Physics Institute imeni P. N. Lebedev, Academy of Sciences
USSR

"Phase Modulation of Coherent Light by Means of Liquid Crystals"

Abstract: The article describes results of a study of the effect of phase
modulation with an electric field of coherent light passing through a nematic
liquid crystal with positive anisotropy of permittivity ($\epsilon_{\parallel} > \epsilon_{\perp}$). Such
modulation opens up the possibility of the use of thin transparent layers of
liquid crystals in controlled phase transparencies and permits an increase in
optical data processing speed as compared to the speed of other liquid-crystal
light switches. Phase changes in the light passing through the liquid crystal
were recorded by observing the interference of light reflected by a rear and a
front electrode. 4'-ethoxybenzylidene-4-aminobenzonitrile was used as the
liquid crystal.

1/1

USSR

UDC: 533.9.07:541.196.193

BLENOV, L. M., LYSOV, G. V., PETROV, Ye. A.

"A High-Frequency Plasmatron"

Moscow, Otkrytiya, Izobreteniya, Promyshlennyye Obraztsy, Tovarnyye Znaki, No 11, 1970, Author's Certificate No 266105, filed 26 Feb 68, pp 74-75

Abstract: This author's certificate introduces: A high-frequency plasmatron which contains a quartz tube with a fitting for tangential or axial gas supply, and a system for excitation of an electromagnetic field. As a distinguishing feature of the patent, the device is designed for producing a continuous ionized flow of nonequilibrium plasma with a gas temperature of 200-500°C. Coaxial with the quartz tube is a circular waveguide to the outside of which a rectangular waveguide is connected through a lead-in aperture in such a way that its wide wall is perpendicular to the axis of the circular waveguide for excitation of the E_{01} mode from an SHF pulse oscillator. A second rectangular waveguide is similarly connected with its wide wall parallel to the axis of the circular waveguide for excitation of the H_{11} mode from a continuous SHF oscillator. 2. A modification of this plasmatron in which the distinguishing features are channel matching and wave reduction. Both rectangular waveguides are located a certain distance from

1/2

USSR

INOV, L. M., et al, Otkrytiya, Izobreteniya, Promyshlennyye Obrastsy, Tovarnyye Znaki, No 11, 1970,

one another lengthwise on the same side of the circular waveguide, the input apertures are covered by metal wires to prevent cross influence of the waves, and identical waveguide sections with matched water loads [sic] are symmetrically connected to the opposite side of the circular waveguide.

2/2

Pathology

KLOCHKO, E.V., KOVAL'CHUK, L.V., KRUGLYAKOVA, K.YE., SEYTS, I.F., LUGANOVA, I. S., BLINOV, M.N., and EMANUEL', N.M., Academician, Institute of Chemical Physics, Academy of Sciences USSR

"Free Radicals and Metabolism in Leukocytes During Leukoses"

Abstract: The content of free radicals in leukocytes from chronic lymphatic leukosis and chronic myeloid leukosis patients was studied after the cells were incubated with various metabolic poisons - monobromoacetate, sodium fluoride, 2,4-dinitriphenol, and oligomycin. The concentration of free radicals decreased by 50% after "leukemic" leukocytes were exposed to 2,4-dinitrophenol, an uncoupler of oxidative phosphorylation in the early stages. The use of oligomycin, an uncoupler of oxidative phosphorylation in the later stages, did not have an appreciable effect on the level of free radicals. The incubation of healthy leukocytes with 2,4-dinitrophenol or oligomycin likewise had no effect on the concentration of free radicals. The level of free radicals in the leukocytes of both leukotic patients and healthy persons was not affected either during inhibition of glycolysis with sodium fluoride or stimulation during anaerobiosis. Monobromoacetate, which blocks glycolysis, had a more pronounced effect. It would appear that the high content of free radicals in leukocytes during leukosis signifies a distur- bance of oxidative phosphorylation.
1/1

1/2   023

UNCLASSIFIED

TITLE--UPTAKE BY ALGAE AND PLANKTON OF NATURAL AND ARTIFICAL RADIONUCLIDES IN THE OCEAN -U-

PROCESSING DATE--16OCT70

AUTHOR-(03)-BARINOV, G.V., BLINOV, M.V., GRITCHENKO, Z.G.

COUNTRY OF INFO--USSR

SOURCE--(AEC-TR-7128, PP 59-61) TRANSLATED FROM REPORT A-AC-82-G-L-1254

DATE PUBLISHED--------70

SUBJECT AREAS--BIOLOGICAL AND MEDICAL SCIENCES, EARTH SCIENCES AND OCEANOGRAPHY

TOPIC TAGS--OCEAN RADIOACTIVITY, THORIUM ISOTOPE, RADIOACTIVITY MEASUREMENT, ALGAE, PLANKTON, SEAWEED

CONTROL MARKING--NO RESTRICTIONS

DOCUMENT CLASS--UNCLASSIFIED

PROXY REEL/FRAME--1983/1768

STEP NO--UR/0000/70/000/000/0059/0061

CIRC ACCESSION NO--AT0054606

UNCLASSIFIED

CIRC ACCESSION NO--AT0054606
ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. THE SEAWEED, SARGASSUM, WAS
   COLLECTED IN THE CARIBBEAN, THE GULF OF MEXICO, AND THE SARGASSO SEA AND
   ANALYZED FOR PRIME234 TH; THE CONCENTRATION FACTOR WAS FOUND TO BE
   1.104. GREEN ALGAE WERE ALSO FOUND TO BE CONCENTRATORS OF PRIME234 TH
   WITH A CONCENTRATION FACTOR OF R TIMES 10 PRIMES. THE ABILITY OF GREEN
   ALGAE TO ACCUMULATE PRIME234 TH SELECTIVELY WAS USED TO DEVELOP A METHOD
   OF DETERMINING THE PRIME234 TH CONTENT OF SEA AND OCEAN SURFACE WATERS.
   ZOOPLANKTON COLLECTED IN THE MURUROA ATOLL REGION CONTAINED APPRECIABLE
   QUANTITIES OF PRIME95 ZR, PRIME95 NB, PRIME103 RU, PRIME141 CE, AND
   PRIME144 CE. THE ROLE OF ZOOPLANKTON AS BIOLOGICAL INDICATORS OF THE
   PRESENCE OF ARTIFICIAL RADIONUCLIDES IN SEA WATER WAS POINTED OUT.
   FACILITY: GOSUDARSTVENNYI KOMITET PO ISPOL'ZOVANIYU ATOMNOI ENERGII
   SSSR, MOSCOW.

UNCLASSIFIED

USSR

UDC 669.15.018.44

BLINOV, N. A.

"Mechanical Properties of Austenitic Chromium-Nickel Steel Alloyed with Silicon"

Metallovedenive -- V sb. (Physical Metallurgy -- collection of works), No 14, Leningrad, Sudostroyeniye Press, 1970, pp 109-114 (from RZh-Metallurgiya, No 4, Apr 71, Abstract No 41638)

Translation: The properties of austenitic Cr-Ni steel type 14-11 containing up to 3% Si were studied in the unstabilized and stabilized states as applied to the conditions of prolonged service at 550°. The investigated types of steel were 00Kh12N12S3M, 0Kh15N11S3M, 00Kh14N11S3M2, Kh14N11S3M2, Kh16N11S3, 0Kh16N11S3. The short-term mechanical properties and the variation of these properties after aging the steel at 550° for up to 8,750 hours in individual cases are presented. It is established that a_H and the plasticity of austenitic steel type Kh14N11 of the investigated compositions alloyed with 3% Si drops during the process of prolonged aging at 550°. This is caused by precipitation of carbides of the $Me_{23}C_6$ type. This steel has high stability of its properties during prolonged heating (after holding for 1,000 hours). The embrittlement of the material decreases with a decrease in the C content

1/2

USSR

BLINOV, N. A., Metallovedeniye, No 14, Leningrad, Sudostroyeniye Press, 1970, pp 109-114

in the steel; tempering at 800° after austenitization intensifies its embrittlement during prolonged aging. The bibliography has 4 entries.

2/2

USSR   UDC: 532.596+551.46.06.8

NIKIFOROV, Ye. G., BLINOV, N. I., BARYSHEVA, G. B., KOCHETOV, S. V.

"Method of Calculating the Fields of Average Monthly and Average Seasonal
Currents in Outlying Arctic Seas and the Adjacent Part of the Arctic
Basin"

Translation: The development of the theory of wind currents is briefly
surveyed. It is pointed out that development of a procedure for cal-
culating the total current necessitates separate accounting for a number
of factors and is complicated by lack of knowledge on the period of estab-
lishment of either the density or the barometric flows. Taking Eckman's
equations of unsteady flow as a basis, the authors consider the problem of
time of establishment of a drift current in a barotropic sea of constant
depth. The problem is solved by sequential application of Laplace and
Greenberg-Leichtmann transforms to the equations of motion. A Laplace

1/4

NIKIFOROV, Ye. G., et al., Tr. Arkt. i antarkt. NII, 1970, 293, pp 17-48

transform is applied to the equation of continuity, and the result is then
integrated with respect to the vertical coordinate z from the surface to
the bottom. As a result, an equation is found for mapping the rise in the
free surface. The original for the rise ζ is found with the aid of the
Cauchy theorem on residues (the computations are not given), and the prob-
lem for ζ leads to an ordinary homogeneous first-order linear differential
equation. Solution of the latter is sought for the case where the field of
atmospheric pressure is given in the form $P = P_0 \cos kx \cos ky$. Eckman's
equations for a steady-state wind over the surface of water are used for
determining the tangential stresses τ_x and τ_y, and ζ is sought in the form
$\zeta = \zeta_0(t) \cos kx \cos ky$. The solution is found for ζ_0. The results are
tabulated, and it is concluded on the basis of an analysis of the tables
that the time of establishment of barotropic currents is short compared
with the time of reformation of density in outlying seas. On this basis,
the authors propose a division of the current into density and barotropic
components, taking Eckman's equations for steady-state current as a point
of departure in both instances. A computational method is proposed. Pro-
jections of the complete flows on the x- and y-axes in the horizontal plane
are compared for a barotropic and a nonhomogeneous sea, and formulas are
found for the uncompensated part of the pressure gradient due to the slope

2/4

- 80 -

NIKIFOROV, Ye. G. et al., <u>Tr. Arkt. i antarkt. NII</u>, 1970, <u>293</u>, pp 17-48

of the free surface of the sea, which gives the authors the possibility
for dividing the current into two components. A procedure for calculating
drift currents in a barotropic sea is outlined in detail. Eckman's equa-
tions of motion are first solved, and the equation of continuity is used
to determine the level of the sea. The non-overflow condition is set by
the boundary condition on the shore, and from the liquid boundaries the
conditions are extended to infinity without proper substantiation. The
authors consider their method to be equally applicable to singly connected
and multiply connected seas and to have an advantage over Veselbaum's
method. A numerical method is proposed for computer calculation with
coarser nets outside the region under consideration. A method is then
considered for calculating the density component of the flow velocity,
assuming that the density field is independent of the barotropic part of
the current.

   Abstractor's note: The work contains errors. Formula (19) is in-
correctly differentiated, and therefore formula (20), derived from (19),
is not valid, and consequently, so are the subsequent formulas (22), (23),
(24), (25), etc. Equations of continuity (28) for a barotropic and a baro-
clinic sea (p 44) are incorrectly written (the term from integration of

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NIKIFOROV, Ye. G. et al., <u>Tr. Arkt. i antarkt. NII</u>, 1970, <u>293</u>, pp 17-48

$\partial v_z/\partial z$ is left out) and contradict the properly written equation (9).
Double integrals are incorrectly written in formulas (22)-(26), (26) [sic]
(28) and (2). The formula

$$P = g \int_0^z \rho\, dz - \rho g \widetilde{\zeta} = Q - G = -P$$

is written on page 42, and it is incorrectly stated that this formula is
obtained by integrating formula (19) from the surface to the bottom $(z=H)$.
Principal equations (32) and (38) found by the authors are therefore
incorrect. A. K. Nikitin.

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USSR

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"Investigation of the Possibility of Controlling Steel Composition by the
Method of Thermoelectromotive Force"

Abstract: An investigation was made of the combined effect of C, Si, Mn, and
Cr on the thermoelectric properties of steel relative to VR-5 thermoelectrodes
and VR-5/20 thermocouples at various average temperatures of sample cooling.
The experiments were conducted on cooling metal samples taken from the furnace
at 1020°C to 740°C. A statistical model developed for the thermoelectric prop-
erties of Fe alloys can be applied to the process of ShKh15 steel production
in the temperature range indicated above. The model makes it possible, if the
chemical composition of the steel is known, to determine its thermoelectric
properties, or, if the content of three admixtures is known, to determine the
content of any fourth admixture (the deviation from the real value does not
exceed $\pm 0.05\%$). The model also demonstrates the possibility of the simul-
taneous determination of chemical composition according to four admixtures.
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