with increasing Zn content until, with 40% Zn, the SR of pure Al is equaled. Thus it appears that various alloys retain in different measure their crystalline lattice even during fusion, so that a varying measure of weakening of the mobility of the current carriers obtains. This is confirmed by the high value of the temperature coefficient of the SR of liquid Al-Cu alloys corresponding to the solid-solution concentration (up to 5.7% Cu), some 2.5-2.7 times greater than for other alloys. The investigation further reveals that the SR of alloys that solidify over a large T interval have their SR jump neither at the solidus nor at the liquidus T, but at T's that lie on a line about midway within that interval, at points at which, apparently, the liquid isolates the crystals from direct mutual contact; this phenomenon was observed on Pb-Sn, Al-Cu, Bi-Pb, and other alloys. Another significant observation is that, in Bi-Pb and Bi-Sn lying between the eutectic point and pure Bi, in both the solid and liquid states the SR changes with T in the same manner as does pure Bi, but the increase in SR with T up to the m.p. decreases with an increase in Pb and Sn in the alloy. The magnitude of the SR, also, decreases until there is no more SR jump left at the eutectic point. Thus, the alloying elements lead to a loss of the inherent properties of the Bi. There are 7 figures, 2 tables, and 17 references (14 Russian-language Soviet, 1 Russian translation of the "Encyclopedia of Metal Physics," 1937, and 2 German).

ASSOCIATION: None given.

Card 2/2

S/279/63/000/001/008/023
E039/E451

AUTHORS: Korol'kov, A.M., Shashkov, D.P. (Moscow)

TITLE: The temperature dependence of the electrical conductivity of some alloys

PERIODICAL: Akademiya nauk SSSR. Izvestiya. Otdeleniye tekhnicheskikh nauk, Metallurgiya i gornoye delo. no.1, 1963, 105-108

TEXT: A series of binary and tertiary alloys was examined to determine the temperatures and compositions of alloys at which a sudden increase in conductivity occured on melting, in comparison with a further series of alloys which did not show a sudden increase. The observations confirm that the conductivity jump occurs in eutectic alloys (e.g. Al - Zn) when the amounts of solid and liquid phases are equal, that is when the crystals lose contact with each other and are isolated by liquid. Similar conductivity jumps are observed in eutectic alloys such as Al-Si, Al-Cu, Cd-Bi etc and also for continuous solid solution alloys (Sb-Bi system). Alloys with concentrations close to the eutectic also show a conductivity jump at the eutectic temperature. This effect is absent in systems which include "semimetals" (Bi, Sb, Ga)

The temperature dependence ...

e.g. Bi-Cd, Bi-In, Pb-Sb alloys. In this case the conductivity jump disappears at eutectic concentrations. Similar behavior is observed for tertiary alloys containing a "semimetal" component (Pb-Sn-Bi, Pb-Sn-Sb). No conductivity jump is present for eutectic alloys with strongly chemically reacting components (Cu-Sb, Mg-Ga). A possible reason for these anomalous changes in conductivity may be a mutual compensation of current carriers on melting. The process is evidently also connected with the complex changes of volume for alloys composed of components with opposite volume changes on melting. These results are of definite interest for developing a theory of alloys and a physical theory for the liquid $\rightleftharpoons$ solid transition. There are 3 figures and 1 table.

SUBMITTED: September 24, 1962

L 5027-66 EWT(m)/EWP(w)/EPF(c)/EWA(d)/T/EWP(t)/EWP(b) IJP(c) JD

ACC NR: AP5023998 SOURCE CODE: UR/0020/65/164/002/0307/0310

AUTHOR: Novikov, I. I.; Shashkov, D. P.; 14,55

ORG: Moscow Institute of Steel and Alloys (Moskovskiy institut stali i splavov) 44,55

TITLE: Change of physical properties of metallic compounds during transition from brittle to plastic behavior

SOURCE: AN SSSR. Doklady, v. 164, no. 2, 1965, 307-310

TOPIC TAGS: copper, silicon, aluminum, magnesium, tin, nickel, germanium, metallic compound, copper silicon compound, copper aluminum compound, aluminum magnesium compound, nickel tin compound, nickel germanium compound, compound property

ABSTRACT: The effect of temperature on the mechanical and physical properties of Cu_5Si, Cu_3Si, $CuAl_2$, Al_3Mg_2, Ni_3Sn_2, and Ni_3Ge intermetallic compounds has been investigated. Compounds from 99.95%-pure Cu, 99.5%-pure Si, 99.99%-pure Al, 99.95%-pure Mg and 99.999%-pure Sn, Ni, and Ge were melted in air. The Cu_3Si, Cu_5Si, and $CuAl_2$ compounds were also melted in a $5 \cdot 10^{-4}$ mm Hg vacuum and with water vapors blown through the bath. It was found that the ductility of all compounds sharply increases to a maximum (bend angle 133°) at a certain temperature. Also, the resistivity of compounds at first increases, reaches a maximum, then drops by 12—30% in a narrow temperature range, and thereafter begins again to increase. The temperature of transition to ductile behavior for all the compounds was found to be within the range of the decrease of resistivity. The maximum thermal emf coincides with the

Card 1/2 UDC: 537.311.3+539.377

L 5027-66

ACC NR: AP5023998

maximum resistivity. The temperature of transition to ductile behavior varies, depending on the stress state. For Cu_5Si this temperature was 530C, 550C, and 620C for compression, bending, and tension, respectively. The resistivity of this compound begins to drop at temperatures above 500—520C. Vacuum degassing of the Cu_5Si melt lowers and water vapor blowing increases the NDT temperature as well as the temperature of the beginning of the drop of resistivity and thermal emf. Similar observations were made in other compounds. Thus, the transition to ductile behavior takes place within a relatively narrow temperature range and is due to metallization of intermetallic bonds and the increase of free electron concentration. Orig. art. has: 4 figures and 1 table. [ND]

SUB CODE: MM, SS/ SUBM DATE: 12May65/ ORIG REF: 005/ OTH REF: 001/ ATD PRESS: 4132

Card 2/2

Shashkov, G.

AID P - 1059

Subject : USSR/Aeronautics

Card 1/1 Pub. 135 - 13/24

Author : Shashkov, G., Major of Technical Service

Title : Caring for the aircraft fuel system in winter

Periodical : Vest. vozd. flota, 1. 67-69, Ja 1955

Abstract : The author stresses the importance of proper maintenance of the fuel system for good engine performance in flight. He gives causes of failures and describes methods of proper maintenance and servicing. Examples of the procedure in units are given and some names mentioned. Photo.

Institution : None

Submitted : No date

AID P - 5227

Subject : USSR/Aeronautics - maintenance

Card 1/1 Pub. 135 - 13/26

Author : Shashkov, G. G., Lt. Col. of tech. service

Title : Careful maintenance of aircraft engines

Periodical : Vest. vozd. flota, 11, 64-65, N 1956

Abstract : The importance of proper operation of aircraft engines is stressed and it is described by the author how to carry out the routine maintenance of engines.

Institution : None

Submitted : No date

AID P - 3686

Subject : USSR/Aeronautics

Card 1/1 Pub. 135 - 13/22

Author : Shashkov, G. G., Maj. of the Tech. Ser.

Title : Selective communication at the point of engineer control

Periodical : Vest. vozd. flota, 1, 59-61, Ja 1956

Abstract : The author describes the technique of radiocommunication for a centralized control of flights of a large number of aircraft of different missions and during repeated flights. Diagrams. Examples.

Institution : None

Submitted : No date

AUTHOR: Shashkov, G. G., Lt. Col. of Technical Service 86-58-6-17/34

TITLE: Under Field Conditions (V polevykh usloviyakh)

PERIODICAL: Vestnik vozdushnogo flota, 1958, Nr 6, pp 53-54 (USSR)

ABSTRACT: The article describes how the aircraft-maintenance section (TECh) of an air regiment was shifted to another airfield for training purposes. At the new airfield the personnel had to carry out routine maintenance work on aircraft under field conditions. The author mentions some shortcomings discovered during this exercise and states that under special circumstances the TECh personnel must be prepared to carry out, not only preventive maintenance work, but also, some repair work of a greater extent.

AVAILABLE: Library of Congress

Card 1/1

SHASHKOV, G., mayor tekhnicheskoy sluzhby

Care of the fuel system of an airplane in winter. Vest. Vozd Fl. 37 no.1:67-69 J '55. (MIRA 16:8)

(Airplanes, Military--Maintenance and repair)

L 11278-67 EWT(1)/ [illegible]

ACC NR: AM6029633 SOURCE CODE: UR/0000/66/000/000/0242/0254

AUTHOR: Lobelinskiy, A. V. (deceased); Nefedov, Yu. G.; Domshlak, M. P.; Kompaniyets, N. N.; Moskalev, Yu. I.; Rychov, N. I.; Baronskaya, N. G.; Bibikova, A. T.; Ganshina, [illegible]; Lebedev, B. I.; L'vitsyna, G. M.; Shashkov, I. F.; Borbonova, M. I.; Gerasimova, [illegible]

ORG: none

TITLE: Model investigations of cosmic radiation biologic effect

SOURCE: Voprosy obshchey radiobiologii (Problems of general radiobiology). Moscow, Atomizdat, 1966, 242-254

TOPIC TAGS: dog, rat, induced radiation effect, cosmic radiation biologic effect, proton radiation biologic effect, relative biologic efficiency

ABSTRACT: With space flights of longer duration, cosmic rays, radiation belts and solar flares present an increasing danger to astronauts. However, relatively little is known of the biologic effect of cosmic radiation and its components, particularly high energy protons. In the present study the RBE of high energy protons was compared in large laboratory animals (dogs) and small laboratory animals (rats) to determine possible RBE differences. In a series of experiments groups of dogs were irradiated with high energy protons and X-irradiation (or gamma irradiation) in fractional and

Card 1/2

L 11275-67

ACC NR: AT6029633 0

single doses of 250 to 650 rads; groups of rats (Wistar line) were also irradiated in fractional and single doses of 300 to 1200 rads. A synchrocyclotron was used for proton irradiation (510 Mev, field diameter 40 cm, dose rate of 1 rad/sec). Clinical symptoms, histological investigations, EEG data, mean survival periods, and post mortem examinations served as indices. Results show that with fractional dose irradiation of dogs, the RBE of proton irradiation (510 Mev) and X-irradiation (180 kv) is the same (1.0). With fractional irradiation of rats, the RBE of proton irradiation is 0.8. With single dose irradiation of dogs, the RBE of protons is 1.15 compared to gamma irradiation. With single dose irradiation of rats, the RBE of protons is 0.75 compared to gamma irradiation. No conclusions are drawn. Orig. art. has: 4 tables and 6 figures.

SUB CODE: 06/ SUBM DATE: 23Apr66/ ORIG REF: 004/ OTH REF: 004

Card 2/2 jb

SHASHKOV, Ivan Grigor'yevich; PANCHENKO, V., red.; LUCHKIV, M., tekhred.

[Organization of work in vineyard brigades] Organizatsiia pratsi u vynohradars'kykh bryhadakh. Uzhhorod, Zakarpats'ke obl.vyd-vo, 1958. 21 p. (MIRA 13:3)

1. Starshiy naukoviy pratsivnik Zakarpats'koi oblasnoi sil's'kogospodars'koi stantsii.
(Viticulture)

KOVAL', M.M., nauchnyy sotr., kand. sel'khoz. nauk; GERMAN, Ya.B., starshiy nauchnyy sotr.; BIRYUKOV, Yu.V., starshiy nauchnyy sotr.; MART'YANOVA, O.A., starshiy nauchnyy sotr.; SHASHKOV, I.G., nauchnyy rabotnik; KORSHAK, I.T.; BROZHEYT, M.F.; KUKHARCHUK, G.N.; YEFREMOV, N.V., red.; CHEREVATSKIY, S.A., tekhn. red.

[Technological charts for grape cultivation] Tekhnologicheskie karty po vozdelyvaniiu vinograda. Kiev, Gos.izd-vo sel'khoz. lit-ry USSR, 1961. 141 p. (MIRA 15:3)

1. Ukrainskiy nauchno-issledovatel'skiy institut vinogradarstva i vinodeliya im. Tairova (for Koval', German, Biryukov, Mart'yanova). 2. Zakarpatskaya opytnaya stantsiya (for Shashkov). 3. Ministerstvo sel'skogo khozyaystva USSR (for Korshak, Brozheyt, Kucharchuk).
(Ukraine--Viticulture)

SHASHKOV, I.P., inzh.

New-type vibratory conveyor. Stroi. i dor mash. 10 no.10:17-18 O '65. (MIRA 18:10)

GERSHTEYN, A.K., inzh.; KOTOV, V.V., inzh.; SHASHKOV, I.P., inzh.

Mobile unit for the production of keramzit. Stroi. i dor. mash. 7 no.7:32-34 Jl '62. (MIRA 15:7)
(Omsk Province—Keramzit)

SHASHKOV, I.P., inzh.

Vibrating device for earthmoving machinery. Mekh. stroi. 20 no.9:23-24 S '63. (MIRA 16:10)

(Earthmoving machinery)

L 41419-65 EWT(1)/EWP(m)/EWT(m)/EWP(w)/EWA(d)/EPR/FCS(k)/EWA(1) Pd-1
ACCESSION NR: AP5011323 WW/EM UR/0258/65/005/002/0331/0337
23
B

AUTHOR: Shashkov, I. Ye. (Moscow)

TITLE: On aeroelastic vibrations of an aircraft in supersonic flow

SOURCE: Inzhenernyy zhurnal, v. 5, no. 2, 1965, 331-337

TOPIC TAGS: elastic vibration, flutter, supersonic flutter, torsional flutter, flexural flutter, aircraft flutter

ABSTRACT: The elastic vibrations of an aircraft body are accompanied by its oscillations around its centroid. Such a combined harmonic motion of a winged aircraft consisting of vibrations and oscillations is discussed, taking into account the lift of the fuselage. The involved changes in the angle of attack are regarded as consisting of changes caused by both oscillation and vibration, and formulas for determining these changes as well as the associated changes in aerodynamic forces and moments are given. Equations describing this oscillatory-vibratory motion of the body and wing in a supersonic flow are written, neglecting the effect of the shear force, drag, internal friction, and longitudinal forces and vibrations. From

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L 41419-65
ACCESSION NR: AP5011323 0

these equations, the region of critical velocities can be determined at which the combined undamped vibrations will be excited. For the sake of simplification, the symmetric flexural-torsional flutter of an aircraft is discussed, without regard to its oscillation around the centroid, and equations in terms of frequency and flow velocity are derived from which the region of flutter velocities can be obtained. The bounds of this region depend on the ratio of natural frequencies of the wing and body, thus making it necessary to determine the root-fixing coefficient of the wing. A formula for determining this coefficient, and practical advice concerning its use are given. This approximate method is generalized for analysis of the symmetrical flexural flutter of a pack of three variable-circular-cross-section beams hinged together at two points along their length. Equations for determining the flutter frequency and flow velocity are derived. Orig. art. has: 18 formulas. [VK]

Card 2/3 SUBMITTED: 15Aug63

L 52934-65 EWT(d)/EWT(m)/EWP(w)/EWA(d)/EWP(v)/EWP(k)/EWA(h) Pf-4/Peb
EW/WW

ACCESSION NR: AP5016273 UR/0258/65/005/003/0575/0579
533.601.342

AUTHOR: Shashkov, I. Ye. (Moscow)

TITLE: On elastic vibration of a liquid-filled cylindrical shell

SOURCE: Inzhenernyy zhurnal, v. 5, no. 3, 1965, 575-579

TOPIC TAGS: cylindrical shell, liquid filled shell, shell vibration, shell flutter, liquid filled shell flutter, shell stability

ABSTRACT: The flutter and the dynamic stability of a closed cylindrical shell filled with a liquid in a steady air flow are discussed. Approximate solutions of those problems are presented with the effect of the motion of the liquid on the behavior of the shell taken into account. The aerodynamic forces acting on the shell are determined by means of the A. A. Il'yushin piston theory, and the shell equations are taken from the theory of shallow shells by V. Z. Vlasov. In discussing the flutter of the liquid-filled cylindrical shell in an air flow along the longitudinal axis of the shell, it is assumed that the shell is in a vertical position, completely filled with liquid, and that the motion of the liquid caused by vibration of the shell is potential, thus reducing the problem to determining the

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L 38934-65
ACCESSION NR: AP5016273

velocity potential; after substituting the latter in the Lagrange equation connecting the kinetic energy of the liquid with the generalized force produced by the vibrating shell on the liquid, an expression for the flutter velocity is derived. In investigating the dynamic stability of the shell, it is assumed that the shell is under axial loading uniformly distributed along the face edges. The formulas for the natural frequencies and the buckling load are given, from which it can be seen that the presence of liquid in the shell affects only the natural frequencies without affecting the value of the buckling load. The factor (the influence function) which accounts for the presence of the liquid in the shell is the same in both problems (of flutter and dynamic stability); its values are given for a particular (numerical) case in a diagram and show an essential decrease in the natural frequency and in flutter speed caused by the presence of liquid in the shell. Orig. art. has: 1 figure and 16 formulas. [VK]

ASSOCIATION: none

SUBMITTED: 05Jul63 ENCL: 00 SUB CODE: MEAS

NO REF SOV: 006 OTHER: 001 ATD PRESS: 4048

Card 2/2

SHASHKOV, L.; SHEPTALIN, V.

Closer to industrial requirements. Prof.-tekh.obr.13 no.6:7-9 Je '56. (MLRA 9:9)

1.Direktor teplitskoge uchilishcha mekhanizatsii sel'skogo khozyaystva no.10:7-9, Odesskaya oblast' (for Shashkov). 2.Zamestitel' direktora po uchebno-proizvodstvennoy chasti (for Sheptalin).

(Odessa--Farm mechanization--Study and teaching)

ACC NR: AP7001436 (A, N) SOURCE CODE: UR/0413/66/000/021/0157/0158

INVENTOR: Potiyevskiy, O. I.; Makhan'kov, V. Ye.; O Shashkov, L. L.; Borovkov, V. S.

ORG: none

TITLE: Differential optical correlator. Class 42, No. 188147

SOURCE: Izobreteniya, promyshlennyye obraztsy, tovarnyye znaki, no. 21, 1966, 157-158

TOPIC TAGS: signal correlation, optic system, optic method

ABSTRACT: A differential optical correlator is described (see Fig. 1) which determines the correlation coeffcient between (for example) two images. It contains

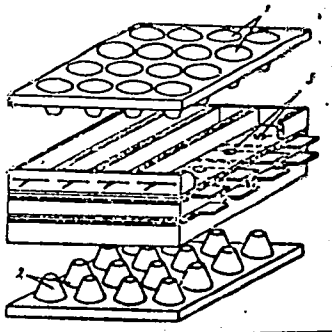


Fig. 1. Optic correlator

1 - Hemispherical lenses; 2 - light conductors; 3 - working filter regions.

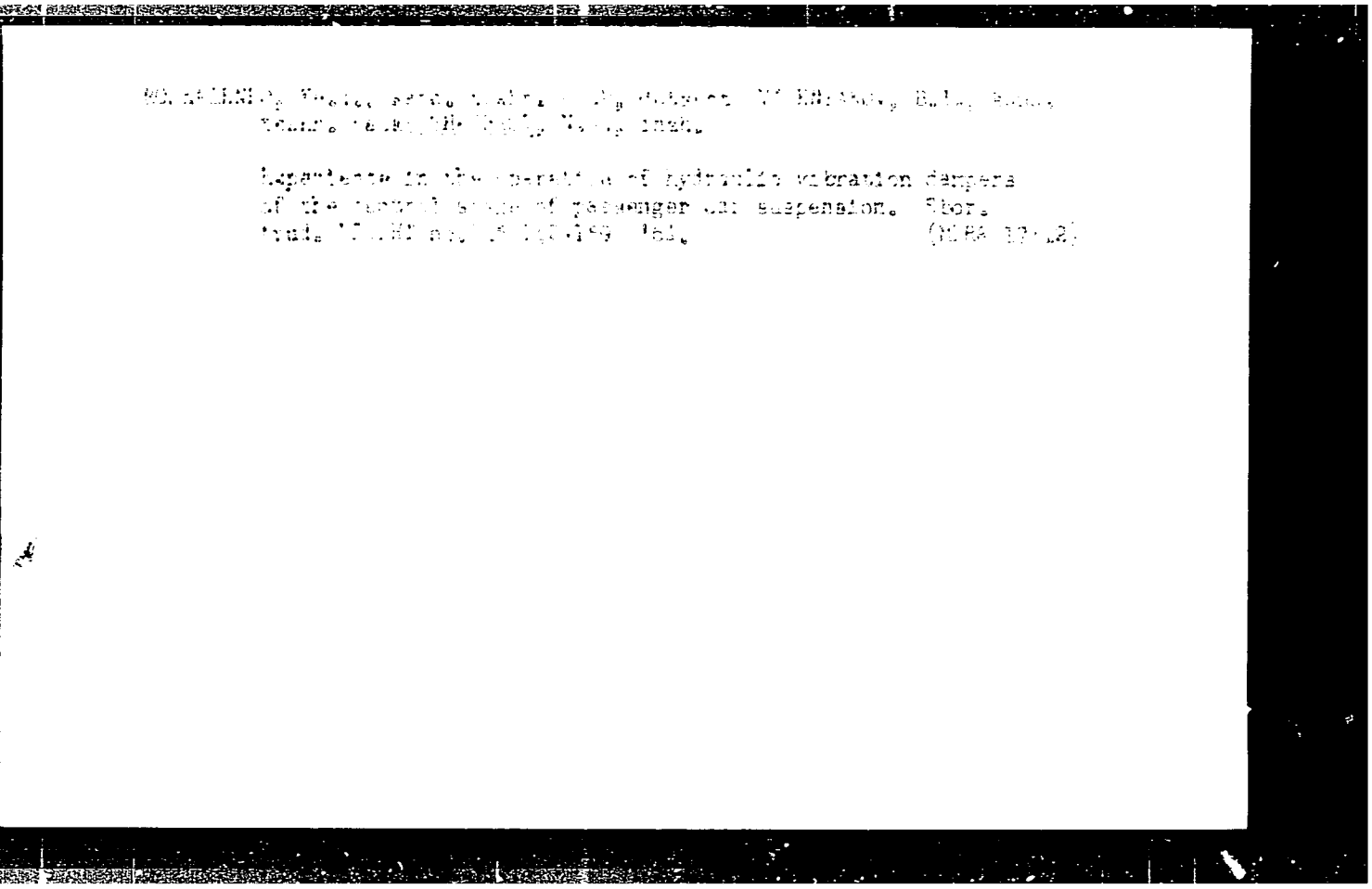
Card 1/2 UDC: 681.142.07

ACC NR: AP7001436

a photoelectric integrator and an optical multiplier based on double modulation of light implemented by electrochemical modulators. To extend their dynamic range, each modulator optical filter contains an independent focusing system. This focusing system consists of a hemispherical lens and a conical light conductor which concentrates the light flux on the working region of the filter. To assure compactness and simplicity of construction optical filters and focusing components form a double-layer matrix board in which the electrochemical modulator electrodes are interconnected in rows and columns. Orig. art. has: 1 figure. [BD]

SUB CODE: 09/ SUBM DATE: 12Feb65/ ATD PRESS: 5110

Card 2/2



124-1957-1-518

Translation from: Referativnyy zhurnal, Mekhanika, 1957, Nr 1, p 65 (USSR)

AUTHOR: Shashkov, N.I.

TITLE: Field Investigations on the Erosion of Portions of a River Bed Serving as the Tailwater Basin of a Dam (Polevyye issledovaniya razmyva rusla reki v nizhnem b'yefe plotiny)

PERIODICAL: Tr. In-ta sooruzh. AN UzSSR, 1955, Nr 7, pp 137-160

ABSTRACT: The paper describes the alluvial regimen of a river along a portion of its erosion bed which serves as the tailwater basin of a newly erected dam; the magnitude of the drop in water levels is indicated. An approximate calculation of the extent of the river erosion is offered.

V.V.Fandeyev

1. River beds--Erosion analysis

Card 1/1

SHAGIKOV, N.Ya. (Terbunskiy rayon, Lipetskoy oblasti)

Man of great deeds. Veterinariia 42 no.12:5-6 D '65. (MIRA 19:1)

SHAJHKOV, C.D.

An Investigation of the Structure of the Deformed Aluminium (4%) Copper Alloy by Means of the Electron Microscope. N. N. Buinov and O. D. Shashkov (*Fizika Metallov i Metallovedenie*, 1960, 9, (3), 434–438).—[In Russian]. Polycrystals of Al–4% Cu were quenched from 520° C. and aged for 1–2½ hr. at 350° C. Platelets of the phase θ′ formed in a network throughout the piece. Specimens polished before deformation gave the usual patterns of slip lines intersecting precipitates, which give information about slip on the surface. Specimens polished after deformation gave a pattern of distorted precipitate plates and provide information about deformation within the bulk of the material. At high deformations (75–90%) slip is concentrated not only into visible slip-bands but also into the spaces between them. Also, the appearance of slip on the surface is a reliable indication of the geometry of deformation in the interior. Comparing the appearance of slip bands on quenched and on age-hardened Al–4% Cu with those on pure Al, those on the alloy in both conditions are straighter, narrower, and farther apart. Replicas of fracture surfaces show that, although the fracture of the hardened alloy is brittle in character, the fracture surfaces provide clear evidence of being mainly composed of slip planes. The concentration of particles on fracture surfaces is much less than normal: B. and S. suggest that intensive slip may have locally the effect of high temp., i.e. it may re-dissolve some precipitates. This opinion is confirmed by micrographs of intensive slip-lines on non-fracture surfaces: the region around them seems impoverished in precipitates.—A. F. B.

[redacted], N.N.; SHASHKOV, O.D.

Using electron microscope for investigating aluminum-copper alloys subjected to aging and tempering processes at high temperatures. Fiz.met.i metalloved. 3 no.1:83-86 '56. (MLRA 9:11)

1. Institut fiziki metallov Ural'skogo filiala AN SSSR.
(Aluminum-copper alloys--Heat treatment)
(Electron microscopy)

S/520/59/000/022/021/021
E111/E452

AUTHOR: Shashkov, O.D.

TITLE: Observing a Specified Portion of the Surface of a Specimen With an Electron Microscope

PERIODICAL: Akademiya nauk SSSR. Ural'skiy filial, Sverdlovsk, Institut fiziki metallov. Trudy, No.22,1959,pp.153-156

TEXT: For observing a specified portion of surface under the electron microscope, the author proposes a method based on that of D.Bradley (Ref.6), the simplest of several (Ref.1 to 5). A simple adapter (Fig.1) is fitted over the objective tube of an optical microscope. The latter should have a magnification of about 100 (a type ПМТ(PMT)-3 hardness microscope can be modified for this). The adapter has a hole (a) whose diameter is somewhat larger than that of the grid used in the electron microscope. Three bent pins (б) are soldered around the hole, the distance between their pointed ends being approximately equal to the radius of the electron-microscope grid. The pins are used to press the grid on to the part of the surface, selected with the aid of the optical microscope. The grid is then fixed to the carbon-film surface with a little acetone collodion. After this has dried,the

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9(0), 7(0) SOV/32-25-1-27/51

AUTHOR: Shashkov, O. D.

TITLE: Observation of a Given Part of the Surface in the Electronic Microscope (Nablyudeniye zadannogo uchastka poverkhnosti v elektronnom mikroskope)

PERIODICAL: Zavodskaya Laboratoriya, 1959, Vol 25, Nr 1, pp 65 - 66 (USSR)

ABSTRACT: Based on Bradley's (Bredli)(Ref 1) principle, a method for the preparation of prints of a given sample portion was worked out. The simple device (Fig) needed for this purpose consists of a brass cylinder, which is linked to the tube of the microscope lens. There are three spikes at the lower end of the cylinder. The spike ends are dipped into a 5% colophony solution and the standard lattice is plotted placed upon the sample part under consideration (in observation through the microscope) and the carbon print is then taken and the investigation carried on. Magnification of the reflexion microscopes is approximately 100. A suitable device for these purposes is the PMT-3 type, which features a weakly magnifying lens, from which the reflexion condenser of the dark field

Card 1/2

Observation of a Given Part of the Surface in the Electronic Microscope SOV/32-25-1-27/51

is taken off. For the case that the surface relief of the dark field is low and the carbon print is difficult to take off, a two-stage variant of the working procedure is described. There are 1 figure and 1 [illegible].

ASSOCIATION: Institut fiziki metallov Akademii nauk SSSR (Institute of Metal Physics of the Academy of Sciences, USSR)

Card 2/2

SHASHKOV, O.D.

Changing the circuit of the URS-70-K1 X-ray apparatus for the operation with two electron tubes. Zav.lab. 27 no.6:758 '61. (MIRA 14:6)

1. Institut fiziki metallov AN SSSR.
(X rays--Equipment and supplies)

S/126/62/014/006/007/020
E193/E383

AUTHORS: Shashkov, O.D. and Buynov, N.N.

TITLE: A study of the zonal stage of decomposition in aluminium-zinc and aluminium-zinc-magnesium alloys by the method of anomalous X-ray scattering

PERIODICAL: Fizika metallov i metallovedeniye, v. 14, no. 6, 1962, 848 - 851

TEXT: The object of the present investigation was to elucidate the nature of the anomalous diffusion effects on X-ray diffraction patterns of aged Al-Zn alloys with a view to providing an explanation of some specific features of ageing of alloys of this type. The X-ray diffraction analysis was conducted on a 20 wt.% Zn-Al alloy (with and without Mg additions ranging from 0.2 - 1.4%), solution-treated at 450 °C and naturally aged. It was found that the streaks observed on the Laue photographs of naturally aged Al-Zn and Al-Zn-Mg alloys were, in fact, "shape effects", i.e. they were caused by superimposition of anomalous X-ray scattering from Guinier-Preston zones and from the solid-solution matrix with lattice defects. Addition of Mg increased the lattice

Card 1/2

SHASHKOV, O.D.; BUYNOV, N.N.

X-ray scattering by an aging alloy crystal taking into account the transition layer between the Guinier-Preston zone and the matrix. Fiz. met. i metalloved. 16 no.4:628-630 O '63. (MIRA 16:12)

1. Institut fiziki metallov AN SSSR.

ACCESSION NR: AP4004689 S/0126/63/016/005/0681/0685

AUTHORS: Shashkov, O. D.; Buynov, N. N.

TITLE: Evaluation of intensity distribution of x-ray scattering near the inverted lattice point of an aging Al-Ag alloy in the zonal phase and dimension determination of the Guinier Preston zone

SOURCE: Fizika metallov i metallovedeniye, v. 16, no. 5, 1963, 681-685

TOPIC TAGS: x-ray scattering, aluminum silver alloy, alloy, aging, Guinier Preston zone, inverted lattice point, scattering, aluminum alloy, lattice point, silver alloy, zonal phase, lattice point scattering, Laue spot

ABSTRACT: The authors have used a general expression from A. M. Yelistratov (DAN SSSR, 1952, 87, 581) describing the intensity distribution near a reciprocal-lattice point in an aging crystal, in addition to data obtained from geometric analysis of anomalous effects on x-ray photographs of Al-Ag alloys, in order to compute intensity distribution of x-rays. These values are then compared with experimental data. The results are summarized in Figs. 1-4 on the Enclosures. The radius of the spherical Guinier-Preston zone is normally computed from the radius of the zone of anomalous scattering as determined from measurements on the x-ray powder diagrams,

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ACCESSION NR: AP4004689

but because of frequent difficulty in determining the precise margin of this effect, the authors propose another method, involving the difference in size of the zone for two types: one conditioned by zones and one with a transition layer (the latter having the smaller anomalous scattering zone). The authors conclude that when the Guinier-Preston zone is within the limits of 20-25 Å, the precision of determining the dimensions by the method they suggest may be within 3-4 Å. "The authors express their thanks to R. M. Lerinman for kindly preparing x-ray photographs of the Al-Ag alloy." Orig. art. has: 4 figures and 8 formulas.

ASSOCIATION: Institut fiziki metallov AN SSSR (Institute of the Physics of Metals AN SSSR)

SUBMITTED: 14Mar63	DATE ACQ: 03Jan64	ENCL: 04
SUB CODE: PH	NO REF SOV: 006	OTHER: 000

Card 2/6

ACCESSION NR: AP 4017362 S/0126/64/017/002/0278/0282

AUTHOR: Shashkov, O. D.; Buynov, N. N.

TITLE: Effect of the addition of a third component on the natural aging of an Al-Zn alloy

SOURCE: Fizika metallov i metallovedeniye, v. 17, no. 2, 1964, 278-282

TOPIC TAGS: alloy, aluminum zinc alloy, copper containing alloy, silver containing alloy, magnesium containing alloy, alloy property

ABSTRACT: The methods of anomalous x-ray scattering, hardness measurement, and electron microscopy were used in a study of the distribution (between the Guinier Preston zones and matrix) of admixtures of Ag (5 and 20%), Mg (0.2—1.0%), Cu (0.1—5%), and Si (1—2%) in Al alloys with 5, 20, and 25% Zn and of the effect of different patterns of distribution on aging. It is shown that Mg (up to 1.4% by weight) and Ag (up to 10%) predominate in the zones while Cu (up to 2%) remains in the matrix or distributes itself uniformly in the matrix and zones. As shown (Fig. 1 of the Enclosure), the natural aging rate changes when

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ACCESSION NR: AP4017362

a third component such as Mg settles in the zone. Cu and Ag, which also increase the hardness, have little effect on the character of the aging curve. Stresses related to the coherence of the zone and matrix lattices are not essential in alloy strengthening. "Part of the work was done by M. F. Komarova." Orig. art. has: 2 figures and 1 table.

ASSOCIATION: Institut fiziki metallov AN SSSR (Institute of Physics of Metals, AN SSSR)

SUBMITTED: 26Apr63 ATD PRESS: 3051 ~64 ENCL: 01

SUB CODE: MM NO REF SOV: 005 OTHER: 007

Card 2/3

ACC NR: AP6032622 (N) SOURCE CODE: UR/0126/66/022/003/0424/0431

AUTHOR: Buynov, N. N.; Dobatkin, V. I.; Rakin, V. G.; Romanova, R. R.; Shashkov, O. D.; Dobromyslov, A. V.

ORG: Institute of Metal Physics, AN SSSR (Institut fiziki metallov, AN SSSR)

TITLE: Investigation of the structure of ATsM and V92 heat-treatable aluminum alloys

SOURCE: Fizika metallov i metallovedeniye, v. 22, no. 3, 1966, 424-431

TOPIC TAGS: aluminum zinc magnesium alloy, aluminum alloy aging, aluminum alloy structure/ATsM aluminum alloy, V92 aluminum alloy metal aging, aluminum base alloy,

ABSTRACT: Aging-induced structural changes and the kinetics of aging in aluminum-base alloys ATsM (4.72% zinc, 1.84% magnesium, 0.69% manganese, 0.35% zirconium, 0.03% titanium, and 0.5% copper) and V92 (3.34% zinc, 4.48% magnesium 0.8% manganese, and 0.005% beryllium) have been studied by means of electron microscopy and x-ray diffraction analysis. The aging kinetics were found to be the same in both alloys. The decomposition of solid solution begins with the formation of Guinier Preston zones with a high density of vacancies, which serve as nuclei for the precipitation of $MgZn_2$-phase and play an important part in the age hardening of the alloys. The temperature and duration of aging has little or no effect on the size of Guinier Preston zones, but a considerable effect on their composition. V92 alloy age hardens

UDC: 546.3-19'621'47'46 : 548.0

ACC NR: AP6032622

more intensively than ATsM does owing to a higher total zinc and magnesium content of the former. Orig. art. has: 4 figures.

SUB CODE: 11/ SUBM DATE: 27Dec65/ ORIG REF: 008/ OTH REF: 007

Card 2/2

USSR/Construction Industry Jan 1946
Pile-driving
Piling, Ferroconcrete

"The Construction of Sea Piling Installations by Pioneer Methods," S. Shashkov, Engr, 3½ pp

"Morskoy Flot" No 1

In the construction of sea pile installations the usual method of driving piles with a floating pile driver cannot be used for various reasons. The article is an account of the construction of a ferroconcrete pile breakwater built in 1940-41 on the Black Sea. The usual methods of driving the piles could not be resorted to and new means had to be devised in the construction.

30T13

[redacted]

"Primeneniye "etallicheskogo Shpunta pri Ustroystve Gidrotekhnicheskikh Sooruzheniy"

.. Gosstroyizdat 1964 160 pp.

SHASHKOV, Semen Adrianovich, kandidat tekhnicheskikh nauk; ISLANKINA, T.F., redaktor; FURMAN, G.V., tekhnicheskiy redaktor

[Hydraulic construction in the People's China] Gidrotekhnicheskoe stroitel'stvo v narodnom Kitae. Moskva, (zd-vo "Znanie," 1956. 39 p. (Vsesoiuznoe obshchestvo po rasprostraneniiu politicheskikh i nauchnykh znanii. Ser.4, no.33) (MLRA 10:1)
(China--Hydraulic engineering)

SOV-98-58-8-21/22

AUTHOR: Shashkov, S.A., Candidate of Technical Sciences

TITLE: E.G. Godes, "New Developments in the Underground Construction Works" Novoye v proizvodstve glubinnykh rabot) State Publishing House of Literature on Building and Architecture, 1957 (Gosud. izd. literat. po stroitel'stvu i arkhitekture, 1957)

PERIODICAL: Gidrotekhnicheskoye stroitel'stvo, 1958, Nr 8, pp 63-64 (USSR)

ABSTRACT: This is a review of the above mentioned book.

1. Underground structures--USSR

Card 1/1

SHASHKOV, S.A.

Determining the building properties of sandy soils by dynamic probing. [Trudy] NIIOSP no.42:78-104 '60. (MIRA 13:6)

(Soil mechanics)

GODES, E.G., inzh.; SHASHKOV, S.A., kand. tekhn. nauk; BAUM, V.A., inzh.; SOROKIN, P.P., kand. tekhn. nauk, retsenzent; LISITSYN, B.V., inzh., retsenzent; BESPALOV, I.V., inzh., nauchnyy red.; PENOVA, Ye.M., red. izd-va; VORONETSKAYA, L.V., tekhn. red.

[Reinforcing river banks near factory grounds]Ukreplenie beregov rek na zavodskikh territoriiakh; proizvodstvennyi opyt. Leningrad, Gos. izd-vo lit-ry po stroit., arkhit. i stroit. materialam, 1961. 134 p. (MIRA 14:10)

(Hydraulic engineering)

SHASHKOV, S.A., kand.tekhn.nauk

Determining the bearing capacity of piles by "sounding." (MIRA 15:1)
Izv. ASiA no.2:105-110 '61.
(Piling (Civil engineering))

SMIRENSKIY, Georgiy Mikhaylovich, inzh.; CHIRIKOV, Nikolay Gavrilovich, inzh.; ARTEMENKO, Mikhail Pavlovich; SHASHKOV, S.A., kand. tekhn.nauk, red.

[Foundations on short pilings in housing construction; practices of the "Riazan'zhilstroi" Trust] Fundamenty na korotkikh svaiakh v zhilishchnom stroitel'stve; iz opyta tresta "Riazan'zhilstroi." Moskva, Gosstroiizdat, 1963. 40 p. (MIRA 17:7)

1. Akademiya stroitel'stva i arkhitektury SSSR. Nauchno-issledovatel'skiy institut organizatsii, mekhanizatsii i tekhnicheskoy pomoshchi stroitel'stvu. 2. Nachal'nik tekhnicheskogo otdela tresta "Ryazan'zhilstroy" (for Smirenskiy). 3. Upravlyayushchiy trestom "Ryazan'zhilstroy" (for Chirikov). 4. Glavnyy inzhener tresta "Ryazan'zhilstroy" (for Artemenko).

ABELEV, Yu.M., doktor tekhn. nauk, prof.; ABELEV, M.Yu., inzh.; BAKHOLDIN, B.V., kand. tekhn. nauk; BEREZANTSEV, V.G., doktor tekhn. nauk, prof.; VYALOV, S.S., doktor tekhn. nauk; GODES, E.G., inzh.; GORBUNOV-POSADOV, M.I., doktor tekhn. nauk, prof.; DAL'MATOV, B.I., doktor tekhn. nauk, prof.; DOKUCHAYEV, V.V., kand. tekhn. nauk; KRUTOV, V.I., kand. tekhn. nauk; KSENOFONTOV, A.I., kand. tekhn. nauk; MARIUPOL'SKIY, G.M., kand. tekhn. nauk; MORAKESKUL,N.N., inzh.; PEKLEY, Ye.M., inzh.; SAVINOV, O.A., doktor tekhn. nauk; SIDOROV, N.N., kand. tekhn. nauk; SMORODINSKIY, N.[illegible], kand. tekhn. nauk; SOKOLOV, N.M., doktor tekhn.nauk; F[illegible]DKIN, A.Ya., inzh.; SHASHKOV, S.A., kand. tekhn.nauk; [illegible]EYKOV, M.L., inzh.; YAROSHENKO, V.A., kand.tekhn.nauk, [deceased]; KHALIZEV, Ye.P., kand. tekhn. nauk, nauchn.red.

[Manual for the designing of industrial plants, apartment houses, and public buildings and structures; foundations] Spravochnik proektirovshchika promyshlennykh, zhilykh i obshchestvennykh zdanii i sooruzhenii; osnovaniia i fundamenty. Leningrad, Stroiizdat, 1964. 268 p.
(MIRA 18:1)

SHASHKOV S.M.

MARTYNOV, N.V.; SIMONENKO, P.K.; SHASHKOV, S.M.; BOLOGINA, N.I., redaktor; GALAKTIONOVA, Ye.N., tekhnicheskiy redaktor

[Computation of road machinery performance] Uchet raboty dorozhnykh mashin. Moskva, Izd-vo dorozhno-tekhn. lit-ry Gushosdora MPS, 1953. 190 p. [Microfilm] (MLRA 7:10)
(Road machinery--Tables, calculations, etc.)

VLADIMIROV, Yu., podpolkovnik, voyennyy letchik pervogo klassa;
SHASHKOV, V., podpolkovnik, voyennyy shturman pervogo klassa

In a heavy airship. Av. i kosm. 48 no.10:59-63 O '65.
(MIRA 18:11)

SHASHKOV, V. F.

GOYKOLOV, Ye.F., inzh.; SHASHKOV, V.F., inzh.

Improve the heat insulation of factory chimneys. Stroi.prom. 35 no.11:32-34 N '57. (MIRA 10:12)
(Chimneys) (Insulation (Heat))

GOYKOLOV, Ye.F.; KANTOROVICH, I.G., inzh.; PETROV, P.V.; RAYTSESS, A.Ya.; CHERNOV, A.V., inzh.; SHASHKOV, V.F.; SHISHKOV, I.A.; SHMIDT, Kh.M.; KEYMAKH, L.I., retsenzent; KUDRYAVTSEV, A.V., retsenzent; V redaktirovanii prinimali uchastiye: ZOTOV, A.V.; TSILYANER, D.M.; SHIROKOVA, G.M., red.izd-va; STEPANOVA, E.S., tekhn.red.; RUDAKOVA, N.I., tekhn.red.

[Handbook for builders of reinforced concrete industrial chimneys and silos] Spravochnik stroitelia zhelezobetonnykh zavodskikh trub i silosov. Pod red. A.V.Chernova. Moskva, Gos.izd-vo lit-ry po stroit., arkhit. i stroit.materialam, 1959. 300 p. (MIRA 13:1)

(Silos) (Chimneys)

GLOZSHTEYN, Ya.S.; ZOTOV, A.V.; SERGEYEV, B.V.; SHASHKOV, V.F.; GORDEYEV, P.A., red.izd-va; SHIROKOVA, G.M., red.izd-va; KOMAROVSKAYA, L.A., tekhn. red.

[Construction of furnaces for the building materials industry] Kladka pechei promyshlennosti stroitel'nykh materialov. [By] IA.S.Glozshtein i dr. Moskva, Gosstroiizdat, 1963. 299 p. (MIRA 17:2)

S/064/60/000/004/012/021/XX
B013/B063

AUTHORS: Popov, S. I., Shashkov, V. I., Bulatov, V. D. (Deceased)

TITLE: Use of the Flotation Process in the Extraction of Selenium From Selenium-poor Slimes Formed in the Production of Sulfuric Acid

PERIODICAL: Khimicheskaya promyshlennost', 1960, No. 4, pp. 38-41

TEXT: The authors have examined the possibility of using the flotation process in extracting selenium from selenium-poor slimes formed in the production of sulfuric acid. A study of the distribution of selenium in the products of the contact system has shown that up to 42% of the initial selenium content of the raw material is concentrated in selenium-poor slimes from the washing department (promyvnoye otdeleniye). There is a considerable loss of selenium in solid residues (ashes, dust), which amounts to more than 21%. The authors have worked out a scheme for the extraction of selenium from slimes with a selenium content of 0.5 - 4.0%, making use of the flotability of selenium with petroleum,

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Use of the Flotation Process in the Extraction of Selenium From Selenium-poor Slimes Formed in the Production of Sulfuric Acid

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alcohol, etc. (Refs. 4,5). Slimes from refrigerators of the washing department have been studied. The selenium content varied from 0.6 to 2%. The authors found that selenium is concentrated chiefly in fine fractions. The presence of highly disperse selenium particles (less than 5μ) and the pulp components containing them complicate the flotation process. The slime particles were enlarged by heating the pulp. Preliminary studies have shown that the extraction of selenium can be increased and the quality of the selenium concentrate improved by heating the pulp to 90-100°C. It is noted that the density of the pulp hardly increases the extraction of selenium but detericrates the quality of the concentrate. A pulp density of 23 - 25% is described as being an optimum. Flotation was found to be intensified by an increase in the acidity of the pulp. The concentration of sulfuric acid in the pulp must not be lower than 20%. Petroleum, butyl xanthate, tall oil, oleic acid (collectors), and various flotation oils (foamers) were tested for the purpose of studying the effect of collectors and foamers. Tests made according to a

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Use of the Flotation Process in the Extraction of Selenium From Selenium-poor Slimes Formed in the Production of Sulfuric Acid

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continuous flotation scheme have shown that no reagents are required for selenium flotation in electrolytes. The quality of the selenium concentrate can be improved by double purification. The final results indicate that extraction of selenium without reagents is more effective than extraction with reagents. The first fractions of the selenium concentrate have a higher selenium concentration than the following fractions. Flotation is most effective during the first 6-10 min. The flotation plant developed according to the experiments described here has recently been put in operation, and the results obtained confirm the results of laboratory tests. There are 5 figures, 4 tables, and 5 Soviet references.

Card 3/3

POPOV, S.I.; SHASHKOV, V.I.; BULATOV, V.D. [deceased]

Flotation recovery of selenium from poor slurries produced in the manufacture of sulfuric acid. Khim.prom. no.4:302-305 Je '60. (MIRA 13:8)
(Selenium)

VIDULIN, A.Ye.; SHASHKOV, V.I.

Analysing the economic effectiveness of the reconstruction of the Lenin Mine of the "Rostovugol'" Combine. Trudy NPI 101:3-19 '60. (MIRA 15:5)
(Donets Basin—Coal mines and mining—Finance)

SLUGIN, S.N.; SHASHKOV, V.M.

Combination of some variational methods in a Hilbert modulus over a series of vector spaces. Uch. zap. Kaz. un. 124 no.6: 284-292 '64. (MIRA 18:9)

GALYATIN, V.M.; KALINSKIY, D.N.; Prinimali uchastiye: KUROCHKIN, I.F.; DUVANOV, A.I.; SOLOV'YEV, Yu.F.; GERASIMOV, Yu.V.; GROSVAL'D, V.G.; SHASHKOV, V.N.; VOLKOV, A.A.; ZHILKO, E.I.; MITROPOL'SKIY, Yu.I.; FEDOSEYEV, S.V.; GONCHAROV, F.I., rabotnik; SHEMETOV, P.Ye., rabotnik; CHUPRINA, I.A., rabotnik; DEMIN, P.Ye., rabotnik; GONCHARENKO, P.V., rabotnik; SIMANYUK, G.N., rabotnik

Investigating power and technological parameters of rolling on the 2350 medium sheet mill. [Sbor. trud.] TSNIICHM no.29:138-148 '63. (MIRA 17:4)

1. Sotrudniki TSentral'nogo nauchno-issledovatel'skogo instituta chernoy metallurgii (for Gerasimov, Grosval'd, Shashkov, Volkov, Zhilko, Mitropol'skiy, Fedoseyev). 2. Listoprokatnyy tsekh Magnitogorskogo metallurgicheskogo kombinata (for Goncharov, Shemetov, Demin, Chuprina, Goncharenko, Simanyuk).

L 00585-66 EPA(s)-2/EWT(m)/EPF(n)-2/EWP(t)/EWP(b) JD/WW/JG
ACCESSION NR: AP5021605 UR/0286/65/000/013/0076/0077

AUTHORS: Sokolov, L. A.; Kazanskiy, V. A.; Sel'kin, G. S.; Ustyuzhanin, V. N.; Shashkov, V. N.

TITLE: Device for continuous temperature measurement of liquid metal. Class 42, No. 172516

SOURCE: Byulleten' izobreteniy i tovarnykh znakov, no. 13, 1965, 76-77

TOPIC TAGS: liquid metal, smelting temperature, temperature measurement

ABSTRACT: This Author Certificate presents a device for continuous temperature measurement of liquid metal.. The device is calibrated for each chemical composition and contains a temperature transducer and a measuring circuit. To automate the smelting process by simultaneously measuring the liquid metal temperature and the difference between the liquid metal and its crystallization temperatures according to the temperature gradient in the container, the container is made of cooled walls of material with high thermal conductivity, e.g. copper. This container is in direct contact with the liquid metal (see Fig. 1 on the Enclosure). To measure the temperature gradient in the high thermal conductivity wall, the device is provided with several temperature transducers placed on the outer and inner

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L 00585-66

ACCESSION NR: AP5021605

surfaces of the container. To produce continuous measurements during a large number of melts and to insure safe operation, the container is cooled by steam. Orig. art. has: 1 diagram.

ASSOCIATION: none

SUBMITTED: 13May64 ENCL: 01 SUB CODE: MM

NO REF SOV: 000 OTHER: 000

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L 00585-66

ACCESSION NR: AP5021605

ENCLOSURE: 01

Fig. 1. 1- cooled wall with high thermal conductivity; 2- temperature transducers (thermocouples); 3- steam pipe

Card 3/3

SHASHKOV, V.S.

Effect of pentamine on the inclusion of S^{35} of methionine into animal proteins. Farm.i toks. 19 supplement:23-24 '56. (MLRA 10:7)

1. Kafedra farmakologii (zav. - zasluzhennyy deyatel' nauki, deystvitel'nyy chlen AMN SSSR prof. V.I.Skvortsov) II Moskovskogo gosudarstvennogo meditsinskogo instituta imeni I.V.Stalina.

(AUTONOMIC DRUGS, effects,
pendiomide on protein incorporation of radiosulfur from methionine, eff. of pendiomide in animals (Rus))
(SULFUR, radioactive,
incorporation into proteins from methionine, eff. of pendiomide in animals (Rus))
(METHIONINE, metabolism,
radiosulfur transfer to proteins in animals, eff. of pendiomide (Rus))
(PROTEINS, metabolism,
radiosulfur transfer from methionine in animals, eff. of pendiomide (Rus))

SHASHKOV, V. S., Cand Med Sci -- (diss) "Effect of pentamine on permeability and incorporation of S^{35} methionine into the proteins of tissues of animals." Mos, 1957. 12 pp (2nd Mos State Med Inst im N. I. Pirogov), 200 copies (KL, 52-57, 113)

T-2

USSR / Human and Animal Physiology. Metabolism.

Abs Jour : Ref Zhur - Biologiya, No 1, 1959, No. 3179

Author : Shashkov, V. S.
Inst : 2nd Moscow Medical Institute
Title : Change in Intensity of Inclusion of Methionine-S35 in Organ and Tissue Proteins of Animals Under Effect of Pentamine

Orig Pub : Uch. zap. 2-y Mosk. med. in-t, 1957, 6, 59-66

Abstract : No abstract given

Card 1/1

SHASHKOV, V.S.

Effect of pentamine on sodium ^{24} absorption from muscle deposits in rabbits [with summary in English]. Farm. i toks. 21 no.4:59-64 Jl-Ag '58 (MIRA 11:11)

1. Kafedra farmakologii (zav. - deystvitel'nyy chlen AMN SSSR zasluzhenny deyatel' nauki prof. V.I. Skvortsov) II Moskovskogo gosudarstvennogo meditsinskogo instituta imeni N.I. Pirogova.

(PENDIOMIDE, effects
on radiosedium absorp. from musc. deposits in rabbits (Rus))
(SODIUM, radioactive,
eff. of pendiomide on absrop. from musc. deposits in rabbits (Rus))

ZHEREBCHENKO, P.G.; GOLOVCHINSKAYA, Ye.S.; KOSTYANOVSKIY, R.G.; KRASNYKH, I.G.; KUZNETS, Ye.I.; MAGIDSON, O.Yu.; MURASHOVA, V.S.; PASTUKHOVA, I.S.; PREOBRAZHENSKAYA, M.N.; SUVOROV, N.N.; TER-VARTANYAN, L.S.; ZHKHINVADZE, K.A.; SHASHKOV, V.S.; SHCHUKINA, M.N.

Role of oxidative deamination in the mechanism of radiation protection afforded by some amines. Zhur.ob.biol. 21 no.2: 157-160 Mr-Ap '60. (MIRA 13:6)
(RADIATION PROTECTION) (DEAMINATION)

YELFIMOVA, Ye.V., mladshiy nauchnyy sotrudnik; SHASHKOV, V.S., mladshiy nauchnyy sotrudnik

Effect of sulfur dioxide in the air on certain biochemical indicators of human blood. Gig. i san. 25 no.3:18-22 Mr '60. (MIRA 14:5)

1. Iz Moskovskogo nauchno-issledovatel'skogo instituta sanitarii i gigiyeny imeni F.F.Erismana Ministerstva zdravookhraneniya RSFSR.
(SULFUR DIOXIDE--PHYSIOLOGICAL EFFECT)
(BLOOD SUGAR) (ASCORBIC ACID) (AIR--POLLUTION)

ZHEREBCHENKO, P.G.; SUVOROV, N.N.; SHASHKOV, V.S.; YARMOLENKO, S.P.; MOROZOVSKAYA, L.M.

Mechanism of the radioprotective action of 5-hydroxytryptophan. (MIRA 14:11)
Radiobiologiia 1 no.5:789-791 '61.
(RADIATION PROTECTION) (TRYPTOPHAN)

SHASHKOV, V.S.; FEDOSEYEV, V.M.

Antiradiation activity of new isothiuronium derivatives. Med. rad. no.7:25-29 '61. (MIRA 15:1)
(RADIATION PROTECTION) (ISOTHIURONIUM COMPOUNDS)

ZHEREBCHENKO, P.G.; KRASNYKH, I.G.; SHASHKOV, V.S.

Role of hypothermia produced with certain substances in the mechanism of radioprotective activity. Med.rad. 6 no.4:37-40 '61. (MIRA 14:12)

(HYPOTHERMIA) (RADIATION PROTECTION)
(RESERPINE--PHYSIOLOGICAL EFFECT)
(PYRROL--PHYSIOLOGICAL EFFECT)

SHASHKOV, V.S.; ANTIPOV, V.V.; KUZNETS, Ye.I.

Kymographic and electromagnetic registration of drops. Farm.i toks. 24 no.2:237-238 Mr-Ap '61. (MIRA 14:6)
(INJECTIONS)

KRASNYKH, I.G.; SHASHKOV, V.S.; MAGIDSON O.Yu.; GOLOVCHINSKAYA, Ye.S.; CHKHIKVADZE, K.A.

Capacity of some new derivatives of purine and pyrimidine to protect against radiation. Farm. i toks. 24 no.5:572-577 S-O '61. (MIRA 14:10)

(RADIATION PROTECTION) (PYRIMIDINES) (PURINES)

SHASHKOV, V.S.; KUZNETS, Ye.I.

Comparative action in vitro and in vive of some monoaminoxidase inhibitors. Farm.i toks. 24 no.6:675-682 '61. (MIRA 15:11)
(AMINE OXIDASE)

KUZNETS, Ye.I.; SHASHKOV, V.S.; TER-VARTANYAN, L.S.; PREOBRAZHENSKAYA, M.N.; SUVOROV, N.N.; SYCHEVA, T.P.; SHCHUKINA, M.N.

Differences in the action of some monoamine oxidase inhibitors in vitro and in vivo. Dokl.AN SSSR 136 no.5:1231-1234 F '61. (MIRA 14:5)

1. Predstavleno akad. A.N.Bakulevym.
(AMINE OXIDASE) (PHARMACOLOGY)

SHASHKOV, V.S.; ANTIPOV, V.V.; RAUSHENBAKH, M.O.; CHERNOV, G.A.; MASLENNIKOVA, V.A.

Effect of space flight factors on the level of serotonin in the blood of animals. Probl.kosm.biol. 1:258-264 '62. (MIRA 15:12)
(SPACE FLIGHT--PHYSIOLOGICAL EFFECT)
(SEROTONIN)

YARMONENKO, S.P.; AVRUNINA, G.A.; SHASHKOV, V.S.; GOVORUN, R.D.

Action of radiation protectors in whole-body irradiation by high-energy protons. Probl.kosm.biol. 2:388-392 '62. (MIRA 16:4)

(RADIATION--SAFETY MEASURES)
(PROTONS--PHYSIOLOGICAL EFFECT)

ZHEREBCHENKO, P.G.; KRASNYKH, I.G.; KUZNETS, Ye.I.; SUVOROV, N.N.; SHASHKOV, V.S.; YARMOLENKO, S.P.

Radioprotective effect of the combined use of amines. Med.rad. no.3:67-72 '62. (MIRA 15:3)
(RADIATION PROTECTION) (AMINES)

AUTHORS: S/205/62/002/001/003/010
D268/D302

AUTHORS: Yamshchenko, S.P., Avrunina, G.A., Shashkov, V.S., and Govorun, R.D.

TITLE: The oxygen effect in whole-body irradiation with high energy protons

PERIODICAL: Radiobiologiya, v. 2, no. 1, 1962, 125 - 127

TEXT: Biological protection and its dependence on the oxygen effect were studied in male white mice (weight 21 - 23 g) chemically protected by peritoneal injection of the following 10 - 15 min. before irradiation: MEA (beta-mercaptoethylamine chlorohydrate), cystamine dichlorohydrate, and AET (S, beta-aminoethylisothiouronium bromide hydrobromide) at 3 mg/mouse, 5-methoxytryptamine chlorohydrate at 1.5 mg/mouse, and Serotonin (5-hydroxytryptamine creatinine sulfate) at 1 mg/mouse. Serotonin and 5-methoxytryptamine were synthesized by N.N. Suvorov, and the remainder by F.Yu. Rachinskiy. Irradiation was by proton impulse beam (660 Mev) at a dose rate of 300 - 400 rad/min. from the synchrocyclotron at the Ob'yedinennyy

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The oxygen effect in whole-body ...

Institut yadernykh issledovaniy (Combined Institute for Nuclear Research). All compounds tested increased survival, the average duration of life in protected animals being 8.1 - 16 days with doses in the range 1,070 - 1,472 rad as against 5.9 - 8.7 days for unprotected with 1,070 - 1,360 rad. Reduction in the biological effect can be attributed to reduction in ionizing density in relation to the acceleration of high energy protons. There was an increase in H_2O_2 yield in water irradiated with accelerated protons particularly at 1.8 - 7 Mev, which can be interpreted as an indirect indication of the oxygen effect appearing in proportion to particle acceleration. Since the oxygen effect increases under the action of high energy protons, it was thought that radiation sickness could be alleviated by preparations in which the oxygen effect plays a major role in the mechanism of radioprotection, and this was confirmed experimentally by local bone marrow asphyxia in mice irradiated with protons (660 mev) at 1,300 rad. There are 2 figures and 10 references: 6 Soviet-bloc and 4 non-Soviet-bloc. The references to the English-language publications read as follows: H.H. Patt,

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The oxygen effect in whole-body ... S/205/62/002/001/005/013
D268/D302

J.W. Clarck, H.H. Vogel, Proc. Soc. Exptl. Biol. and Med., 84, 189, 1953; H.M. Patt, R.L. [illegible]raube, Radiation Res., 1, 226, 1954; A. Forsberg, Acta radiol., 41, 56, 1954; P. Donet-Maury, Disc. Faraday Soc., 12, 71, 1952.

ASSOCIATION: Institut gigiyeny truda i profzabolevaniy AMN SSSR, Moscow (Institute for Work Hygiene and Occupational Diseases, AMS USSR, Moscow)

SUBMITTED: July 18, 1961

Card 3/3

SHASHKOV, V.S.

S/2[illegible]/62/002/001/[illegible]/010
D2[illegible]/D3[illegible]2

27.2400

AUTHORS: Krasnykh, I.G., [illegible], [illegible], [illegible], Sorokina, K.P., and Shashkov, V.S.

TITLE: The radioprotective effect of 5-methoxytryptamine and other alkoxytryptamines

PERIODICAL: Radiobiologiya, v. 2, no. 1, 1962, 156 - 160

TEXT: The radioprotective action of 4-, 5-, 6-, and 7-methoxytryptamine, and 5-ethoxy-, 5-propoxy-, 5-butoxy-, and 5-benzoxytryptamine was investigated. 2,000 white mice irradiated at 700 r and 120 white rats at 800 r were studied. There were 3 series of experiments. In the first, results showed that 5-methoxytryptamine gave over 60 % survival in irradiated mice. Further study in the second series revealed a prophylactic effect over a wide dose range (5 - 150 mg/kg) with an average 68.3 % survival at the optimum 75 mg/kg. Administered by intraperitoneal injection even 1 - 2 hours before irradiation there was a maximum 34 % survival, and orally at the optimum 250 mg/kg; 10 - 15 minutes before irradiation, there was 54 %

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survival, whereas serotonin was ineffective. Subcutaneous injection gave the same protection as intraperitoneal. In the third series of experiments on rats irradiated at 800 r survival was 50 - 65 %. Oral administration also gave protection. The experimental data showed the relationship between the chemical structure of some alkoxytryptamines and radioprotection. Structural changes in tryptamine, by introducing the methoxy radical at different positions on the indole ring increased or decreased radioprotection, increase occurring only when the methoxy radical was introduced at the fifth position. 5-methoxytryptamine gave protection comparable to that of serotonin. Its effectiveness may be due to more selective penetration of radiosensitive tissue. There are 4 figures and 11 references: 5 Soviet-bloc and 6 non-Soviet-bloc. The 4 most recent references to the English-language publications read as follows: P.J.H. Wang, J.G. Aereiakes, Radiation Res., 11, 2, 476, 1959; Z.M. Bacq, and others, Experientia, 15, 5, 175, 1959; Z.M. Bacq, P. Alexander, Fundamentals of radiobiology, London, 1955; Z.M. Bacq, Acta radiol. 41, 1, 1954.

SUBMITTED: August 29, 1961

Card 2/2

KRASNYKH, I.G.; ZHEREBCHENKO, P.G.; MURASHOVA, [illegible]; SOPOKINA, T.P.; SHABLKOV, V.S.

Radioprotective action of 5-methoxytryptamine and other alkoxy-tryptamines. Radiobiologiia 2 no.1:156-160 Ja '62 (MIRA 15:1)

SHASHKOV, V. S., RAZGOVOROV, B. L., MURIN, S. F., MOROZOV, V. S., SAKSONOV, P. P., and ANTIPOV, V. V.,

"On the Biological Effect of High-Energy Protons"

report submitted for the 14th Intl. Astronautical Federation (IAF) Congress, Bioastronautics Committee, Paris, France 25-Sep-1 Oct 63

ACCESSION NR: AP4043503

5-methoxytryptamine (75 mg/kg), serotonine (50 mg/kg), and mercamine (150 mg/kg) showed significantly greater viability and longer mean longevity than mice given tryptamine (100 mg/kg) and 5-oxytryptophane (250 mg/kg). In the second test, 400 mice received 660 Mev corpuscular radiation with protons in an 1178-rad (DL_{100}) dose. Of 160 irradiated controls, only 3 survived for 30 days. Of mice administered radioprotectors, those given AET and 5-methoxytryptamine showed the greatest survival. Mercamine and serotonine exerted the same protective influence as in the test with gamma rays. In other investigations, AET has been shown to be an effective protective agent even during 1600 rad of absolutely lethal proton radiation. In the third test, 220 mice received 1200—1C0 rad (DL_{100}) doses of 120 Mev protons. Of 60 irradiated controls, 2 survived for 30 days. The protective influence of AET, serotonine, mercamine, and 5-methoxytryptamine was preserved in this test. Finally, it was concluded that the relative biological effectiveness of 660 and 120 Mev protons was 75% that of gamma rays. Orig. art. has: 4 tables.

ASSOCIATION: None

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ACCESSION NR: AP4043503 S/0293/64/002/004/0641/0647

AUTHOR: Shashkov, V. S.; Saksonov, P. P.; Antipov, V. V.; Morozov, V. S.; Murin, G. F.; Razgovorov, B. L.; Suvorov, N. N.; Fedoseyev, V. M.

TITLE: Effectiveness of pharmacological and chemical protection under conditions of gamma radiation and protons with energies of 660 and 120 Mev

SOURCE: Kosmicheskiye issledovaniya, v. 2, no. 4, 1964, 641-647

TOPIC TAGS: radiation protection, pharmacology, chemistry, radioprotective pharmaceutical, radioprotective chemical, gamma radiation, proton, corpuscular radiation

ABSTRACT: The comparative effects of gamma and corpuscular radiation were studied using 1360 white mice. In each of three tests, the protective influence of AET, mercamine, serotonine, 5-methoxytryptamine, tryptamine, and 5-oxytryptophane was tested. Experimental animals were compared with irradiated controls (mice not given protective agents) and biological controls (mice under normal conditions). In the first test, 240 mice were irradiated with an 850-r(DL_{100}) dose of cobalt-60 gamma rays. All irradiated controls perished. Of those administered radioprotective agents, mice given AET (150 mg/kg),

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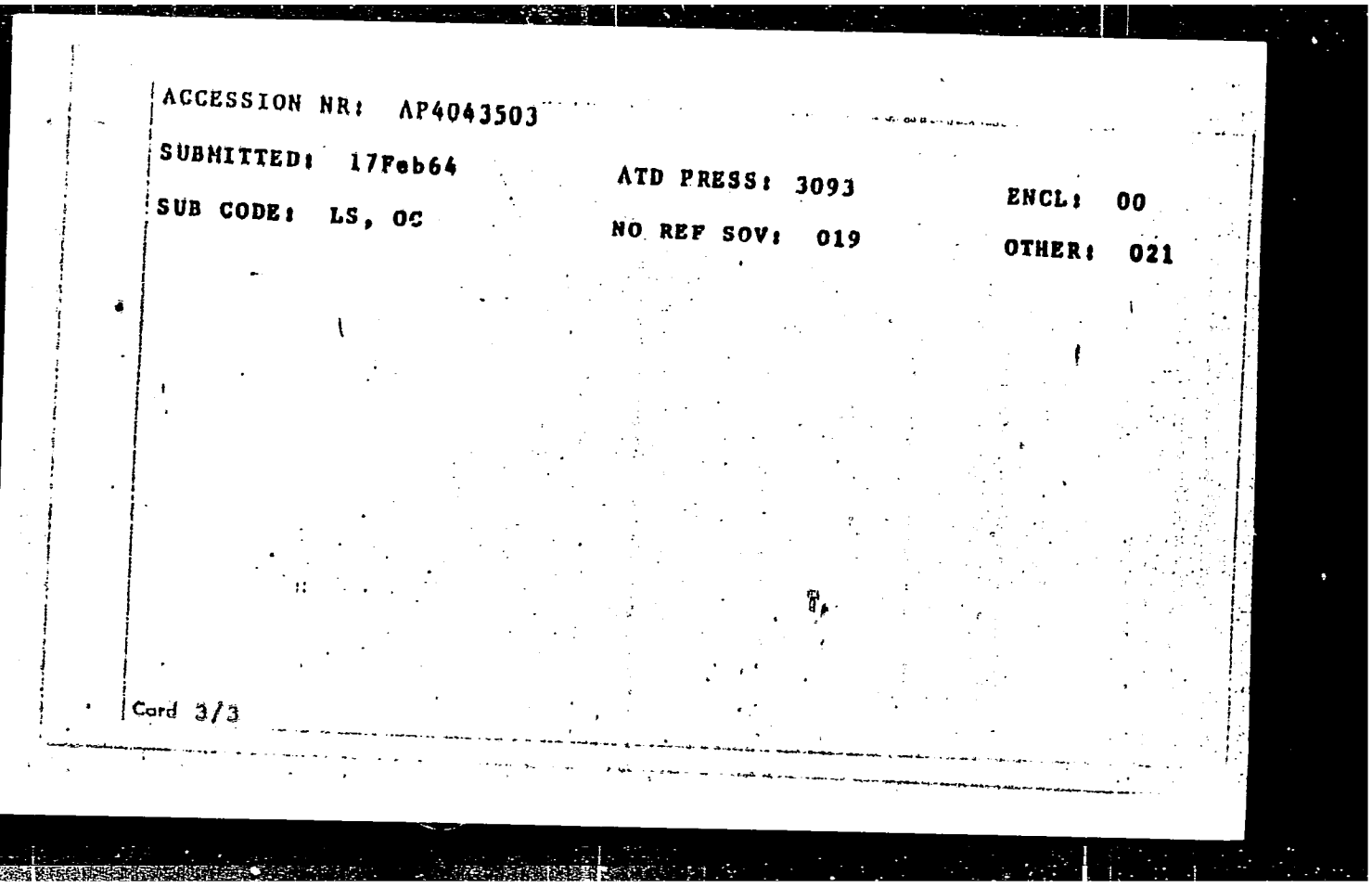

ACCESSION NR: AP4043503

SUBMITTED: 17Feb64 ATD PRESS: 3093 ENCL: 00

SUB CODE: LS, OC NO REF SOV: 019 OTHER: 021

Card 3/3

L 41407-65 EWG(j)/EWT(m) GS

ACCESSION NR: AT 5003262 S/0000/64/000/000/0066/0100

8
B+1

AUTHOR: Yarmonenko, S. P.; Shashkov, V. S.; Kostyanovskiy, R. G.

TITLE: Chemical means of preventing radiation damage

SOURCE: AN SSSR. Vsesoyuznyy institut nauchnoy i tekhnicheskoy informatsii. Vliyaniye ioniziruyushchikh izlucheniy na organizm. Problemy transplantatsii i regeneratsii 1962 (Effect of ionizing radiation on organisms. Problems of transplanting and regeneration, 1962). Moscow, 1964, 66-100

TOPIC TAGS: radiation damage, chemical radiation protection, oxygen effect, chromosomal aberration, free radical, antiradiation drug, radioprotective agent

ABSTRACT: The authors attempt to analyze the experimental work carried out in recent years in the Soviet Union and abroad in model radiation experiments at the molecular and cellular level and on intact organisms and to relate the results to the possibility of using chemical agents in the protection of man against radiation. Antiradiation agents are classified in relation to three aspects: their chemical characteristics, pharmacological properties, and protective action; the last one, the mechanism of action, is preferred by the authors. A review is given of the contemporary opinions as to the mechanism of action of radioprotective

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ACCESSION NR: AT5003262

agents, i.e., inactivation of radicals, protection by modification of radiosensitivity due to changes in the physicochemical environment and by modification of radiosensitivity due to chemical combination of target molecules with organic compounds, and the oxygen effect. The authors next review the world literature on investigations using model systems (physical, chemical, physicochemical, and biochemical), using diverse vegetable, microbial, and animal objects. The main groups of radioprotective agents consist of the mercaptoalkylamines and indolylalkylamines. The protective action of other compounds is also reviewed: EDTA, BAL, chlortetracycline, sodium ribonucleate, calcium pantothenate, ethyl palmitate, tranquillizers, antihistamines, vitamins, sex hormones, folic acid, heparin, etc. The combined use of many protective agents has been shown to be of great promise. The suggested use of nontoxic inhibitors of free-radical reactions for protection against radiation damage is examined. The authors end their review with an examination of the practical aspect of using radioprotective agents. They point out three basic factors complicating the practical use of such protective agents: 1) During radiation therapy the protective agent must accumulate primarily in healthy tissues and secondarily in neoplastic tissues; 2) the narrow therapeutic range of the protective agents and their side effects; and 3) the ineffectiveness of the agents following fractional irradiation. To overcome the obstacles to the

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ACCESSION NR: AT5003262

practical use of radioprotective agents, the authors recommend that investigations be carried out in the following directions: a study of the pharmacodynamics of radioprotective agents with differentiation between the side effects and those determining their protective action; the combined use of various compounds both for enhancing their protective action and for reducing their toxicity; a study of the effect of protective agents against local irradiation on the radiosensitivity of individual tissues; development of protective methods against fractional irradiation; an analysis of the relation between radiation dose, dose of the protective agent, and the protective effect; a study of the possibility of the topical use of agents to protect healthy tissues in areas being irradiated; a search for ways to prolong the protective action applicable to specific conditions of radiation therapy; a study of the possibility of a differential alteration in the radiosensitivity of healthy and neoplastic tissues by means of radioprotective and sensitizing agents both in radiation therapy and in combination with chemotherapy; and the search for new agents and means of protection against radiation. Orig. art. has: 1 table and 10 chemical formulas.

ASSOCIATION: None

SUBMITTED: 11Jul64 ENCL: 00 SUB CODE: LS

NO REF SOV: 106 OTHER: 132

Card 3/3 ans

L 27408-65 EWG(j)/EWG(r)/EWT(l)/FS(v)-3/EWG(v)/EWG(a)/EWG(c) Pe-5 DD/RD

ACCESSION NR: AP5003895 S/0216/65/000/001/0003/0009

AUTHOR: Parin, V. V.; Antipov, V. V.; Raushenbakh, M. O.; Saksonov, P. P.; Shashkov, V. S.; Chernov, G. A.

TITLE: Changes in the concentration of serotonin in the blood of animals caused by the effects of ionizing radiation and the dynamic factors of space flight

SOURCE: AN SSSR. Izvestiya. Seriya biologicheskaya, no. 1, 1965, 3-9

TOPIC TAGS: blood serotonin level, ionizing radiation effect, x ray, vibration, vibration effect, combined factors effect, mouse, rat, guinea pig, dog, monkey, acceleration, weightlessness

ABSTRACT: Experiments were performed in order to test the effects of space flight in orbital spaceships and of ionizing radiation and vibration under laboratory conditions on the concentration of serotonin in the blood of animals. The biological method described by Erspamer and Vane was used to determine the concentration of serotonin in the blood. This method is based on the ability of serotonin to cause contraction of the smooth intestinal muscles of a rat. Monkeys, dogs, guinea pigs, rats, and mice were subjected to lethal doses of gamma rays (Co^{60}) in the radiation experiments. In dogs, monkeys, and guinea pigs, the disruption in the serotonin

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L 27408-65
ACCESSION NR: AP5003895

level of the blood was very marked and was in direct relation to the severity of the radiation sickness. While in rats and mice the drop in the concentration of serotonin was less marked and did not depend on the extent of radiation injury. The first group of animals developed a sharply defined hemorrhagic syndrome during the course of radiation sickness while the second group (rats and mice) did not evidence hemorrhagic symptoms. The chief reason for the drop in the serotonin level of the blood during radiation sickness is the disruption of the formation of serotonin in the digestive tract. The concentration of serotonin in the blood of mice and dogs carried on the fourth and fifth orbital spaceships dropped 8—10 times in mice and 3.5—10 times in dogs, on the first or second day after return, in comparison with the control level (0.12—0.2 μg/ml). After 10 days the serotonin level of these animals returned to normal. During the period of 80—240 days after space flight, the serotonin level in dogs remained normal. Mice and guinea pigs subjected to vibration (frequency: 35 and 70 cps, amplitude: 0.4 mm), for fifteen minutes also showed a drop in the serotonin level of the blood during the first two days, with a subsequent return to normal. The authors conclude that vibration is one of the factors responsible for a drop in the concentration of serotonin in the blood during space flight. Orig. art. has: 4 tables. [BM]

ASSOCIATION: none

Card 2/3

1C

L [illegible]-65 [illegible]/EWT(m)/FS(v)-3/[illegible]/EEC(t)/T/ [illegible]/Pe-5/Pq-4/Pae-2/Peb/Pi-4 IJP(c) DD/RD/GW-2

[illegible] AP5009651 UR/0293/65/003/002/0325/0329

73

B

AUTHOR: [illegible], V. S.; [illegible], V. V.; Davydov, B. I.; Dobrov, N. N.; [illegible]; [illegible], V. G.

TITLE: The biological effect of cosmic radiation under conditions of onset of solar flares on the Earth-Moon route in model experiments

SOURCE: Kosmicheskiye issledovaniya, v. 3, no. 2, 1965, 325-329

TOPIC TAGS: cosmic radiation, biological effect, solar flare, solar flare model, [illegible], Co^{60}, mouse, radioprotector, radiation drug, lunar trajectory

ABSTRACT: The possibility of modeling the biological effect of ionizing radiation during short solar flare on a lunar spaceflight (7—10 days) is demonstrated in [illegible] experiments. Co^{60} is used as the radiation source because it has an [illegible] to a flow of protons, which cannot at present be simulated in the laboratory. [illegible] white mice in a concentrated biological unit were supplied with special food concentrate and water for 5 days prior to irradiation by a dose of 900 r distributed to simulate solar flare in space flight. A second group on the same diet were exposed to an acute dose of 900 r in plexiglas cages. The number of deaths in 30 days was the same in both cases (75%). A third group, fed a normal

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L 39960-65

ACCESSION NR: AP5009651

diet and also irradiated in plexiglas cages, had a 90% mortality rate in the same period of time. Pharmacologic and chemical defenses from the effect of radiation did not differ in principle in the model of simulated solar flare and under normal (i.e., acute) conditions of irradiation. Results of the experiment will be the subject of a further report. Orig. art. has: 3 figures and 2 tables. [JB]

ASSOCIATION: none

SUBMITTED: 01Dec64 ENCL: 00 SUB CODE: LS, AA

NO REF SOV: 004 OTHER: 006 ATD PRESS: 3223

Card 2/2

L 53048-65 EWG(j)/EWT(m)

ACCESSION NR: AP5014856 UR/0020/65/162/003/0688/0690

AUTHOR: Saksonov, P. P.; Antipov, V. V.; Shashkov, V. S.; Razgovorov, B. L.; Murin, G. F.; Morozov, V. S. 24 B

TITLE: The biological effect of high-energy protons 19

SOURCE: AN SSSR. Doklady, v. 162, no. 3, 1965, 688-690

TOPIC TAGS: high energy proton, RBE, chemical antiradiation agent, AET, cystamine, serotonin, 5 methoxytryptamine, mouse

ABSTRACT: The RBE of 120- and 660-Mev protons was determined for different biological objects, and the antiradiation effectiveness of certain chemicals was tested. The objects were irradiated from a synchrocyclotron with a pulsed proton beam (with specific ionization of approximately 6 and 20 ion pairs per 1 μ for 660- and 120-Mev protons, respectively). The dose power was 400—700 rad/min for 660-Mev protons and 80—100 rad/min for 120-Mev protons. Different tests [not described] concerned with vital activity and heredity were used to estimate the RBE of protons as compared to gamma rays. Experiments showed that the RBE of 660- and 120-Mev protons (according to LD_{50} criteria) for rats and mice is 0.7, and that protons are somewhat less effective than gamma rays. Similar results were obtained by other experimenters.

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L 53048-65

ACCESSION NR: AP5014856

The antiradiation properties of various pharmacochemical substances were tested during irradiation with 120- and 660-Mev protons and also with gamma rays. Animals were injected intraperitoneally with the desired substance 15—20 min before irradiation with lethal doses. When AET, 5-methoxytryptamine hydrochloride, or serotonin creatine sulfate were injected into mice, 50—70% survived, and those that died lived longer than the unprotected animals. With cystamine dihydrochloride, 50% survived, and with tryptamine hydrochloride and 5-hydroxytryptophan, around 20% survived. The RBE of 120- and 660-Mev protons, as determined by these experiments on mice and rats, and by other experiments on fruit flies, seeds, and other biological objects, does not exceed 1. An RBE higher than 1 was observed for 510-Mev protons during experiments with dogs, and for 730-Mev protons with monkeys. The type of animal and the experimental methods used account for this difference. [JS]

ASSOCIATION: none

SUBMITTED: 31Jul64 ENCL: 00 SUB CODE: LS

NO REF SOV: 011 OTHER: 003 ATD PRESS: 4015

BBB

Card 2/2