"APPROVED FOR RELEASE: 07/16/2001 CIA-RDP86-00513R001755620004-1

BENESHEVICH, I.I. (continued) Card 3.

nauk, redaktor; MARKOV, M.V., inzhener, redaktor; KALININ, V.K., inzhener, redaktor; STEPANOV, V.H., professor, redaktor; SIDOROV, N.I., inzhener, redaktor; GERONIMUS, B.Ye., kandidat tekhnicheskikh nauk, redaktor; ROBEL', R.I., otvetstvennyy redaktor

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1. Chlen-korrespondent Akademii nauk SSSR (for Petrov)
(Electric railroads) (Railroads--Management)

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TIKHONOV, Konstantin Kuz'mich; SEMENYAKO, A.F., retsenzent; USHAKOV, S.S., retsenzent; PESKOVA, L.N., red.; BOBROVA, Ye.N., tekhn. red.

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TIKHONOV, K.K., kand.tekhn.nauk, dotsent

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(Railroads—Trains)
(Railroads—Management)

APPROVED FOR RELEASE: 07/16/2001 CIA-RDP86-00513R001755620004-1"

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TIKHONOV, K.K., kand.tekhn.nauk, dotsent

Selecting the optimum variant of the plan for making up trains.
Zhel.dor.transp. 47 no.10:24-27 O '65. (MIRA 18:10)

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"APPROVED FOR RELEASE: 07/16/2001 CIA-RDP86-00513R001755620004-1

MAKAROCHKIN, Andrey Mikhaylovich; SVIRIDOV, Viktor Mikhaylovich; TIKHONOV, Konstantin Kuz'mich; ZABELLO, M.L., kand.tekhn. nauk, red.; KHITROVA, N.A., tekhn.red.

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Organizing the use of "pusher" locomotives on the section. Trudy MIIT no.86:74-132 '57. (MIRA 11:1)

(Locomotives)

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Tikhonov, KK

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Increasing the traffic and transport capacity of single-track lines lines by using "pusher" trains. Trudy MIIT no.86:133-166 '57.
(Railroads--Management) (MIRA 11:1)

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SHUKHMAN, Aba Semenovich; TIKHONOV, K.K., kandidat tekhnicheskikh nauk, redaktor; BOBROVA, Ye.N., tekhnicheskiy redaktor

[Organization of dense freight traffic; experience of the Ufa division of the Ufa railroad line] Organizatsiia dvizheniia na gruzonapriazhennykh liniiakh; iz opyta Ufimskogo otdeleniia Ufimskoi dorogi. Moskva, Gos.transp.zhel-dor.izd-vo, 1957. 60 p. (MLRA 10:9)

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KOCHNEV, Fedor Petrovich, prof., doktor tekhn. nauk; MAKSIMOVICH, Boris Mikhaylovich; POMERANTSEV, Vladimir Vladimirovich; TIKHONOV, Konstantin Kuz'mich; CHERNOMORDIK, Georgiy Il'ich; DLUGACH, B.A., kand. tekhn. nauk, red.; PRIGOROVSKIY, B.F., inzh., red.; KHITROV, P.A., tekhn. red.

[Traffic management in railroad transportation] Organizatsiia dvizheniia na zheleznodorozhnom transporte. Pod obshchei red. F.P. Kocheneva. Moskva, Gos. transp. zhel-dor. izd-vo, 1958. 491 p. (MIRA 11:10)

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Train traffic organization on lines with lengthened hauls. Zhel. dor. transp. 43 no. 1:21-28 Ja '61. (MIRA 14:4)

1. Nachal'nik sluzhby dvizheniya Kuybyshevskoy dorogi (for Mokshin).
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(Railroads—Traffic)

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TF652.T5 1946

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TIKHONOV, K. K.

The direction of train traffic on one and two way track sections Moskva, Gos. transp. zhel.-dor. izd-vo, 1940. 55 p. (50-40640)

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TIKHONOV, K. K.

Assembling trains in winter Moskva, Transzheldorizdat. 1945. 19 p.

Cyr.4 T537

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Bibliography: p. [3] of cover.

DLC: TF85.T5

SO: Soviet Transportation and Communications, A Bibliography, Library of Congress, Reference Department, Washington, 1952, Unclassified.

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TIKHONOV, K. K.

Skorostnaia obrabotka poezdov. [Methods for speeding up the processing of trains]. Izd. 2., p erer. Moskva, Gos. transp. zhel-dor. izd-vo, 1946. 182 p. diagrs.
DLC: HE1.M6

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TIKHONOV, K.S. (Simferopol')

Blood proteins in gastric and duodenal ulcer before and following stomach resection. Vrach.delo no.4:415-417 Ap '60. (MIRA 13:6)

1. Kafedra gospital'noy khirurgii (zav. - prof. K.S. Keropian) pediatricheskogo fakul'teta Krymskogo meditsinskogo instituta.
(BLOOD PROTEINS) (PEPTIC ULCER) (STOMACH--SURGERY)

APPROVED FOR RELEASE: 07/16/2001 CIA-RDP86-00513R001755620004-1"

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TIKHONOV, K.S., aspirant (Simferopol', ul.Kuybysheva,d.30,kv.1)

Lipid function of the liver in a case of stomach and duodenal ulcers. Klin.khir. no.5:82 My '62. (MIRA 16:4)

1. Kafedra gospital'noy khirurgii (zav. - prof. K.S.Keropian) pediatricheskogo fakul'teta Krymskogo meditsinskogo instituta.
(ALIMENTARY CANAL ULCERS) (CHOLESTEROL METABOLISM)

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TIKHONOV, K.V., kandidat meditsinskikh nauk

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(ANGIOGRAPHY,
aortography, translumbar, in animals (Rus))

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Ratsionalizatsiya i izobretatel'stvo na zavode [Innovation and Invention in Factories by] P. V. Kozlov (and) K. Ya. Tikhonov. Moskva, Mashgiz, 1953.

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TIKHONOV, L.A.

Attachment for grinding ends according to the machined hole.
Stan.i instr. 33 no.7:39 Jl '62, (MIRA 15:7)
(Grinding machines--Attachments)

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(Gear-cutting machines)

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1. TIKHONOV L.S.

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7. Textbook with serious errors ("Bee culture." P.S. Shcherbina. Reviewed by L.S. Tikhonov). Pchelovodstvo 30, no.1, 1953.

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KULIKOV, N.S.; CHEREPOV, V.T.; KHOMUTOVA, T.M.; VECHERKINA, L.G.; TIKHONOV, L.S.

Paratyphoid fever in bees. Veterinariia 41 no.8:43-44 Ag '64. (MIRA 18:4)

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"APPROVED FOR RELEASE: 07/16/2001 CIA-RDP86-00513R001755620004-1

Tikhonov, L. V.

USSR/Physics

Card 1/1 Pub. 22 - 21/59

Authors : Kritskaya, V. K.; Kurdyumov, G. V., Academician; and Tikhonov, L. V.

Title : Effect of machining on the coupling forces in the crystals of an solid solution of iron-nickel alloy

Periodical : Dok. AN SSSR 102/2, 271-274, May 11, 1955

Abstract : Studies are described of the harding and tempering effect on the coupling forces of the plastic deforation of iron-nickel alloys of the following compound: 4% Ni; 0.015% C; 0.04% Si, and 0.001% P. Intensities of the Spectral lines were studies. Fourteen USSR references (1951-1955). Diagram; table.

Institution : Central Scientific Research Institute of Ferrous Metals, Institute of Metallography and Physics of Metals

Submitted : February 23, 1955

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"APPROVED FOR RELEASE: 07/16/2001 CIA-RDP86-00513R001755620004-1

SOV/126-7-5-20/25

AUTHORS: Lysak, L. I. and Tikhonov, L. V.

TITLE: Change in Fine Crystalline Structure of Niobium on Hardening by Plastic Deformation (Izmeneniye tonkoy kristallicheskoy struktury niobiya pri uprochnenii plasticheskim deformirovaniyem)

PERIODICAL: Fizika metallov i metallovedeniye, Vol 7, Nr 5, pp 757-765 (USSR)

ABSTRACT: This paper is concerned with a study of the changes in secondary and tertiary distortions of the crystal lattice, the size of coherent regions, the texture and similar properties of niobium after hardening to various degrees by cold plastic deformation. Pure niobium (99.997%) was used in this work. Hardening was carried out at room temperature by plastic deformation using three methods:
1. Static uniaxial compression in a 300 ton press;
2. Uniaxial compression under conditions of vibrational loading at a vibration frequency of the hammer of 37 per second and an amplitude of up to 1 mm;
3. Drawing through a die with different orifices, and

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SOV/126-7-5-20/25

Change in Fine Crystalline Structure of Niobium on Hardening by Plastic Deformation

4. Extension in the direction of the axis of the plate-like specimen.

For the deformation by the first two methods square niobium rods, 16 x 16 mm, were rolled into round rods of 10 mm diameter, from which cylindrical specimens of 7 mm diameter and 12 mm length were made. A batch of specimens was annealed in vacuum (approximately 10^{-5} mm Hg) at 1200°C for one hour. After annealing the hardness of the specimens was found to be 119 kg/mm^2. The degree of deformation of specimens having been compressed uniaxially was determined from the difference between the cylinders before and after deformation. The "true" stress used in compression was estimated according to formulae suggested by Shaposhnikov (Ref.11). The hardness of deformed specimens was measured on a Vickers hardness testing machine, using a load of 15 kg. The secondary distortions of the crystal lattice and the size of the regions of coherent scatter were determined by an X-ray method according to the diffuseness of the interference lines (110) and (330) obtained in the K_α - irradiation of a copper anode. X-ray pictures were taken in a Debye chamber, the drum of which had a diameter of 143 mm. In

Card 2/4

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SOV/126-- --7-5-20/25

Change in Fine Crystalline Structure of Niobium on Hardening by Plastic Deformation

Fig.1 the results of the study of hardening processes is shown. In Fig.2 the secondary distortions, $\Delta a/a$, are plotted against the true compressional stress S. In Fig.3 the results of the investigation of specimens having undergone small deformations (0-5%) by pulling are shown. It is concluded that in the hardening of niobium the following structural factors play a decisive role:

1. Fragmentation of blocks and grains.
2. Disorientation of blocks and grains.
3. The degree of texture if the hardness is measured in the direction of the deformation force.
4. The increase of any type of local lattice distortions, and
5. The uniformity of distribution of the distorted lattice throughout the metal.

There are 3 figures, 1 table and 23 references, of which 4 are Swiss, 5 English and 14 Soviet.

Card 3/4

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"APPROVED FOR RELEASE: 07/16/2001 CIA-RDP86-00513R001755620004-1

SOV/126-- -7-5-20/25

Change in Fine Crystalline Structure of Niobium on Hardening by Plastic Deformation

ASSOCIATION: Institut metallofiziki, AN USSR (Institute of Metal Physics, Ac. Sc., Ukr.SSR)

SUBMITTED: February 20, 1958

Card 4/4

APPROVED FOR RELEASE: 07/16/2001 CIA-RDP86-00513R001755620004-1"

"APPROVED FOR RELEASE: 07/16/2001 CIA-RDP86-00513R001755620004-1

TIKHONOV, L. V.: Cand Master Phys-Math Sci (diss) -- "Crystal-structural changes in the strengthening and weakening of columbium". Kiev, 1958. 10 pp (Acad Sci Ukr SSR, Inst of the Physics of Metals) 150 copies (KL, No 5, 1959, 143)

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"APPROVED FOR RELEASE: 07/16/2001 CIA-RDP86-00513R001755620004-1

24(2) SOV/20-122-3-18/57

AUTHOR: Tikhonov, L. V.

TITLE: On the Problem of the Investigation of the Fine Crystal Structure on the Basis of the Intensities of the Diffraction Lines (K voprosu ob izuchenii tonkoy kristallicheskoy struktury po intensivnostyam diffraktsionnykh liniy) Pure Metals (Chistyye metally)

PERIODICAL: Doklady Akademii nauk SSSR, 1958, Vol 122, Nr 3, pp 389-392 (USSR)

ABSTRACT: This paper calculates the integral intensity of a diffraction line for the reflection of an X-ray beam impinging under any angle on an opaque plane sample. An X-ray beam of the average intensity I and of the cross section area A is assumed to be impinging under any angle α on a plane sample of an ideal polycrystalline preparation. The author investigates a thin crystalline layer of the thickness dx which is parallel to the plane of the cut in the depth x. A formula is given for its contribution to the integral intensity of the diffraction. The model of Vil'khinskiy (Ref 1) is used for the deduction of the formula for the intensity of the diffracted radiation

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"APPROVED FOR RELEASE: 07/16/2001 CIA-RDP86-00513R001755620004-1

SOV/20-122-3-1?/57

On the Problem of the Investigation of the Fine Crystal Structure on the Basis of the Intensities of the Diffraction Lines. Pure Metals

by a non-ideal polycrystalline preparation. The integral intensity of the radiation diffracted by an "opaque" sample may be expressed by a double series:

$P = \sum_{n=1}^{\infty} \sum_{m=1}^{M} P_{mn}$. P_{mn} denotes the contribution of the mth crystal plate which lies in the nth layer to the integral intensity of the diffracted radiation. The carrying out of the summation is discussed. The deduced formula is more general than the formula of Vil'khinskiy. This formula is then specialized for the case of continuous materials. The author thanks L. I. Lysak for his discussions and for his interest in this paper. There are 3 figures and 2 references, 1 of which is Soviet.

ASSOCIATION: Institut metallofiziki Akademii nauk USSR (Institute of Metal Physics, Academy of Sciences UkrSSR)

PRESENTED: April 29, 1958, by N. V. Belov, Academician

Card 2/3

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"APPROVED FOR RELEASE: 07/16/2001 CIA-RDP86-00513R001755620004-1

18(4,7); 25(1) PHASE I BOOK EXPLOITATION SOV/2306

Akademiya nauk Ukrainskoy SSR. Institut metallofiziki

Voprosy fiziki metallov i metallovedeniya (Problems in the Physics of Metals and Metallography) Kiyev, Izdo-vo AN Ukrainskiy SSR, 1959. (Series: Its: Sbornik nauchnykh rabot, Nr 9) Errata slip inserted. 3,000 copies printed.

Ed. of Publishing House: V.L. Shkurko; Tech. Ed.: M.I. Yefimova; Editorial Board: V.N. Svechnikov, Academician, Academy of Sciences Ukrainian SSR (Resp. Ed.); S.D. Gertsriken, Doctor of Physical and Mathematical Sciences; and I.Ya. Dekhtyar, Doctor of Technical Sciences.

PURPOSE: This collection of articles is intended for scientific workers, aspirants, and engineers in the fields of the physics of metals, metallography, and metallurgy. It may also be useful to students of advanced courses in metallurgical and physical faculties.

COVERAGE: This collection of articles deals with the following topics: effect of high-speed heating, heat treatment, deformations, and crystallization conditions on phase transformations, structures, and properties of metals and alloys; the effect of additional alloying components on volumetric and intercrystalline diffusion in alloys; and the effect of repeated quench hardening and radioactive and ultrasonic treatment on the physical properties of alloys. No personalities are mentioned. References follow several of the articles.

Lysak, L.I., and Yu.P. Sogrishin. Effect of Plastic Deformation on Internal Stresses in Metal 22

Changes in the substructure of metals due to shifting from statical to vibratory loading were studied. Experiments in which cylindrical specimens of the aluminum alloy, AMTsM, were flattened, statically and with vibrations, between plates at room temperature are described.

Lysak, L.I., and L.V. Tikhonov. Changes in the Crystalline Structure of Columbium Subjected to Various Types of Deformation 27

This article deals with a study of changes which take place in certain characteristics of columbium when it is subjected to different types of deformation. Such changes include distortions of crystal lattices of the second and third types, distortion of the sizes of coherent zones, and changes in texture and strength accompanying varying methods and degrees of hardening.

Larikov, L.N. Problem of Phase Transformations in Plastically Deformed Metals and Alloys 36

The author discusses processes taking place in phases which were in a state of equilibrium or quasi-equilibrium before plastic deformation. Also discussed are processes occurring during the deformation of a metastable phase.

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"APPROVED FOR RELEASE: 07/16/2001 CIA-RDP86-00513R001755620004-1

TIKHONOV, L. V.

18(7) PHASE I BOOK EXPLOITATION SOV/3355

Akademiya nauk SSSR. Institut metallurgii. Nauchnyy sovet po probleme zharoprochnykh splavov

Issledovaniya po zharoprochnym splavam, t. IV (Studies on Heat-resistant Alloys, vol. 4), Moscow, Izd-vo AN SSSR, 1959. 400 p. Errata slip inserted. 2,200 copies printed.

Ed. of Publishing House: V. A. Klimov; Tech. Ed.: A. P. Gusevs; Editorial Board: I. P. Bardin, Academician; G. V. Kurdyumov, Academician; N. V. Agayev; Corresponding Member, USSR Academy of Sciences; I. A. Oding, I. M. Pavlov, and I. P. Zudin, Candidate of Technical Sciences.

PURPOSE: This book is intended for metallurgists concerned with the structural metallurgy of alloys.

COVERAGE: This is a collection of specialized studies of various problems in the structural metallurgy of heat-resistant alloys. Some are concerned with theoretical principles, some with descriptions of new equipment and methods, others with properties of specific materials. Various problems occurring under specified conditions are studied and reported on. For details, see Table of Contents. The articles are accompanied by a number of references, both Soviet and non-Soviet.

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APPROVED FOR RELEASE: 07/16/2001 CIA-RDP86-00513R001755620004-1"

"APPROVED FOR RELEASE: 07/16/2001 CIA-RDP86-00513R001755620004-1

TIKHONOV, L.V.

Study of fine crystal structure by means of the intensities of the diffraction lines. Kristallografiia 5 no.2:194-199 Mr-Ap '60. (MIRA 13:9)

1. Institut metallofiziki AN USSR.
(Crystallography)

APPROVED FOR RELEASE: 07/16/2001 CIA-RDP86-00513R001755620004-1"

"APPROVED FOR RELEASE: 07/16/2001 CIA-RDP86-00513R001755620004-1

18.9200

S/126/60/009/01/022/031
E091/E191

AUTHORS: Lysak, L.I., and Tikhonov, L.V.

TITLE: Imperfections in the Crystalline Structure of Niobium resulting from High Degrees of Deformation.

PERIODICAL: Fizika metallov i metallovedeniye, 1960, Vol 9, Nr 1, pp 119-123 (USSR)

ABSTRACT: In this work the change in the distortions of the crystalline lattice and in block sizes of niobium after extensive plastic deformation (> 70%) was studied in great detail, taking into consideration the anisotropic properties of the material. The material was hardened at room temperature by static uniaxial compression of cylindrical specimens to various extents. The test specimens were prepared as follows. Bars of niobium (99.997% Nb), 16 x 16 mm, were rolled into rods of 10 mm diameter. These rods were made into cylindrical specimens of 7 mm diameter and 12 mm length. The latter were annealed in vacuum (approximately 10^{-5} mm Hg) at 1200 °C for 1 hour. After deformation their hardness was tested in two directions perpendicular to each other, namely, in the direction in which the forming force (A) was acting,

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E091/E191

Imperfections in the Crystalline Structure of Niobium Resulting from High Degrees of Deformation

and in a direction at right-angles to this (B). In order to achieve this the deformed specimens were sawn into two halves (Fig 1). From the core of one half of each deformed specimen a cylindrical specimen of 0.9 mm diameter was cut out in such a way that its axis coincided with the radius of the specimen. After etching, the specimens were photographed in an X-ray camera, the drum diameter of which was 143 mm. Each specimen was rotated during exposure. The secondary distortions of the crystalline lattice and the dimensions of the regions of coherent scattering (blocks) were determined from the diffuseness of the interference lines (110) and (330) obtained in K_α-radiation of a copper anode of the tube (Refs 2 and 3). The static lattice distortions ($\sqrt{\overline{u^2}}$) were deduced from the intensity of the (110) and (220) lines obtained under the same conditions. The other halves of the specimens were studied in a URS-501 X-ray apparatus with automatic recording of the intensity distribution curves of the interference lines. During

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Imperfections in the Crystalline Structure of Niobium resulting from High Degrees of Deformation

exposure a counter was used to record the equatorial parts of the interference lines. In such an exposure those planes reflected which were parallel (with a small angle of scatter) to the X-ray irradiated plane of the specimen surface. The physical broadening of the lines is due to lattice distortions and block dimensions in a direction perpendicular to the specimen surface. Two surfaces were investigated, namely, the end face, the normal to which is parallel to the direction of the deforming force, and the lateral surface, the normal to which is perpendicular to the direction of the deforming force (see Fig 1). The lines (110) (220) and (310) were obtained from the lateral surface in a K_α-radiation of an iron anode. In the exposure of the end-face surface the lines (110), (200), (220) and (310) were recorded, using a K_α-radiation of an iron anode, and the lines (222) and (321) were recorded, using a K_α-radiation of copper. Calculation of the crystalline lattice distortions and block dimensions was carried out

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E091/E191

Imperfections in the Crystalline Structure of Niobium resulting from High Degrees of Deformation

according to a method described by Lysak (Refs 2 and 3). The measured widths of the lines (110), (220) and (310) are shown in Fig 2. The width of the line (110) on the exposure of the lateral surface of a specimen deformed by 83% could not be measured because at a small angle of slip (24° 30') the surface area of the section is too small to cover the primary beam of X-rays. The width of the line (220) in the exposure of the end face surface of a specimen deformed by 72% remained unaltered as the intensity of this line was small. The results of the experiments are shown in Fig 3. The values with index T denote that they have been obtained from the end face, and those with index б that they have been taken from the lateral surfaces of the specimen. Fig 4 gives a schematic illustration of the mechanism of plastic deformation of a specimen in compression. Fig 5 shows the change in intensity of the interference lines of niobium in relation to degree of deformation. The authors conclude that the difference in hardness tested

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Imperfections in the Crystalline Structure of Niobium resulting from High Degrees of Deformation

in the direction of the axis of compression and in the direction perpendicular to this axis is associated with a difference between the crystal lattice distortion and the block dimensions, and not with a change in texture. Hence the anisotropy in hardness may be due not to different physical properties in various crystallographic directions, but to a dependence of the properties of the fine crystalline structure on the direction relative to the axis of compression in plastic deformation. Further, hardening observed after strong deformation is accompanied not only by formation of a considerable number of imperfections in the crystal structure, but also by changes in the degree of perfection of the texture. These changes govern the mechanism and kinetics of plastic deformation which exerts a considerable influence on the formation and nature of imperfections of the crystal structure.

There are 5 figures and 4 Soviet references.

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Imperfections in the Crystalline Structure of Niobium resulting from High Degrees of Deformation

ASSOCIATION: Institut metallofiziki AN USSR
(Institute of Metal Physics, Acad. Sci. Ukr. SSR)

SUBMITTED: June 29, 1959

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L 24445-66 EWT(m)/EWP(w)/T/EWP(t) IJP(c) JD/HW/JG/GS

ACC NR: AT6010580 (N) SOURCE CODE: UR/0000/65/000/000/0143/0152

47
B+1

AUTHOR: Tikhonov, L. V.; Khar'kova, G. V.

ORG: Institute of Physics of Metals, AN UkrSSR (Institut metallofiziki AN UkrSSR)

TITLE: The part played by flaws in the initial crystalline structure in thermal fatigue of cast alloys

SOURCE: AN UkrSSR. Mekhanizm plasticheskoy deformatsii metallov (Mechanism of the plastic deformation of metals). Kiev, Naukova dumka, 1965, 143-152

TOPIC TAGS: crystal structure, thermal fatigue, cast alloy, chromium alloy, nickel alloy, cyclic test, metal heat treatment, crystal structure defect

ABSTRACT: Experimental data are given from a study of crack formation as a function of defects in the crystal structure generated during thermocyclic treatment. The specimens were coarse-grained cast chromium-nickel alloy bars 50 mm long. The specimens were subjected to thermocyclic treatment under the following conditions: upper temperature of the cycle -- 960°C (heating in air), lower temperature of the cycle -- 20°C (cooling in water), time of the cycle -- 7 minutes. The x-ray

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analysis procedure is briefly described. Photomicrographs of the specimens in the initial state and after 30 cycles of thermocyclic treatment are compared. The experimental results show that the nature of the formation and development of cracks during thermocyclic treatment of cast alloys is considerably dependent on the flaws in the crystalline structure of the alloy in the initial state. Orig. art. has: 5 figures.

SUB CODE: 11,20/ SUBM DATE: 05Oct64/ ORIG REF: 003/ OTH REF: 003

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L 24446-66 EWT(m)/EWP(w)/EWA(d)/T/EWP(t) IJP(c) JD/HW/GS

ACC NR: AT6010581 (N) SOURCE CODE: UR/0000/65/000/000/0153/0160

43
41
B+1

AUTHOR: Glazov, A. P.; Tikhonov, L. V.

ORG: Institute of Physics of Metals, AN UkrSSR (Institut metallofiziki AN UkrSSR)

TITLE: Crystallostructural changes due to periodic thermal loading in the surface layer of guide vanes made from ZhS-6K alloy

SOURCE: AN UkrSSR. Mekhanizm plasticheskoy deformatsii metallov (Mechanism of the plastic deformation of metals). Kiev, Naukova dumka, 1965, 153-160

TOPIC TAGS: cyclic test, thermal fatigue, guide vane, crystal structure, plastic deformation

ABSTRACT: The paper is a continuation of a previous work (Glazov, A. P., Tikhonov, L. V., Khazanov, M. S., "Problems in the Physics and Science of Metals, 18", *Izd-vo AN UkrSSR*, Kiev, 1964) based on improved methods. More accurate experimental data are given and a number of generalizations are made. Guide vanes made from ZhS-6K alloy were subjected to thermocyclic treatment on a special installation with the following parameters: maximum temperature--800°C, minimum temperature--400°C, time

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ACC NR: AT6010581

of a cycle--120 seconds. The modifications made in the x-ray method used in the previous work are described. Three blades were studied subjected to 300, 560 and 600 cycles. It is found that a periodically changing temperature field causes irreversible processes resulting in considerable structural and phase transformations which gradually accumulate and reduce the resistance of the material to alternating thermal stresses, resulting in final destruction. The greatest structural and phase transformations in ZhS-6K alloy occur in a thin surface layer of the turbine blade (0.05-0.1 mm deep), which is due to the distribution of thermal stresses through the cross section of the blade and to the effect of the aggressive high-temperature gas stream. Thus the state of the surface layer determines the thermal fatigue strength of the blades. The thermal fatigue process may be divided into two successive stages: 1. (up to approximately 100 cycles) a reduction in the flaw density of the crystal structure in the surface layer accompanied by softening; 2. (beginning at a number of cycles which is strongly dependent on the maximum temperature) accumulation of defects in the crystal structure and formation of cracks. The processes which take place in the material during both stages are closely associated with the initial structure of the surface layer. The physical and chemical changes which take place in the surface layer are discussed. The plastic deformation which takes place during the second stage does not increase the overall macro- and microelastic

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deformation in the surface layer as compared to its initial state. A characteristic feature of crystallostructural changes during operation of guide vanes is irregularity in the state of the surface layer in various sections of the blade. This is due to differences in temperature conditions. The greatest structural changes are observed at approximately the middle of the blade on the concave side toward the intake edge. Thermal fatigue cracks are observed in this region as a rule. This indicates that crack formation in the blades is directly associated with plastic effects in the softened surface layer due to periodic thermocyclic stresses. The strong localized irregularity in surface deformation is visible from grain to grain and within the confines of a single grain. The greatest structural changes during thermocyclic treatment occur in grains with considerable structural defects. Intergranular boundaries of complex configuration may serve as stress concentrators and thus are potential sites of crack formations. The structural irregularity of the alloy from grain to grain has a considerable effect on thermal fatigue in causing localized plastic deformation accompanied by concentration of stresses in both intercrystalline and transcrystalline fracture. Orig. art. has: 2 figures, 1 table.

SUB CODE: 11,20/ SUBM DATE: 26Oct64/ ORIG REF: 009/ OTH REF: 000

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L 27674-66 EWT(m)/T/EWP(t)/ETI IJP(c) JD/HW/GD

ACC NR: AT6013829 SOURCE CODE: UR/0000/65/000/000/0014/0020

55
B+1

AUTHOR: Gontareva, R. G.; Tikhonov, L. V.

ORG: Institute of Metal Physics, AN UkrSSR (Institut metallofiziki AN UkrSSR)

TITLE: Crystal structure changes in surface layers of nickel specimens induced by periodic thermal loads

27

SOURCE: AN UkrSSR. Issledovaniye nesovershenstv kristallicheskogo stroyeniya (Study of imperfections in crystal structure). Kiev, Naukova dumka, 1965, 14-20

TOPIC TAGS: nickel, material failure, metal crystal, thermal stress, crystal structure, metal surface

ABSTRACT: Specimens of electrolytically pure nickel were annealed for 30 min at 500C to remove the surface work hardness resulting from their preparation, some of the specimens were polished mechanically, and all were subjected to thermal treatment which consisted in heating to 900C, holding for 5 min, and cooling in water (25C). The specimens were then analyzed by x-ray diffraction and electron microscopy. The results indicate that the mechanisms of failure of thin and massive nickel specimens are substantially different: in the case of failure of thin specimens, a predominant role is played by a vacancy mechanism, whereas in massive specimens at considerable heating and cooling rates the thermal stresses produced are large enough to activate the dislocatory process of failure. The authors thank Yu. N. Petrov for the electron micrographs. Orig. art. has: 3 figures.

2

SUB CODE: 11, 07/ SUBM DATE: 28Nov64/ ORIG REF: 005/ OTH REF: 005

Card 1/1

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"APPROVED FOR RELEASE: 07/16/2001 CIA-RDP86-00513R001755620004-1

SOGRISHIN, Yu.P.; TIKHONOV, L.V.; CHERNIS, T.Sh.

Effect of the stress application method on the structure and mechanical properties of the D16M alloy. Metalloved. i term. obr. met. no. 2:48-50 F '65. (MIRA 18:12)

1. Eksperimental'nyy nauchno-issledovatel'skiy institut kuznechno-pressovogo mashinostroyeniya.

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"APPROVED FOR RELEASE: 07/16/2001 CIA-RDP86-00513R001755620004-1

ACCESSION NR: AT4010695 S/2601/63/000/017/0111/0119

AUTHOR: Glazov, A. P.; Ly*sak, L. I.; Tikhonov, L. V.; Khazanov, M. S.

TITLE: Investigation of changes in the fine crystalline structure of alloy ZhS-6K during thermal fatigue

SOURCE: AN UkrRSR. Insty*tut metalofizy*ky*. Sbornik nauchny*kh trudov, no. 17, 1963. Voprosy* fiziki metallov i metallovedeniya, 111-119

TYPIC TAGS: thermal fatigue, turbine, turbine blade, thermal stress, macro deformation, microdeformation, roentgenography, cracking, elasticity, alloy Zhs-6K, alloy crystal structure

ABSTRACT: Thermal fatigue is one of the basic factors leading to breakage of gas turbine blades. Continuous, cyclic, thermal loads when starting, stopping, or changing operating conditions sharply decrease the durability of the blades. During the process of cyclic thermal loading cracks usually appear in the surface layers of the blades and quickly lead to breakage. It is usually agreed that thermal stress is the most important factor occurring in processes without fixed thermal influences. Thermal stress surface is

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greatest on the layers; hence structural changes are more evident there. During the loading process an accumulation of elastic macrodeformations takes place leading to the formation of cracks. In this study the blades of a gasturbine were investigated by an X-ray (roentgenographic) method; the blades were tested for thermal stability in conditions maximally approaching working conditions with respect to temperature and speed of the gas stream. X-ray examinations of the blades were made before and after the appearance of cracks. Roentgenographic investigation of the hard solution on the surface layers was conducted in a ionization unit URS-50I which automatically registered the diffused radiation. The results showed that considerable structural changes occur during cyclic, thermal loading only on the surface layers of blades with thickness 0.05 - 0.10 mm. Noticeable changes occur with a relatively low number of thermocycles (about 100). With further increase in the number of thermocycles structural changes do not occur either before or after the formation of cracks. Further, with an increase in the number of thermocycles, the zone of coherent diffusion first increases from an initial 3.10^{6} cm to a magnitude of 10^{-3} mm and then decreases to 3.10^{-6} cm, after which cracks appear. In blades with cracks the dimensions of the area of coherent diffusion is 10^{-3} cm. During cyclic thermal loading of blades no noticeable accumulation of elastic macro and microdeformations occurs in surface layers as compared with their initial state. At the same

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ACCESSION NR: AT4010695

time, before the formation of a crack, intensive accumulation of plastic deformations is noticeable in the zones of the formation of the crack, accompanied by an increase in the density (closeness) of dislocation. Orig. art. has: 5 figures.

ASSOCIATION: Insty*tut Metalofizy*ky* AN UkrRSR (Institute of Metallurgical Physics AN UkrRSR)

SUBMITTED: 00 DATE ACQ: 31Jan64 ENCL: 00

SUB CODE: MM, PR NO REF SOV: 012 OTHER: 000

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"APPROVED FOR RELEASE: 07/16/2001 CIA-RDP86-00513R001755620004-1

ACCESSION NR: AT4042834 S/2601/64/000/018/0060/0068

AUTHOR: Glazov, A.P.; Tikhonov, L. V.; Khazanov, M. S.

TITLE: Radiographic study of the surface of turbine blades tested for heat resistance

SOURCE: AN UkrSSR. Institut metallofiziki. Sbornik nauchny*kh rabot, no. 18, 1964. Voprosy* fiziki metallov i metallovedeniya (Problems in the physics of metals and physical metallurgy), 60-68

TOPIC TAGS: gas turbine, gas turbine blade, turbine blade heat resistance, turbine blade surface crack, blade surface radiography, narrow beam method, surface oxide film effect, microcrystalline transition layer, mosiac structure, structural disorientation.

ABSTRACT: The size of mosaic structure fragments, the disorientation of adjacent fragments and a parameter characterizing the concentration heterogeneity of the γ-solid solution in various sectors of the surface of gas turbine blades tested for heat resistance were determined by x-ray using a narrow beam with low angular divergence. The irradiated area and volume were 1.57 mm^2 and $7.85 \cdot 10^{-6}$ cm^3, respectively. The average divergence was $12.5 \cdot 10^{-3}$ radians. The methodology is given in detail. The results indi-

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cate the presence of a thin microcrystalline transition layer down the length of the blades prior to and after formation of cracks. It is concluded that the surface oxide film plays a significant part in structural changes resulting in crack formation. The study confirmed results of previous similar studies by other Soviet writers and the authors suggest that studies of dislocation defects and vacancies in the surface layers can yield valuable information on factors governing thermal fatigue of turbine blades. Orig. art. has: 4 graphs, 5 microphotos and 8 formulas.

ASSOCIATION: Institut metallofiziki AN UkrSSR (Metallophysics Institute, AN UkrSSR)

SUBMITTED: 21Mar63 ENCL: 00

SUB CODE: PR, MM NO REF SOV: 002 OTHER: 003

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"APPROVED FOR RELEASE: 07/16/2001 CIA-RDP86-00513R001755620004-1

GLAZOV, A.P.; LYSAK, L.I.; TIKHONOV, L.V.; KHAZANOV, M.S.

Investigating the changes of the fine crystal structure during the thermal fatigue of the ZhS-6K alloy. Sbor. nauch. rab. Inst. metallofiz. AN URSR no.17:111-119 '63. (MIRA 17:3)

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AM4017086 BOOK EXPLOITATION S/

Gertsriken, S. D.; Dekhtyar, I. Ya.; Krivoglaz, M. A.; Larikov, L. N.; Ly*sak, L. I.; Nesterenko, Ye. G.; Novikov, N. N.; Sosnina, Ye. I.; Slyusar, N. P.; Tikhonov, L. V.; Trofilov, V. I.; Chuistov, K. V.

Physical bases of the strength and ductility of metals (Fizicheskiye osnovy* prochnosti i plastichnosti metallov) Moscow, Metallurgizdat, 1963. 321 p. illus., biblio. Errata slip inserted. 4250 copies printed. Editor of the publishing house: Ye. N. Berlin; Technical editor: L. V. Dobuzhinskaya; Bindery artist: Yu. M. Vashchenko

TOPIC TAGS: strength of metals, ductility, crystal lattice, dislocations, metal failure, strain hardening, solid solution, microstress, lattice defect, plastic strain, relaxation, polygonization, recrystallization, grain growth

PURPOSE AND COVERAGE: This collection of articles is intended for scientific personnel and for engineers and metals physicists; it also may be useful to students at metallurgical and machine-building vuzes. The results of study of crystal-lattice imperfections and dislocation theory of metal failure are

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presented. Contemporary concepts of the nature and mechanism of different weakening processes in metals are expounded, as well as present-day thinking concerning the effect of impurities on the kinetics of the weakening processes. The articles in this collection are principally the original results of research performed in recent years at the Institut Metallofiziki AN USSR.

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SUB CODE: ML, AP SUBMITTED: 23Aug63 NR REF SOV: 253

OTHER: 463 DATE ACQ: 17Jan64

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"APPROVED FOR RELEASE: 07/16/2001 CIA-RDP86-00513R001755620004-1

GERTSRIKEN, S.D.[deceased]; DEKHTYAR, I.Ya.; KRIVOGLAZ, M.A.; LARIKOV, L.N.; LYSAK, L.I.; NESTERENKO, Ye.G.; NOVIKOV, N.N.; SOSNINA, Ye.I.; SLYUSAR, B.F.; TIKHONOV, L.V.; TREFILOV, V.I.; CHUISTOV, K.V.; BERLIN, Ye.N., red.izd-va; DOBUZHINSKAYA, L.V., tekhn.red.

[Physical principles of the strength and plasticity of metals] Fizicheskie osnovy prochnosti i plastichnosti metallov. [By] S.D.Gertsriken i dr. Moskva, Metallurgizdat, 1963. 321 p. (MIRA 16:12)

(Physical metallurgy)

APPROVED FOR RELEASE: 07/16/2001 CIA-RDP86-00513R001755620004-1"

"APPROVED FOR RELEASE: 07/16/2001 CIA-RDP86-00513R001755620004-1

DANILENKO, V.M.; TIKHONOV, L.V.

Crystal lattice defects and the scattering of X rays. Sbor. nauch. rab. Inst. metallofiz. AN URSR no.15:3-79 '62. (MIRA 15:12)
(Crystal lattices—Defects) (X rays—Scattering)

APPROVED FOR RELEASE: 07/16/2001 CIA-RDP86-00513R001755620004-1"

"APPROVED FOR RELEASE: 07/16/2001 CIA-RDP86-00513R001755620004-1

RYABOSHAPKA, K.P.; TIKHONOV, L.V.

Deformation effects connected with the presence of characteristic dislocations in elastic anisotropy metals with a cubic symmetry lattice. Fiz. met. i metalloved. 12 no.1:3-10 Jl '61. (MIRA 14:8)

1. Institut metallofiziki AN USSR.
(Dislocations in metals) (Crystal lattices)

APPROVED FOR RELEASE: 07/16/2001 CIA-RDP86-00513R001755620004-1"

"APPROVED FOR RELEASE: 07/16/2001 CIA-RDP86-00513R001755620004-1

RYABOSHAPKA, K.P.; TIKHONOV, L.V.

Deformation effect in cold-deformed metals connected with characteristic dislocations and widening of x-ray fringes. Part 1: Elastic isotropy. Fiz. met. i metalloved. 11 no. 4:489-495 Ap '61. (MIRA 14:5)

1. Institut metallofiziki AN USSR.
(Deformations (Mechanics)) (X rays—Diffraction)

APPROVED FOR RELEASE: 07/16/2001 CIA-RDP86-00513R001755620004-1"

"APPROVED FOR RELEASE: 07/16/2001 CIA-RDP86-00513R001755620004-1

18.8200
24,7500 (1144, 1160, 1482)

25910 S/126/61/012/001/001/020
E193/E483

AUTHORS: Ryaboshapka, K.P. and Tikhonov, L.V.

TITLE: Deformation effects associated with the presence of specific dislocations in elastically anisotropic metal with the cubic crystal lattice

PERIODICAL: Fizika metallov i metallovedeniye, 1961, Vol.12, No.1, pp.3-10

TEXT: Using the general method due to J.D.Eshelby, W.T.Read, and W.Shockley (Ref.2: Acta met., 1953, 1, 251), the present authors obtained expressions for the displacement of atoms in the vicinity of edge and screw dislocations in crystals with face-centred and body-centred cubic lattice. In the frame of a model used in the authors' earlier work (Ref.1: FMM, 1961, 11, 489), formulae for the mean quadratic displacements $\langle \overline{e^2_{hkl}} \rangle^{1/2}$ were derived. Qualitative assessment of $\langle \overline{e^2_{hkl}} \rangle^{1/2}$ for copper and brass showed that the higher the elastic anisotropy of the metal the more pronounced is the effect of the orientation factor G on the magnitude of $\langle \overline{e^2_{hkl}} \rangle^{1/2}$ which is in satisfactory agreement with experimental data obtained by X-ray analysis (Ref.5: Warren B.E., Warekois E.P.,

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Acta met., 1955, 3, 473). The formulae derived by the present authors can be used for assessing the deformation effects only in the case of randomly distributed dislocations, as for instance in the case of heavily deformed materials. There are 9 references: 3 Soviet and 6 non-Soviet. The four most recent references to English language publications read as follows: Eshelby J.D., Read W.T., Schockley W. Acta met., 1953, 1, 251; Warren B.E., Warekois E.P. Acta met., 1955, 3, 473; Williamson G., Smallman R. Phil. Mag., 1956, 1, 34; Wilson A.J.C. Research., Lond., 1950, 3, 387.

ASSOCIATION: Institut metallofiziki AN UkrSSR
(Institute of Physics of Metals AS UkrSSR)

SUBMITTED: November 5, 1960

APPROVED FOR RELEASE: 07/16/2001 CIA-RDP86-00513R001755620004-1"

"APPROVED FOR RELEASE: 07/16/2001 CIA-RDP86-00513R001755620004-1

ACCESSION NR: AP5[illegible]

AUTHOR: Sogrishin, Yu. P.; Tikhonov, L. V.; Chernis, T. [illegible]

TITLE: Effect of loading technique [illegible] and mechanical properties of the D16M alloy

SOURCE: Metallovedeniye i termicheskaya obrabotka metal[illegible] [illegible], 2, [illegible], 48-5[illegible]

TOPIC TAGS: alloy structure, alloy mechanical property, impact loading, vibration loading, vibratory compression, plastic deformation, alloy hardness, D16M alloy

ABSTRACT: The authors studied the changes in the characteristics of the fine crystal structure of D16M alloy subjected to various degrees of plastic deformation under conditions of vibration, static, and impact loading. Cylindrical specimens 10 mm in diam. and 15 mm long were annealed at [illegible], and deformed by uniaxial compression along the cylinder axis. The degree of barrel-shaped distortion was approximately the same in all types of [illegible]. Hardness was measured after deformation. The specimens [illegible] specimens [illegible] statically deformed [illegible] impact [illegible]

Card 1/2

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"APPROVED FOR RELEASE: 07/16/2001 CIA-RDP86-00513R001755620004-1

L 33220-65

ACCESSION NR: AP5005106

loading. The hardness and distortion of the crystal lattice were less with vibration loading than with static loading and more than with [illegible] loading. The sizes of the crystal blocks being largest with impact [illegible] and smallest with static loading. The investigated all [illegible] loading than with static loading. Orig. art. has [illegible] and 1 figure.

ASSOCIATION: ENIKMASh

SUBMITTED: 00

NO REF SOV: 002 OTHER: 001

Card 2/2

APPROVED FOR RELEASE: 07/16/2001 CIA-RDP86-00513R001755620004-1"

"APPROVED FOR RELEASE: 07/16/2001 CIA-RDP86-00513R001755620004-1

TRUKHMANOV, B.G.; TIKHONOV, L.Ya.

Active anaphylaxis to anatoxins under conditions of changed sensibility of the organism. Trudy TomNIIVS 11:141-146 '60. (MIRA 16:2)

1. Tomskiy nauchno-issledovatel'skiy institut vaktsin i syvorotok. (ANAPHYLAXIS) (TOXINS AND ANTITOXINS)

APPROVED FOR RELEASE: 07/16/2001 CIA-RDP86-00513R001755620004-1"

"APPROVED FOR RELEASE: 07/16/2001 CIA-RDP86-00513R001755620004-1

TIKHONOV, M., (gorod Goredok, Buryat-Mongol'skaya ASSR)

It is time to prepare for the shortwave radio competitions.
Radio no.8:40 Ag '56. (MIRA 9:10)
(Radio operators--Competitions)

APPROVED FOR RELEASE: 07/16/2001 CIA-RDP86-00513R001755620004-1"

"APPROVED FOR RELEASE: 07/16/2001 CIA-RDP86-00513R001755620004-1

TIKHONOV, M., inzhener.

Maintaining drying and cleaning towers. Muk.-elev. prom. 23 no.4: 24 Ap '57. (MLRA 10:5)

1. Krasnoyarskaya krayevaya kontora Rosglavzerno.
(Grain--Drying)

APPROVED FOR RELEASE: 07/16/2001 CIA-RDP86-00513R001755620004-1"

"APPROVED FOR RELEASE: 07/16/2001 CIA-RDP86-00513R001755620004-1

SHCHUMOV, G.; TIKHONOV, M.

Supply grain-cleaning machines with a set of spare screens. Muk.-elev. prom. 22 no.3:28 Mr '56. (MLRA 9:7)

1.Krasnoyarskaya kontora Zagotserno.
(Grain--Cleaning)

APPROVED FOR RELEASE: 07/16/2001 CIA-RDP86-00513R001755620004-1"

"APPROVED FOR RELEASE: 07/16/2001 CIA-RDP86-00513R001755620004-1

LISOVSKIY, N.; TIKHONOV, M.

System of operation for newly harvested grain in Siberia. Muk.-elev. prom. 22 no.7:8-9 Jl '56. (MIRA 9:9)

1.Krasnoyarskaya kontora Zagotzerno.
(Siberia--Grain)

APPROVED FOR RELEASE: 07/16/2001 CIA-RDP86-00513R001755620004-1"

"APPROVED FOR RELEASE: 07/16/2001 CIA-RDP86-00513R001755620004-1

TIKHONOV, M.

Polishing of tubing for beds is streamlined. Prom.koop. 14 no.6:19 Je '60. (MIRA 13:7)

1. Tekhnoruk arteli "Metallist", g.Bor, Gor'kovskoy oblasti. (Metals--Finishing) (Beds and bedsteads)

APPROVED FOR RELEASE: 07/16/2001 CIA-RDP86-00513R001755620004-1"

"APPROVED FOR RELEASE: 07/16/2001 CIA-RDP86-00513R001755620004-1

PA 11T4

TIKHONOV, M.

Feb 1947

USSR/Air Force
Airplanes, High altitude

"Bombing from High Altitudes," M. Tikhonov, V. Kirillov, 6 pp

"Vestnik Vozdushnogo Flota" Vol XXIX, No 2

Largely mathematical discussion of relations between size of target, speed, altitude, etc. Illustrated with formulae and tables of operating data.

11T4

APPROVED FOR RELEASE: 07/16/2001 CIA-RDP86-00513R001755620004-1"

"APPROVED FOR RELEASE: 07/16/2001 CIA-RDP86-00513R001755620004-1

TIKHONOV, M.

Alfalfa

New species of alfalfa "Stepnaia 600." Kolkh. proizv., 12, No. 7, 1952.

Monthly List of Russian Accessions, Library of Congress October 1952 UNCLASSIFIED.

APPROVED FOR RELEASE: 07/16/2001 CIA-RDP86-00513R001755620004-1"

"APPROVED FOR RELEASE: 07/16/2001 CIA-RDP86-00513R001755620004-1

TIKHONOV, M.

BRYUKHANOV, N.; TIKHONOV, M.

Work out cost and output standards for grain dryers. Muk.-elev. prom.21 no.9:30 S'55. (MIRA 8:12)

1. Krasnoyarskaya kontora Zagotzerno
(Grain--Drying)

APPROVED FOR RELEASE: 07/16/2001 CIA-RDP86-00513R001755620004-1"

"APPROVED FOR RELEASE: 07/16/2001 CIA-RDP86-00513R001755620004-1

TIKHONOV, M.

TIKHONOV, M.

Waste heat used for hothouses. Nauka i zhizn' 22 no.2:33 F '55. (MLRA 8:3)
(Greenhouses--Heating and ventilation)

APPROVED FOR RELEASE: 07/16/2001 CIA-RDP86-00513R001755620004-1"

"APPROVED FOR RELEASE: 07/16/2001 CIA-RDP86-00513R001755620004-1

TIKHONOV, M.

Popular-science motion pictures in 1959. NTO no.2:46-47 F '59. (MIRA 12:2)

1. Direktor kinostudii "Mosnauchfil'm."
(Motion pictures in science)

APPROVED FOR RELEASE: 07/16/2001 CIA-RDP86-00513R001755620004-1"

"APPROVED FOR RELEASE: 07/16/2001 CIA-RDP86-00513R001755620004-1

TIKHONOV, M.

(MLRA 6:6)

MK-251. Nauka i zhizn' 20 no.6:14 Je '53. (Concrete, Reinforced)
(Columns, Iron and steel)

APPROVED FOR RELEASE: 07/16/2001 CIA-RDP86-00513R001755620004-1"

"APPROVED FOR RELEASE: 07/16/2001 CIA-RDP86-00513R001755620004-1

TIKHONOV, M.

Mechanical cultivation of cabbage. Nauka i zhizn' 21 no.1:36 Ja '54. (MLRA 7:1)

(Cabbage) (Agricultural machinery)

APPROVED FOR RELEASE: 07/16/2001 CIA-RDP86-00513R001755620004-1"

"APPROVED FOR RELEASE: 07/16/2001 CIA-RDP86-00513R001755620004-1

L 08859-67 EWT(1) SSTB DD/GD

ACC NR: AT6036673 SOURCE CODE: UR/0000/66/000/000/0365/0366

AUTHOR: Tikhonov, M. A.

ORG: none

TITLE: Effect of excess interal pressure oxygen breathing on the elastic properties of the lungs [Paper presented at the Conference on Problems of Space Medicine held in Moscow from 24-27 May 1966]

SOURCE: Konferentsiya po problemam kosmicheskoy meditsiny, 1966. Problemy kosmicheskoy meditsiny. (Problems of space medicine); materialy konferentsii, Moscow, 1966, 365-366

TOPIC TAGS: oxygen excess pressure, hyperoxia, pulmonary elasticity, tissue physiology

ABSTRACT:

The effect of increased intrapulmonary pressure on the elastic properties of the lungs were studied in 38 dogs under morphine-urethane anesthesia. Tensile strength of lung tissue expressed in mm H_2O was taken as an index of elasticity.

The elastic properties of the lung were studied at intrapulmonary

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ACC NR: AT6036673

pressures up to 300 mm H_2O without counterpressure and up to 600 mm H_2O using compensating coveralls.

Immediately after pressure breathing without counterpressure, elasticity was 60% higher in all animals, returning to initial levels within 2.5 hrs.

This increase in elasticity and dynamics of restoration to the initial level were approximately identical for animals regardless of length of exposure (5, 30, or 60 min).

In the experiments with external counterpressure, if was found that elasticity of the lungs decreased by 15%. With excess pressure two times greater than that used without counterpressure, elasticity increased only 17% and returned to the initial level within 30 min.

Excess pressure breathing opens up physiological atelectases and stretches already functioning alveoli, which increases the number of ventilated alveoli and the volume of the lungs.

Following excess pressure, a period of slightly increased lung capacity

Card 2/3

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L 08559-67

ACC NR: AT6036673

and more numerous and capacious functioning alveoli persists for some time.

The greater number of open alveoli increases the elasticity of the lungs.

Alveolar geometry also affects elasticity: surface tension of the fluid covering the alveolus decreases as alveolus radius increases, resulting in increased elasticity of the lungs.

Surface tension increasing with decreasing volume of the inflated alveolus collapses the alveolus when a certain point is reached. Thus physiological atelectases are restored and pulmonary elasticity returns to the initial level. Thus, increased pulmonary elasticity following excess pressure breathing is basically a hysteresis phenomenon due to changes in the volume of the lungs, the number of functioning alveoli, and alveolar surface tension. It is probably also to some extent the result of an inverse decrease in the elasticity of pulmonary tissue structures. [W.A. No. 22; ATD Report 66-116]

SUB CODE: 06 / SUBM DATE: 00May66

Card 3/3 egk

APPROVED FOR RELEASE: 07/16/2001 CIA-RDP86-00513R001755620004-1"

"APPROVED FOR RELEASE: 07/16/2001 CIA-RDP86-00513R001755620004-1

TIKHONOV, M.A., inzh.

Technological information specialist in a metal-cutting tool shop. Opyt. rab. po tekh. inform. i prop. no.3:19-20 '63. (MIRA 16:12)

1. Byuro ratsionalizatsii, izobretatel'stva i tekhnicheskoy informatsii Saratovskogo zavoda.

APPROVED FOR RELEASE: 07/16/2001 CIA-RDP86-00513R001755620004-1"

"APPROVED FOR RELEASE: 07/16/2001 CIA-RDP86-00513R001755620004-1

TIKHONOV, M.D.

TIKHONOV, M. D., G. I. IGNATSIUS, and I. F. SMOL'IANINOV.

Bombometanie; uchebnik dlia shkol i uchilishch voennykh vozdushnykh sil RKKA. Moskva, Gos. voen. izd-vo, 1939. 263 p., diagrs.

Title tr.: Bombing; textbook for military aviation schools of the Red Army.

UG630.T5

SO: Aeronautical Sciences and Aviation in the Soviet Union, Library of Congress, 1955.

APPROVED FOR RELEASE: 07/16/2001 CIA-RDP86-00513R001755620004-1"

"APPROVED FOR RELEASE: 07/16/2001 CIA-RDP86-00513R001755620004-1

TIKHONOV, M. D., G. I. IGNATSIUS and I. E. SMOL'IANINOV.

Bombometanie; uchebnik dlia shkol i uchilishch voennykh vozdushnykh sil RKKA. Moskva, Gos. voen. izd-vo, 1939. 263 p., diagrs.
Title tr.: Bombing; textbook for military aviation schools of the Red Army.

UG630.T5

SO: Aeronautical Sciences and Aviation in the Soviet Union, Library of Congress, 1955.

APPROVED FOR RELEASE: 07/16/2001 CIA-RDP86-00513R001755620004-1"

"APPROVED FOR RELEASE: 07/16/2001 CIA-RDP86-00513R001755620004-1

TIKHONOV, M. D.

Bombardment; textbook for air force schools. Moskva, Gos. voen. izd-vo, 1939. 263 p. (50-47601)

UG630.T5

APPROVED FOR RELEASE: 07/16/2001 CIA-RDP86-00513R001755620004-1"

"APPROVED FOR RELEASE: 07/16/2001 CIA-RDP86-00513R001755620004-1

LEONT'YEVSKIY, K.Ye., kand. tekhn. nauk; TIKHONOV, M.I., inzh.; CHUDNOVSKAYA, M.A.

Effect of surface-active substances on oil yield in pressing. Masl.-zhir. prom. 28 no.10:17-20 O '62. (MIRA 16:12)

1. Vsesoyuznyy nauchno-issledovatel'skiy institut zhirov.

APPROVED FOR RELEASE: 07/16/2001 CIA-RDP86-00513R001755620004-1"

"APPROVED FOR RELEASE: 07/16/2001 CIA-RDP86-00513R001755620004-1

BEZUGLOV, I.Ye.; BOCHARNIKOV, V.M., inzh.; Prinimali uchastiye: TIKHONOV, M.I.; LODZYATO, V.V.; RENESLATSIS, L.P. [Reneslacis, L.]

Some characteristics of the oil extraction system equipped with a "Lurgi 100" continuous line. Masl.-zhir.prom. 30 no.2:31-32 F '64. (MIRA 17:3)

1. Vsesoyuznyy nauchno-issledovatel'skiy institut zhirov (for Bezuglov, Bocharnikov, Tikhonov, Lodzyato). 2. Liyepayskiy masloekstraktsionnyy zavod (for Reneslatsis).

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"APPROVED FOR RELEASE: 07/16/2001 CIA-RDP86-00513R001755620004-1

DOTSENKO, G.I. [Dotsenko, H.I.]; VOYT, S.K., kand.sel'skokhoz.nauk; OZEROV, V.I., kand.sel'skokhoz.nauk; TIKHONOV, M.I., kand. sel'skokhoz.nauk; VAKAL, L.S., nauchnyy sotrudnik; VISHNEVSKAYA, T.G. [Vyshnevs'ka, T.H.], nauchnyy sotrudnik; KRATYUK, V.I., nauchnyy sotrudnik; YAKOVENKO, M.S., nauchnyy sotrudnik; LEVIN, D.A., agronom; GALAT, B.F. [Halat, B.F.], zootekhnik; PETROVSKIY, O.M. [Petrovs'kyi, O.M.], red.; LIMANOVA, M.I., tekhn.red.

[Management system on a collective farm; the Dzerzhinskii Artel, Sumy Province] Systema vedeniia hospodarstva u kolhospi; artil' imeni Dzerzhyns'koho Sums'koi oblasti. Kharkiv, Kharkivs'ke knyzhkove vyd-vo, 1960. 77 p. (MIRA 14:4)

1. Nachal'nik kolkhoza imeni Dzerzhinskogo, Sumskogo rayona, Sumskoy oblasti (for Dotsenko).
(Sumy Province--Farm management)

APPROVED FOR RELEASE: 07/16/2001 CIA-RDP86-00513R001755620004-1"

"APPROVED FOR RELEASE: 07/16/2001 CIA-RDP86-00513R001755620004-1

LEONT'YEVSKIY, K.Ye., kand.tekhn.nauk; TIKHONOV, M.I.; ZENIN, N.A.

Operating experience with two-stage screw presses. Masl.-zhir. prom. 26 no.11:38-40 N '60. (MIRA 13:11)

1. Vsesoyuznyy nauchno-issledovatel'skiy institut zhirov (for Leont'yevskiy, Tikhonov). 2. Belorechenskiy maslozavod (for Zenin).
(Oil industries--Equipment and supplies) (Power presses)

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"APPROVED FOR RELEASE: 07/16/2001 CIA-RDP86-00513R001755620004-1

TIKHONOV, M.K.

AID

STRUCTURE AND PHYSICS OF THE ATMOSPHERE

3.5-114

551.510.41:620.19

Tikhonov, M.K., Korrozi a metallov v morskom vozdukhe. (Corrosion of metals in sea air.) Akademiia Nauk SSSR. Morskoi Gidrofizicheskii Institut, Trudy, 1:75-82, 1948. 6 figs., tables, 10 refs. Mh-Mh- Quantitative measurements of the intensity of corrosion of metals (iron and iron alloys) in sea air are described, tabulated and shown graphically and the effects shown in photographs. Methods of investigation are described in detail. Both mechanical and chemical (or electro-chemical) effects are considered, as well as area and shape of metal. An important study for meteorological instrumentation and installations at sea or at coastal stations. Subject Headings: 1. Corrosion 2. Sea air damage.-M.R.

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"APPROVED FOR RELEASE: 07/16/2001 CIA-RDP86-00513R001755620004-1

TIKHONOV, M.K.

Corrosion of concrete reinforcements. Trudy MGI 10:82-93 '57.
(Reinforced concrete--Corrosion) (MIRA 11:3)

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3(7) PHASE I BOOK EXPLOITATION SOV/2131

Akademiya nauk SSSR. Morskoy gidrofizicheskiy institut

Termika morya. Khimiya morya (Thermal Regime of the Sea. Chemistry of the Sea) Moscow, AN SSSR, 1958. 145 p. (Series: Its: Trudy, tom 13) Errata slip inserted. 1,300 copies printed.

Resp. Ed.: A.G. Kolesnikov, Doctor of Physical and Mathematical Sciences; Ed. of Publishing House: L.K. Nikolayeva; Tech. Ed.: N.P. Yegorova.

PURPOSE: This collection of articles is intended for geophysicists, hydrophysicists, and oceanographers.

COVERAGE: These articles deal with problems in the physics and chemistry of sea water. Individual papers treat the turbulent thermal conductivity and heat exchange in sea water, the pulsations in air temperature, the salinity of the Black Sea, the determination of calcium, magnesium, and copper in sea water, and the determination of sodium in atmospheric precipitates. Figures, tables, and graphs accompany the articles. There are 121 references: 92 Soviet, 18 English, 8 German, 2 French, and 1 Swedish.

Bysova, N.L. Non-Stationary Liquid Exchange Between Two Reservoirs of Different Temperatures 78

Shopintsev, B.A., F.A. Gubin, R.V. Vorob'eva, and O.A. Vershinina. Main Components in the Salt Composition of Black Sea Water and Problems of Water Circulation 89

Shopintsev, B.A. A Study of the Composition of Suspended Substances and Colored Organic Compounds in the Azov and Black Seas 113

Shopintsev, B.A., and V.V. Kabanov. An Integrated Method for Determining Calcium and Magnesium in Sea Waters 130

Tikhonov, N.K., and V.K. Zhavoronkina. The Problem of Determining Copper in Sea Water 137

Zhavoronkina, T.K., and V.K. Zhavoronkina. Determination of Sodium in Air Precipitates by the Spectral Method 143

AVAILABLE: Library of Congress

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8-11-59 (8)

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"APPROVED FOR RELEASE: 07/16/2001 CIA-RDP86-00513R001755620004-1

TIKHONOV, M.K.

ca

9

Action of flotation reagents on the charge in suspensions of mineral particles. M. K. Tikhonov. *Bull. acad. sci. U. R. S. S.* 1935, 239-53 (in English 253-4).—An alk peat-tar-oleic acid soln. does not recharge an apatite suspension. The charge on quartz is reversed with both lime and oleic acid, with adsorption of the acid and coagulation of muds by lime. K ethylxanthate changes the sign on purified, but not on unpurified, pyrite. Colloidal quartz muds are changed and adsorbed by pyrite [illegible] when treated with lime. The electrostatic charges, however, do not account for all flotation phenomena.

Gregg M. Evans

ASM-SLA METALLURGICAL LITERATURE CLASSIFICATION

APPROVED FOR RELEASE: 07/16/2001 CIA-RDP86-00513R001755620004-1"

"APPROVED FOR RELEASE: 07/16/2001 CIA-RDP86-00513R001755620004-1

TIKHONOV, M.K.

PROCESSES AND PROPERTIES INDEX

Corrosion of iron at the boundary: metal-liquid-gas and metal-liquid-liquid. M. K. Tikhonov. *Compt. rend. acad. sci. U. R. S. S.* 17, 315-17(1937)(in English).

Corrosion in a drop of an electrolyte depends on the choice of the electrolyte and the conditions of expt. A soln. of corrosive sublimate can be applied as a strong corroding agent in the study of the resistance properties of oxide-adsorption films by the drop method. Corrosion of iron in a drop of sublimate soln. under atm. conditions proceeds in the same degree both in the center and at the periphery of the drop. Corrosion of iron in a drop of sublimate soln. at the metal-liquid-liquid boundary proceeds essentially in the center of the drop which is in accord with Evans differential aeration theory. Seven references.

J. N. Lynn

ASM-SLA METALLURGICAL LITERATURE CLASSIFICATION

APPROVED FOR RELEASE: 07/16/2001 CIA-RDP86-00513R001755620004-1"

"APPROVED FOR RELEASE: 07/16/2001 CIA-RDP86-00513R001755620004-1

TIKHONOV, M.K.

Ca

2

Kinetics of solution of iron in hydrochloric and sulfuric acids in the presence of coal and quartz. M. K. Tikhonov. *Vestnik Metalloprom.* (U. S. S. R.) 17, No. 12, 96-101 (1937).—Expts. on soln. of Fe in 6, 8, 10 and 12 *N* H_2SO_4, with or without addns. of powd. quartz or coal, were made at 78.4°, and in 3 and 5 *N* HCl, with or without these addns., at 50°. The Fe used analyzed C 0.09, Mn 0.64, Si 0.017, P 0.015, S 0.037 and Ni 0.25. The addn. of coal or quartz to the acid at first decreased the rate of soln. of Fe, owing to the formation of a protective coating on the metal, but later on the rate increased with time.
S. L. Madorsky

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TIKHONOV, M.K.

PROCESSES AND PROPERTIES INDEX

Effect of the degree of dispersion of a solid on the kinetics of dissolving of iron. M. K. Tikhonov. *Vestnik Metallopromy.* 18, No. 4, 64-8(1938). This problem was investigated in connection with the corrosion of structural steel in damp air in the presence of coal dust deposited on the steel. Samples of Fe were dissolved in H_2SO_4 in concns. of 4, 6, 8, 10 and 12 N at 50°, in presence of colloidal C of different particle sizes up to 50 μμ. It was found that the larger the colloidal C particle the greater the rate of soln. of the Fe. Seven references. S. L. Madorsky

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