SOV-26-58-3-32/51

AUTHOR: Grin, A.M.

TITLE: The Third All-Union Hydrological Congress (Tretiy vsesoyuznyy gidrologicheskiy s"yezd)

PERIODICAL: Priroda, 1958, Nr 3, pp 109-110 (USSR)

ABSTRACT: The Third Hydrological Congress convened in Leningrad in October 1957, assembled about 1,500 delegates from over 300 institutes and installations of the Soviet Bloc including Red China and Mongolia. A total 450 papers dealing with the achievements in the field of hydrology since the beginning of Soviet rule were delivered to the plenary sessions. Over 90 papers were devoted to prognoses and calculations of the flow. About 40 papers were presented by invited guests. Special attention was paid to problems of sub-soil water utilization and hydrological engineering.

ASSOCIATION: Institut geografii AN SSSR-Moskva (Institute of Geography of the AS USSR-Moscow)

1. Hydrology--USSR

Card 1/1

AUTHOR: Grin, A.M. SOV-10-58-4-7/28

TITLE: The Geographical Peculiarities of Small Rivers in the Patom Highlands (Geograficheskiye osobennosti malykh rek Patomskogo nagor'ya)

PERIODICAL: Izvestiya Akademii nauk SSSR - Seriya geograficheskaya, 1958, Nr 4, pp 60-63 (USSR)

ABSTRACT: The author gives a detailed description of the Patom Highlands, their climate and river system. His observations are based on his studies conducted in this region in 1954. The main points of interest are the construction of artificial river beds and the creation of artificial ice layers to provide sufficient water for industrial purposes during the warm season. There are 2 photographs, 2 graphs and 1 table.

ASSOCIATION: Institut geografii AN SSSR (Institute of Geography of the AS USSR)

1. Inland waterways--Development

Card 1/1

SOV/10-59-2-25/29

3(5)

AUTHOR: Grin A.M.

TITLE: The Defense of Two Climatological Theses in the Institute of Geography of the AS of the USSR.

PERIODICAL: Izvestiya Akademii nauk SSSR, Seriya geograficheskaya, 1959, Nr 2, pp 155-156,(USSR)

ABSTRACT: This is a short report of the successful defense of two candidate theses maintained on 25 November 1958 by the researchers of the section of climatology of the Institut geografii (Institute of Geography) of the AS of the USSR, S.S. Savina and Yu. V. Spiridonova. In her work "Gidrometeorologicheskiy pokazatel' zasukhi i yego rasprodeleniye po Yevropeyskoy territorii SSSR" ("Hydrometeorological Drought Index and its Distribution over the European Territory of the USSR") S.S. Savina proposed to use as drought index, the evaporation deficit equal to the difference between evaporability and actual

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The Defense of Two Climatological Theses in the Institute of Geography of the AS of the USSR.

evaporation from the surface of the vegetational cover. The thesis of Yu.V. Spiridonova, "Sopryazhennost' tsirkulyatsiy v razlykh chastyakh severnogo polushariya" (The Linkage of Circulations in Various Parts of the Northern Hemisphere") is dedicated to the investigation of the connections between the main links of the macro-processes in the atmosphere. Yu.V. Spiridonova succeeded in analyzing the character of the territorial distribution of zonal and meridional processes according to the seasons of the year, and the character of their perennial oscillations. As a result five areas could be distinguished on the northern hemisphere, called natural synoptic districts, two of which appear as oceanic and three as belonging to the continent. The theses were elaborated under the guidance of B.L. Dzerdzeyevskiy.

Card 2/2

3(5) SOV/10-59-3-12/32

AUTHOR: Grin, A.M.

TITLE: Changes in the Run-Off Dynamics of the Syr-Dar'ya River in Connection with the Development of Irrigation in the Fergana Valley.

PERIODICAL: Izvestiya Akademii nauk SSSR, Seriya geograficheskaya, 1959 Nr 3, pp 89-93 (USSR)

ABSTRACT: The author analyzes data concerning flow quantities of the Syr-Dar'ya river on its arrival in the Fergana valley and its exit from that area (data collected since 1926). The hydrological station "Zaporozhskaya" is mentioned by name. Although an extensive irrigation network has been built in the valley (639,000 hectares of irrigated fields in 1939, 931,000 in 1953) the yearly water input at the upper part of the valley is almost equal to the yearly output at the lower part of that area. The author explains the paradoxical phenomenon by stating that since the river is the only drain line of the entire valley a great deal of water used for irrigation purposes naturally comes slowly back into the

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Changes in the Run-Off Dynamics of the Syr-Dar'ya River in Connection with the Development of Irrigation in the Fergana Valley

river. There are 3 graphs, 2 tables and 2 Soviet references.

ASSOCIATION: Institut geografii AN SSSR (the Institute of Geography, AS USSR).

GRIN, A.M.

Tree belts and the runoff of snow water. Priroda 49 no.9:98-100 S '60. (MIRA 13:10)

1. Institut geografii AN SSSR, Moskva.
(Windbreaks, shelterbelts, etc.) (Runoff)

GRIN, A.M.

Soil moisture and snow water runoff. Priroda 49 no.10:116-117 O '60.
(MIRA 13:10)

1. Institut geografii AN SSSR, Moskva.
(Soil moisture) (Runoff)

G.III, A.M.

Special features of the formation of the surface runoff on various agricultural lands of the forested steppe in European Russia. Izv. AN SSSR. Ser. geog. no.1:95-103 Ja-F '61. (MIRA 14:2)

1. Institut geografii AN SSSR.
(Russia, Northwestern--Runoff)

GRIN, A.M., nauchnyy sotrudnik, kand.geograf.nauk

Project "Inga." Nauka i zhizn' 28 no.1:65-67 Ja '61.
(MIRA 14:1)

1. Institut geografii AN SSSR.
(Congo River--Water resources development) (Peace)

GRIN, A.M., nauchnyy sotrudnik

Pechora River will flow into the Caspian Sea. Nauka i zhizn' 28 no.5:13-15 My '61. (MIRA 14:6)

1. Institut geografii AN SSSR.
(Pechora River)
(Caspian Sea)

L'VOVICH, M.I.; BASS, S.V.; GRIN, A.M.; DREYYER, N.N.; KUPRIYANOVA, Ye.I.

The water balance of the U.S.S.R. and prospects for its transformation. Izv. AN SSSR. Ser. geog. no.6:36-46 N-D '61. (MIRA 14:12)

1. Institut geografii AN SSSR.
(Water resources development)

LVOVICI, M.I. [L'vovich, M.I.]; BASS, S.V.; GRIN, A.M.; DREIER, N.N.; [illegible] M.M.]; KUPREANOVA, E.I. [Kupriyanova, Ye.I.]

Hydrologic balance of the U.S.S.R., and prospects of its transformation. Analele geol geogr 16 no.3:124-136 Jl-Ag '62.

GRIN, A.M.

Seminar on the evaluation of underground drainage in rivers.
Izv.AN SSSR.Ser.geog. no.2:156-158 Mr-Ap '63. (MIRA 16:4)
(Runoff)

GRIN, A.M.; DREYYER, N.N.; L'VOVICH, M.I., doktor geograf. nauk

Water represents the wealth of a country; water balance and its regulation. Priroda 51 [i.e. 52] no.5:36-43 '63. (MIRA 16:6)

1. Institut geografii AN SSSR, Moskva.
(Water resources development)

GRIN, A.M.

Water balance of the U.S.S.R. and its regulation. Izv. AN SSSR. Ser. geog. no.6:129-131 N-D '63. (MIRA 17:1)

GRIN, A.M.

Effect of the underlying surface on the formation of spring surface runoff and washing of soil in Kursk Province. Sbor.rab.Kursk. gidromet.obzorv. no.2:89-97 '64. (MIRA 17:9)

GRIN, A.M.; NAZAROV, G.V.

Characteristics of soil permeability to water in the forest steppe zone of the European U.S.S.R. Izv. Vses. geog. obva 97 no.2:184-189 Mr-Ap '65. (MIRA 18:5)

GRIN, A.M.; NAZAROV, G.V.

Comparative characteristics of the percolative capacity of soils in the forest-steppe zone of the European part of the U.S.S.R. Pochvovedenie no.3:47-52 Mr '65. (MIRA 18:6)

1. Institut geografii AN SSSR i laboratoriya ozerovedeniya Leningradskogo gosudarstvennogo universiteta.

BASS, S.V., kand. geograf.nauk; GRIN, A.M., kand. geograf. nauk; NAZAROV, G.V., kand. geograf. nauk

Once more on the calculations of changes in streamflow under the influence of agriculture. Meteor. i gidrol. no.8:47-50 Ag '65. (MIRA 18:7)

1. Institut geografii AN SSSR i Laboratoriya ozerovedeniya Leningradskogo gosduarstvennogo universiteta.

GRIN, A.M. (Moskva)

Ice on the rivers of Eastern Siberia. Priroda 54 no.12:126-127 D '65. (MIRA 18:12)

GRIN', A.V.

Internal Friction in Deformed Alpha-Aluminium-Magnesium Alloys. A. V. Grin' and V. A. Pavlov (*Fizika Metallov i Metallovedenie*, 1956, 3, (1) 170–180).—[In Russian]. A letter. Measurement of the damping of oscillations in Al alloys contg. 0–1·0 wt.-% Mg as a function of temp. shows max., one of which is associated with the movement of atoms of Mg. G. and P. plot the temp. at which this max. occurs as a function of compn.—the temp. rises rapidly in the range 0·0·2% Mg then flattens out, becoming completely level by 0·5% Mg. This can be interpreted on a model in which the activation energy for diffusion of Mg is raised by trapping of Mg on dislocation lines (Cottrell atmospheres). Alternatively, a diffusion mechanism due to Arkharov (*Zhur. Tekhn. Fiziki*, 1954, 24, 375) will explain the results—in this theory account is taken of the possibility that diffusion in solids may involve the movement of complexes of atoms and not only of single atoms as in gaseous or liq. diffusion. There is nothing in the experimental results to choose between the theories, and both mechanisms may play a part.—A. F. B.

GRIN', A. V. Cand Phys-Math Sci -- (diss) "Study of the phenomena of inelasticity in alpha-solid solutions of aluminum and magnesium." Sverdlovsk, 1957. 10 pp (Acad Sci USSR. Ural Affiliate), 100 copies (KL, 6-58, 99)

GRIN', A. V., and PAVLOV, V. A.

"Internal Friction in Deformed Aluminum-Magnesium Alloys," p. 184-192, in the book Research in the Physics Solids, Moscow, Izd-vo ANSSSR, 1957. 277 p. Ed. Bol'shanina, M. A.; Tomsk Universitet, Siberskiy fiziko-tekhnicheskiy institut.

Personalities: Veynberg, B. P.; Kuznetsov, V. D., and Ioffe, A. F., Materials used: Alloy prepared from aluminum AV000 and electrolytic magnesium. There are 6 figures and 18 references, 9 of which are Soviet.

This colle ction of articles is meant for metallurgical physicists and for engineers of the metal-working industry. This book contains results of research in the field of failure and plastic deformation of materials, mainly of metals. Problems of cutting, abrasion, friction, and wear of solid materials (metals) are discussed.

SOV/137-58-8-17716

Translation from: Referativnyy zhurnal, Metallurgiya 1958 Nr 8 p 217 (USSR)

AUTHORS: Pavlov, V. A., Gaydukov, M. G., Grin', A. V., Pereturina, I. A.

TITLE: The Effect of Static Distortions of the Crystal Lattice on the Mechanical Properties of Alloys of Solid Solutions of Aluminum With Magnesium (Vliyaniye staticheskikh iskazheniy kristallicheskoy reshetki na mekhanicheskiye svoystva splavov α-tverdogo rastvora alyuminiya s magniyem)

PERIODICAL: V sb.: Issled. po zharoprochn. splavam. Vol. 2. Moscow, AN SSSR, 1957, pp 257-265

ABSTRACT: Investigations performed dealt with the effect of static distortions of the crystal lattice on the mechanical properties of an α-solid solution of Al-Mg (0.01-2% Mg) the cohesive forces in which are independent of the concentration of the solid solution. In studying the relationship between E and the temperature, it was established that E and G do not depend of the concentration within a relatively wide range of temperatures, 20-700°C. The structure of alloys which had been deformed as well as the processes occurring during deformation were studied by means of investigation of the internal friction (IF)

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The Effect of Static Distortions of the Crystal Lattice (cont.)

within plastically deformed alloys. The IF was determined at torsional vibrations with a frequency of 1 cps. The IF graph for pure Al exhibits one maximum at approximately 250°, whereas the IF graphs of alloys show two maxima at 130° and at 250°. In the recrystallized state, the alloys exhibit one maximum at 300°, a condition indicative of relaxation along the grain boundaries. The maximum IF point, corresponding to 250° and situated in the region of recrystallization (R) temperatures, is governed by the viscous behavior of the slip lines. In the light of dislocation theory, this maximum is attributable to the dispersion of energy connected with the motion of dislocations (D) under the influence of external stresses. The IF maximum at 130° is attributable to the diffusion of Mg in alloys which have been deformed. As the concentration of Mg in the solid solution is increased, this maximum is displaced toward higher temperatures (up to 200°). The energy of activation of the diffusion of Mg throughout deformed alloys increases with increasing concentrations of Mg. In alloys which have been deformed and which exhibit static distortions, the additives are unevenly distributed throughout the volume, a condition which, as shown by experiments, significantly affects the kinetics of plastic deformation, recovery, and recrystallization. In the light of the dislocation theory, the increase in R temperature is explained by the formation of clouds of Mg atoms around the D's with resulting reduction

SOV/137-58-8-17716

The Effect of Static Distortions of the Crystal Lattice (cont.)

in the mobility of the latter. Bibliography: 18 references See also RZhMet. 1958; Nr 3, abstract 5868.

L. G.

1. Aluminum-magnesium alloys--Mechanical properties
2. Crystals--Distortion 3. Crystals--Lattices

Card 3/3

1. Grin', A.V.

AUTHOR: Grin', A.V. and Pavlov, V.A. 115

TITLE: Internal friction of deformed alloys of aluminium with magnesium. (Vnutrenneye treniye deformirovannykh splavov alyuminiya s magniem.)

PERIODICAL: "Fizika Metallov i Metallovedenie", (Physics of Metals and Metallurgy), 1957, Vol.IV, No.1 (10), pp.103-111 (U.S.S.R.)

ABSTRACT: The temperature dependence of the internal friction of deformed alloys of aluminium with magnesium was investigated. A new maximum was detected, which is attributed to the diffusion of magnesium, and it is shown that this maximum is displaced to higher temperatures and that the activation energy of magnesium diffusion increases with increasing concentration of magnesium in solid solution. The displacement of the maximum of internal friction is explained by the complication of the elementary act of diffusion as a result of the non-uniform distribution of magnesium in the deformed solid solution and formation of magnesium atom clouds around non-uniformities of the crystal lattice. The authors considered the study of the diffusion in deformed aluminium-magnesium alloys of interest since, with increasing magnesium concentration, the inter-atomic bond forces do not change but considerable distortions occur in the crystal lattice which are caused by the magnesium atoms. The specimens used were 0.9 mm dia. and 300 mm long

Internal friction of deformed alloys of aluminium with magnesium. (Cont.)

wire deformed at room temperature by drawing with a reduction of 90%. The internal friction was measured in the case of slow furnace heating at a rate of about 50 °C/hr. The measured temperature dependence of the internal friction is plotted in the graphs, Figs. 1 - 5; Fig. 6 gives the dependence of the position of the maximum of internal friction as a function of the magnesium content; Fig. 7 gives the dependence of the recrystallisation temperature on the magnesium concentration. The graph, Fig. 8, shows the dependence of the activation energy of diffusion of magnesium as a function of the magnesium concentration in the solid solution. The temperature dependence of internal friction due to distortions in the crystal lattice, which are caused by the plastic deformation, do not suffer appreciable changes during transition through the recrystallisation temperature, and this indicates that the maximum of internal friction is caused by such distortions in the crystal lattice which do not cease during recrystallisation. It was found that an increased concentration of magnesium also changes the curve of internal friction and this leads to the assumption that the quantity of the most mobile distortions decreases with increasing magnesium content. 8 graphs, 18 references, 10 of which are Russian. Institute of Metal Physics, Ural Branch,Ac.Sc. Recd.Jul.9,1956.

AUTHOR: Grin', A. V. 126-2-30/30

TITLE: Internal friction in recrystallised aluminium-magnesium alloys. (Vnutrenneye treniye v rekristallizovannykh splavakh alyuminiya s magniyem).

PERIODICAL: "Fizika Metallov i Metallovedeniye" (Physics of Metals and Metallurgy), Vol.IV, No.2, 1957, pp.383-384 (USSR).

ABSTRACT: The temperature dependence was investigated of the internal friction of recrystallised α-solid solutions of Mg and Al by means of low frequency torsional oscillations. The investigated alloys contained 0.01, 0.05, 0.5, 1 and 2 wt.% of Mg. For obtaining the necessary grain size all the alloys were annealed at various temperatures with an approximately equal heating speed. The measurements have shown that for low Mg concentrations (0.01 and 0.05%) the curves have only a single maximum at about 300 C and this is attributed to the tough properties of the grain boundaries in the metal manifesting themselves. The dependence of this maximum on the grain size is similar to that observed by Ke, T.S. Phys. Rev.,1947,71,533; 1947,72,41). Alloys containing 0.5 and 1% Mg show an additional maximum at about 380 C, whereby at 2% Mg the second maximum ceases to exist. In this case the influence of the grain size on the internal friction also has a more complicated character.

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Internal friction in recrystallised aluminium-magnesium alloys. (Cont.) 126-2-30/30

Earlier the existence of two maxima was observed on recrystallised Au of 99.998% purity and this was explained by various stages of recrystallisation (Mash D.R. and Hall, L.D. Journ. of Metals, 1953, 5, 937). However, data obtained by the author of this paper indicates that the occurrence of a second maximum should be attributed to relaxation stresses along the boundaries of the blocks of the structural mosaic. It is known from literary sources that alloying with Al leads to an intensive decrease of the block dimensions after deformation and also of the speed of growth of the blocks during subsequent heating. Thus, if Al is alloyed with Mg it is possible to obtain in the recrystallised material a large quantity of boundaries of mosaic blocks which give a maximum on the internal friction curve. Regarding the influence of the Mg concentration on the investigated processes of stress relaxation, the following can be stated: reduction of the level of the maximum of internal friction along the grain boundaries was observed; in an alloy containing 0.5% Mg this maximum drops faster with increasing grain sizes than in the case of 0.01% Mg content; the second maximum ceases to exist on increasing

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Internal friction in recrystallised aluminium-magnesium alloys. (Cont.) 126-2-30/30

the Mg content to 2%. The enumerated facts are satisfactorily explained by means of the theory of intercrystallite internal adsorption developed by V. I. Arkharov. (Trudy Inst. Fiz.Met.,,U.F.A N,USSR,1947,No.8,p.54).The author expresses his thanks to V. A. Pavlov for his assistance and advice. (Note: This is not an abstract but a full translation).

There are 3 references, one of which is Slavic.

SUBMITTED: January 4, 1957.

ASSOCIATION: Institute of Metal Physics, Ural Branch, Ac.Sc. USSR. (Institut Fiziki Metallov, Ural'skogo Filiala AN SSSR).

AVAILABLE:

Card 3/3

AUTHOR: Grin', A.V. 126-3-32/34

TITLE: Influence of magnesium on the internal friction along the boundaries and the blocks of the structural mosaic of Al-Mg alloys. (Vliyaniye magniya na vnutrenneye treniye po granitsam zeren i blokam strukturnoy mozaiki v splavakh alyuminiya s magniyem).

PERIODICAL: "Fizika Metallov i Metallovedeniye" (Physics of Metals and Metallurgy), 1957, Vol.4, No.3, pp. 561-563 (U.S.S.R.)

ABSTRACT: In an earlier paper (5) the author published results on the temperature dependence of internal friction in recrystallised Al-Mg alloys and in this paper new data are given on the influence of Mg on the relaxation processes in this state. The Mg concentration varied between 0.1 to 2 wt.%, the frequency of measurements was 1.5 c.p.s. The internal friction was measured after cooling down of the specimen together with the furnace to room temperature. The graph, Fig.1, gives the internal friction as a function of temperature for alloys containing 0.01, 0.05, 0.5, 1 and 2% Mg for equal grain sizes of 0.15 mm; for low Mg concentrations (up to 0.05%) only one maximum can be observed which is located between 300 and 320 C and is caused by the fact that the tough properties of the grain boundaries in

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Influence of magnesium on the internal friction along the boundaries and the blocks of the structural mosaic of Al-Mg alloys. (Cont).

the metals manifest themselves. Alloys containing 0.5 and 1% Mg have a second maximum at about 380 C. Fig.2 gives the influence of the grain size on the internal friction in an alloy containing 0.01% Mg, whilst Fig.3 gives the same relation for an alloy containing 0.5% Mg, whilst Fig.4 gives the relation between the maximum value at about 300 C and the Mg concentration for a grain size of 0.15 mm. It is concluded from the results obtained by measuring the internal friction that Mg is horophilic relative to aluminium. There are 4 figures and 6 references, 2 of which are Slavic.

Card 2/2

SUBMITTED: December 20, 1956.

ASSOCIATION: Institute of Metal Physics Ural Branch of the Ac.Sc., U.S.S.R. (Institut Fiziki Metallov Ural'skogo Filiala AN SSSR).

AVAILABLE: Library of Congress

126-5-3-14/31

AUTHORS: Grin', A.V., Pavlov, V. A. and Pereturina, I. A.

TITLE: Influence of Static Distortions of the Crystal Lattice on the Mechanical Properties of Aluminium-Magnesium Alloys (Vliyaniye staticheskikh iskazheniy kristallicheskoy reshetki na mekhanicheskiye svoystva splavov alyuminiya s magniyem) I. Dependence of the Yield Point and the Ultimate Strength on the Temperature and the Speed of Deformation (Zavisimost' predela tekuchesti i vremennogo soprotivleniya ot temperatury i skorosti deformirovaniya)

PERIODICAL: Fizika Metallov i Metallovedeniye, 1957, Vol 5, Nr 3, pp 493-500 (USSR)

ABSTRACT: The aim of the work described in this paper was to study the influence on the mechanical properties of the static distortions of the crystal lattice which are caused by atoms of the dissolved elements and the diffusion processes taking place as a result of stresses occurring during plastic deformation. Aluminium-magnesium alloys were used in the experiments. Earlier investigations of one of the authors and his team (Refs.10, 11) have shown that considerable static distortions of the crystal lattice take place, which are brought about by magnesium atoms but

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Influence of Static Distortions of the Crystal Lattice on the Mechanical Properties of Aluminium-Magnesium Alloys.
I. Dependence of the Yield Point and the Ultimate Strength on the Temperature and the Speed of Deformation

the bond forces do not change the composition of the alloy. Such a combination of properties permits studying in the pure form the influence of crystal lattice distortions on the mechanical properties. The authors investigated the temperature dependence of the yield point and the ultimate strength of pure aluminium (containing about 0.01% Mg, 0.0017% Fe, 0.0014% Si, 0.0011% Cu) and its magnesium alloys (0.05, 0.1, 0.3, 0.5 and 1% Mg) in the temperature range between 80 and 700°K for widely differing deformation speeds ($6.4 \cdot 10^{-3}$, $2 \cdot 10^{-1}$, $2 \cdot 10^{-4}$). It was established that for pure aluminium the temperature dependence of the yield point in the temperature range up to 500°K is determined fundamentally by a change in the interatomic bond forces. At elevated temperatures a more pronounced dependence was detected of the yield point on the temperature, which is apparently due to deformations along the grain boundaries. Hardening of the aluminium alloys with magnesium is caused by static distortions of

Influence of Static Distortions of the Crystal Lattice on the Mechanical Properties of Aluminium-Magnesium Alloys.
I. Dependence of the Yield Point and the Ultimate Strength on the Temperature and the Speed of Deformation

the crystal lattice which are brought about by magnesium atoms. The diffusion processes lead to a non-monotonous dependence of the yield point on the temperature, an anomalous dependence on the speed of deformation and a complication of the dependence of the mechanical properties on the composition of the alloy and on the conditions of deformation. Maxima were observed of the yield point in the temperature range of about 500°K and increased values at 80°K which are attributed to various types of diffusion processes taking place in the case of deformation under the effect of stresses. Thus, it was found that static distortions of the crystal lattice, brought about by the magnesium atoms, cause an increase in the yield point and the ultimate strength. In the second part of this paper (1958, Vol VI, Nr 1, pp.110-115), the authors investigate the total and the uniform deformation of alloys of aluminium with magnesium in the temperature range of 80 to 700°K for the same range of speeds of deformation. They found that

Influence of Static Distortions of the Crystal Lattice on the Mechanical Properties of Aluminium-Magnesium Alloys.
I. Dependence of the Yield Point and the Ultimate Strength on the Temperature and the Speed of Deformation

the static distortions of the crystal lattice caused by magnesium atoms reduces the plasticity and that the diffusion processes taking place as a result of the stresses during deformation of alloys bring about an increase in the plasticity and complicate the temperature dependence of the total and the uniform elongations. In alloys of aluminium with magnesium, the crystal structure of which has suffered static distortions, a complicated dependence is observed of the total and the uniform elongations on the temperature and the speed of deformations. The plastic properties of such alloys is apparently determined by several factors which act simultaneously, namely: a more uniform distribution of the plastic deformation along the volume of the crystal and an increase of the effective volume which participates in the deformation, brings about an increase in the plasticity of the alloys; a diffusion of the atoms of the alloying elements under the effect of stresses taking

Influence of Static Distortions of the Crystal Lattice on the Mechanical Properties of Aluminium-Magnesium Alloys.
I. Dependence of the Yield Point and the Ultimate Strength on the Temperature and the Speed of Deformation

place during deformation and causing a reduction of the peaks of over-stresses in the neighbourhood of non-uniformities of the crystal lattice and in the neighbourhood of microscopic cracks bring about an increase of the plasticity; an increase of the types II and III distortions during plastic deformation and an increase of the resistance to deformation in the alloys bring about a reduction in the plasticity. Obviously, the interaction of these factors will cause a sufficiently complicated dependence of the uniform and the total elongations on the composition of the alloy and the conditions of deformation.

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There are 8 figures and 23 references, 15 of which are Soviet, 7 English, 1 German.

ASSOCIATION: Institut fiziki metallov Ural'skogo filiala AN SSSR (Institute of Metal Physics, Ural Branch, Ac.Sc., USSR)

SUBMITTED: August 11, 1956.

1. Alloys--Mechanical properties 2. Alloys--Temperature factors 3. Crystals--Lattices 4. Crystals--Distortion

SOV/126-6-1-14/33

AUTHORS: Grin', A. V., Pavlov, V. A. and Pereturina, I. A.

TITLE: Influence of Static Distortions of the Crystal Lattice on the Mechanical Properties of Aluminium-Magnesium Alloys (Vliyaniye staticheskikh iskazheniy kristallicheskoy reshetki na mekhanicheskiye svoystva splavov alyuminiya s magniyem)
II Dependence of the Total and of the Uniform Deformation on the Temperature and the Speed of Deformation
(II Zavisimost' polnoy i ravnomernoy deformatsii ot temperatury i skorosti deformirovaniya)

PERIODICAL: Fizika Metallov i Metallovedeniye, 1958 Vol 6 Nr 1, pp 110-115 (USSR)

ABSTRACT: The aim of the work described in the first part of this paper (1957, Vol 5, Nr 3, pp 493-500) was to study the influence on the mechanical properties of the static distortions of the crystal lattice which are caused by atoms of the dissolved elements and the diffusion processes taking place as a result of stresses occurring during plastic deformation. Aluminium-magnesium alloys were used in the experiments. Earlier investigations of one of the authors and his team have shown that

Influence of Static Distortions of the Crystal Lattice on the Mechanical Properties of Aluminium-Magnesium Alloys
II. Dependence of the Total and of the Uniform Deformation on the Temperature and the Speed of Deformation

considerable static distortions of the crystal lattice take place, which are brought about by magnesium atoms but the bond forces do not change the composition of the alloy. Such a combination of properties permits studying in the pure form the influence of crystal lattice distortions on the mechanical properties. The authors investigated the temperature dependence of the yield point and the ultimate strength of pure aluminium (containing about 0.01% Mg, 0.0017% Fe, 0.0014% Si, 0.0011% Cu) and its magnesium alloys (0.05, 0.1, 0.3, 0.5 and 1% Mg) in the temperature range between 80 and 700°K for widely differing deformation speeds ($6.4 \cdot 10^{-3}$, $2 \cdot 10^{-1}$, $2 \cdot 10^{-4}$). It was established that for pure aluminium the temperature dependence of the yield point in the temperature range up to 500°K is determined fundamentally by a change in the interatomic bond forces. At elevated temperatures a more pronounced dependence was detected of the yield point on the temperature which

Influence of Static Distortions of the Crystal Lattice on the Mechanical Properties of Aluminium-Magnesium Alloys
II. Dependence of the Total and of the Uniform Deformation on the Temperature and the Speed of Deformation

is apparently due to deformations along the grain boundaries. Hardening of the aluminium alloys with magnesium is caused by static distortions of the crystal lattice which are brought about by magnesium atoms. The diffusion processes lead to a non-monotonous dependence of the yield point on the temperature, an anomalous dependence on the speed of deformation and a complication of the dependence of the mechanical properties on the composition of the alloy and on the conditions of deformation. Maxima were observed of the yield point in the temperature range of about 500°K and increased values at 80°K which are attributed to various types of diffusion processes taking place in the case of deformation under the effect of stresses. Thus it was found that static distortions of the crystal lattice, brought about by the magnesium atoms, cause an increase in the yield point and the ultimate strength. In the here published second part of the paper, the authors

Influence of Static Distortions of the Crystal Lattice on the Mechanical Properties of Aluminium-Magnesium Alloys
II. Dependence of the Total and of the Uniform Deformation on the Temperature and the Speed of Deformation

investigate the total and the uniform deformation of alloys of aluminium with magnesium in the temperature range of 80 to 700°K for the same range of speeds of deformation. They found that the static distortions of the crystal lattice caused by magnesium atoms reduce the plasticity and that the diffusion processes taking place as a result of the stresses during deformation of alloys bring about an increase in the plasticity and complicate the temperature dependence of the total and the uniform elongations. In alloys of aluminium with magnesium, the crystal structure of which has suffered static distortions, a complicated dependence is observed of the total and the uniform elongations on the temperature and the speed of deformations. The plastic properties of such alloys is apparently determined by several factors which act simultaneously, namely: a more uniform distribution of the plastic

 deformation along the volume of the crystal and an

Influence of Static Distortions of the Crystal Lattice on the Mechanical Properties of Aluminium-Magnesium Alloys
II. Dependence of the Total and of the Uniform Deformation on the Temperature and the Speed of Deformation

increase of the effective volume which participates in the deformation, brings about an increase in the plasticity of the alloys; a diffusion of the atoms of the alloying elements under the effect of stresses taking place during deformation and causing a reduction of the peaks of over-stresses in the neighbourhood of non-uniformities of the crystal lattice and in the neighbourhood of microscopic cracks bring about an increase of the plasticity; an increase of the types II and III distortion during plastic deformation and an increase of the resistance to deformation in the alloys bring about a reduction in the plasticity. Obviously, the interaction of these factors will cause a sufficiently complicated dependence of the uniform and the total elongations on

SOV/126-6-1-14/33

Influence of Static Distortions of the Crystal Lattice on the Mechanical Properties of Aluminium-Magnesium Alloys
II. Dependence of the Total and of the Uniform Deformation on the Temperature and the Speed of Deformation

the composition of the alloy and the conditions of deformation.
There are 7 figures and 9 references, all of which are Soviet.

ASSOCIATION: Institut fiziki metallov Ural'skogo filiala AN SSSR (Institute of Metal Physics, Ural Branch of the Ac.Sc., USSR)

SUBMITTED: August 11, 1956

1. Aluminum-magnesium alloys--Mechanical properties
2. Crystals--Deformation 3. Crystals--Lattices
4. Crystals--Metallurgical effects

Card 6/6

ORIN', A. V.

"Investigation of the Phenomena of Non-Elasticity in α-solid Solutions of Aluminium with Magnesium."

dissertation for the degree of Cand of Physico-Math. Sci. submitted at AS USSR, Ural Branch.
Sverdlovsk, 1957.

Metallovedeniye i Obrabotka Metallov, 1958, N . 2, p. 63.

18.8200

67657
SOV/126-8-6-4/24

AUTHORS: Shmatov, V.T. and Grin', A.V.

TITLE: The Mechanism of Formation of an Impurity Peak of Internal Friction

PERIODICAL: Fizika metallov i metallovedeniye, 1959, Vol 8, Nr 6, pp 829-833 (USSR)

ABSTRACT: In polycrystalline pure metals only one internal friction peak is observed at high temperatures. Since such a peak is absent in monocrystals of pure metals, its appearance is ascribed to relaxation at the grain boundaries. When impurities are introduced into pure metals, an additional internal friction peak appears; it is known as an impurity peak. From the systematic investigations of this impurity peak, carried out by several workers (Ref 1 to 5), the authors draw the following general conclusions:
(1) Even small amounts of impurity (0.03 atomic %. Ref 3) may produce an impurity peak of internal friction.
(2) On increase of the impurity concentration the impurity-peak height generally rises but in certain alloys it reaches a maximum and then falls or even disappears completely (Ref 6) at higher impurity concentrations.
(3) The activation energy of relaxation processes

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The Mechanism of Formation of an Impurity Peak of Internal Friction

responsible for the impurity peak is close to the activation energy of diffusion of atoms, provided the impurity concentration is sufficiently great.
(4) With increase of the impurity concentration the internal friction peak due to relaxation at the grain boundaries (observed in pure polycrystals) is depressed and may disappear altogether (Ref 1 to 3, 6).
(5) The impurity peak is found only in polycrystals and not in monocrystals and consequently, just like the peak observed in pure polycrystals, it is due to processes occurring at the grain boundaries.
(6) The magnitude of the impurity peak is only slightly affected by the change in the mean grain dimensions (it falls gradually with increase of these dimensions; Ref 3 and 6). In contrast, the relaxation time related to the impurity peak depends strongly on the mean grain dimensions, rising rapidly with increase of the latter. The experimental observations summarized in the above six points can be explained as follows. Impurities are concentrated predominantly at the grain boundaries because the energy of distortion by an impurity atom is lower at

The Mechanism of Formation of an Impurity Peak of Internal Friction

the grain boundary than inside the grain. Elastic deformation which alters this distortion energy would either favour or obstruct accumulation of impurity atoms at the grain boundaries. Consequently if such deformation is varied periodically the impurity atom concentration at the grain boundaries will also vary periodically. If elastic deformation alternates sufficiently rapidly the changes of the impurity concentration will not manage to follow elastic deformation and this will, of course, lead to dissipation of elastic energy, ie to an impurity peak at appropriate frequencies. The authors discuss this mechanism mathematically and show that it explains satisfactorily the experimental data summarized in the points (1) to (6) above. The paper is entirely theoretical. There are 10 references, 4 of which are Soviet, 4 English and 2 international.

ASSOCIATION: Institut fiziki metallov AN SSSR (Metal Physics Institute, AS USSR)

SUBMITTED: April 15, 1959

SOV/58-59-10-22727

Translation from: Referativnyy Zhurnal, Fizika, 1959, Nr 10, p 135 (USSR)

AUTHOR: Grin', A.V.

TITLE: Effect of Recrystallization Conditions on Internal Friction in Metals and Alloys

PERIODICAL: Tr. In-ta fiz. metallov. AN SSSR, 1959, Nr 22, pp 101 - 106

ABSTRACT: The author shows that in pure Al the height of the internal-friction peak relating to grain boundaries depends very much on the heating rate during recrystallization. He shows that a similar phenomenon develops to a slight extent in alloys of Al with 0.5% and 1% of Mg.

The author's conclusions

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S/520/59/000/022/014/021
E193/E483

AUTHOR: Grin', A.V.

TITLE: The Effect of Recrystallization Conditions on Internal Friction of Metals and Alloys

PERIODICAL: Akademiya nauk SSSR. Ural'skiy filial, Sverdlovsk. Institut fiziki metallov. Trudy, No.22,1959,pp.101-106

TEXT: The resistance to deformation of polycrystalline aggregates of metals and alloys depends to a large extent on the properties of the grain boundaries, as determined by the thermal and mechanical history of the material and by the presence or absence of alloying additions. The results of many investigations (Ref.1 to 10) have shown that internal friction measurements provide a tool which is eminently suitable for studying the effects of various treatments on the properties of grain boundaries. The object of the present investigation was to study how the temperature-dependence of internal friction is affected by the variation of the conditions during annealing. In the first series of experiments, specimens of pure aluminium AB000 (AV000), cold-rolled to 90% reduction of area, were used. One specimen was heated to 400°C at a rate of 1°C/min; the other was placed in the furnace at 400°C,

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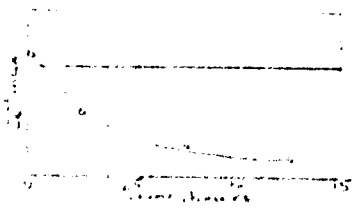
as a result of which it attained the annealing temperature at a rate of 100°C/min. Both specimens were held at 400°C for 15 min, after which they were furnace-cooled to room temperature. Both treatments ensured full recrystallization of the metal and growth of sufficiently large grains. The results of internal friction measurements, carried out on these specimens, are reproduced in Fig.1, where internal friction (Q^{-1}) is plotted against the test temperature, Curves 1 and 2 relating to specimens that had undergone, respectively, slow and rapid recrystallization. It will be seen that although in both cases the internal friction peak occurred at the same temperature, its magnitude was 1.5 times larger in the rapidly recrystallized specimen. Similar results were obtained for specimens, preliminarily cold-worked to 70% reduction in area. On the other hand, no increase in the internal friction peak was observed in a specimen that had been rapidly recrystallized at 500°C (see Curve 3, Fig.1). Macro- and microscopic examination of the specimens revealed no structural differences, the average grain size in all cases being 0.15 to 0.17 mm. In order to check whether the effect observed was not caused by the presence of impurities (0.0017% Fe, 0.0015% Si, 0.001% Cu, 0.01% Mg), the experiments

were repeated on the same material, re-melted in vacuum. Since identical results were obtained, it was concluded that the observed increase in the magnitude of internal friction peak was due solely to increased rate of recrystallization. In the next series of experiments, the effect of isothermal treatment, applied after rapid recrystallization, was studied. Specimens of vacuum re-melted aluminium were rapidly heated to 410°C and were then held at 375°C for periods ranging to 12.5 h. With increasing duration of this treatment the internal friction peak decreased, but even after 12.5 h at 375°C, it did not reach the low level of internal friction of slowly recrystallized specimens. This effect is illustrated in Fig.3, where the magnitude of the internal friction peak Q^{-1}_{max}, is plotted against time (hours) at 375°C. In the final stage of the investigation, the effect of the rate of recrystallization on internal friction peak of cold-worked specimens of aluminium alloys, containing 0.5 and 1% Mg, was studied. It was found that in the case of these alloys the magnitude of the internal friction peak was practically unaffected by the recrystallization rate. One of the possible explanations of the effect observed is based on the assumption that the rate of

heating during annealing affects the texture of a recrystallized metal. The existence, form and degree of texture should be reflected in the energy state of atoms on the grain boundaries and should, consequently, affect the magnitude of internal friction in this region. This view is supported by the results obtained recently by Ye.I.Krupnikova-Perlina and D.I.Layner (Ref.14), who have shown that the degree of texture is highly dependent on the annealing time and temperature. An alternative explanation is based on the possible effect of the annealing conditions on the degree of enrichment of the grain boundaries by the impurity atoms. It could be assumed that after rapid recrystallization, the impurity atoms concentrate at the newly formed grain boundaries not at once but gradually, while the specimen is held at a given temperature. This theory would explain the absence of the increase in the magnitude of the internal friction peak in alloyed aluminium in which the concentration of impurity atoms at the grain boundaries is relatively high, irrespective of the rate of recrystallization; it would also explain the effect of isothermal treatment on the magnitude of the internal friction peak (see Fig.3), since this treatment, accompanied by continuous diffusion of the impurity

atoms, would tend ultimately to increase their concentration at the grain boundaries. The explanation favoured by the present author is that after rapid recrystallization, the grain-boundary regions are characterized by a low degree of perfection of the crystal structure and contain a large number of lattice defects. After a long isothermal treatment, or after slow heating to the recrystallization temperature, the metal in the grain-boundary regions is brought nearer to the equilibrium condition, as a result of which the internal friction at the grain boundaries decreases. The experimental evidence available at present is not sufficient to decide which of the hypotheses discussed above is the most likely explanation to the effect studied by the present author. There are 4 figures and 17 references: 5 Soviet and 12 non-Soviet.

Fig.3.



Card 5/6

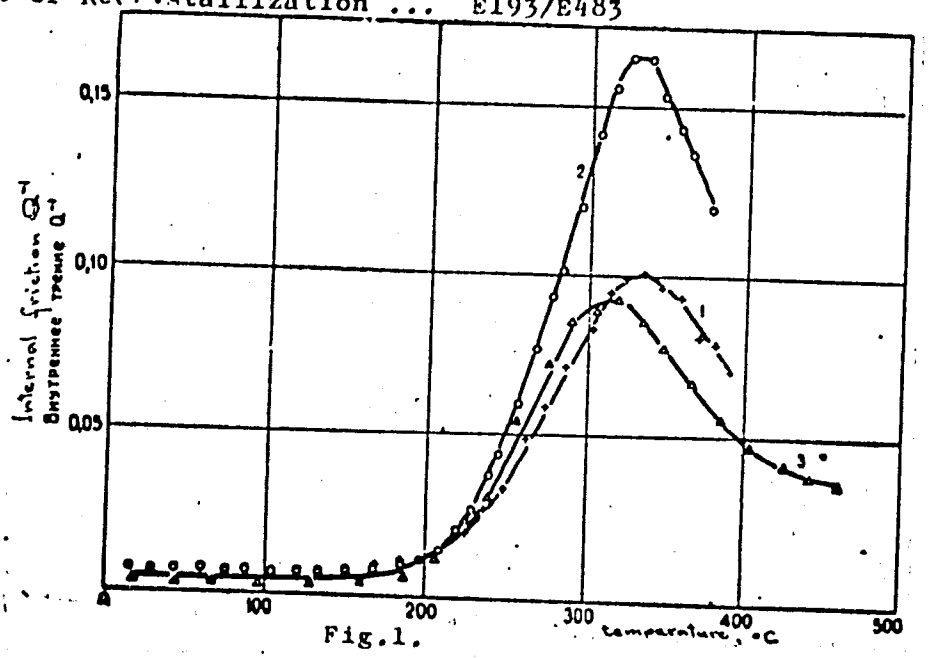


Fig.1.

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GRIN, A. V.

PHASE I BOOK EXPLOITATION SOV/5305

Moscow. Institut stali

Relaksatsionnyye yavleniya v metallakh i splavakh; trudy Mezhvuzovskogo soveshchaniya (Relaxation Phenomena in Metals and Alloys; Transactions of the Inter-Institute Conference) Moscow, Metallurgizdat, 1960. 326 p.

Sponsoring Agency: Ministerstvo vysshego i srednego spetsial'nogo obrazovaniya RSFSR and Moskovskiy institut stali imeni I.V. Stalina.

Ed. (Title page): B.N. Finkel'shteyn; Ed. of Publishing House: Ye.I. Levit; Tech. Ed.: A.I. Karasev.

PURPOSE: This collection of articles is intended for personnel in scientific institutions and schools of higher education and for physical metallurgists and physicists specializing in metals. It may also be useful to students of these fields.

COVERAGE: The collection contains results of experimental and theoretical investigations carried out by schools of higher education and scientific research institutions in the field of the relaxation phenomena in metals and alloys. Several articles are devoted to the investigation—by the internal-friction method—of the decomposition of supersaturated solid solutions. Also analyzed are the defects of the crystalline lattice, plastic deformations, high-temperature behavior of alloys, and creep. Problems of the relation between internal friction and temper brittleness, the use of the method of internal friction in the investigation of powder-metallurgy products, and the mechanism of impact fatigue are discussed. The collection also contains articles on the damping characteristics of materials, elastic after-effect, and the new slow-detection method. No personalities are mentioned. References follow most articles. There are 366 references: 192 Soviet and 174 non-Soviet.

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80219

S/126/60/009/04/024/033
E021/E435

18.7500

AUTHOR: Grin', A.V.

TITLE: Internal Friction of the Grain Boundaries in Aluminium

PERIODICAL: Fizika metallov i metallovedeniye, 1960, Vol 9, Nr 4, pp 613-615 (USSR)

ABSTRACT: The internal friction was studied in aluminium of various kinds: A - 99.994% pure; B - AV000 aluminium remelted in vacuo and C - AV000 not remelted. The aluminium C contained Fe - 0.0017%, Cu - 0.001%, Si - 0.0015% and Mg - 0.01%. The measurements were carried out on 0.9 mm dia specimens using frequencies of 1.5 and 0.5 cps. All the samples were preliminarily deformed to 90% and recrystallized with a slow heating rate of 1°C per min up to 400 to 430°C and holding at this temperature. The maximum of the curve moves to a higher temperature with decrease in purity. The results show that with increase in purity, the content of impurities at the grain boundaries decreases. This decrease cannot be connected with the thermal treatment of the samples as they were all treated alike. The energy of activation was also measured for all these samples; this increases with

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80219

S/126/60/009/04/024/033
E021/E435

Internal Friction of the Grain Boundaries in Aluminium

decrease in purity. The impurities at the grain boundaries impede the process of relaxation, increasing the activation energy and displacing the maximum of internal friction to a higher temperature. There are 1 figure, 1 table and 17 references, 10 of which are Soviet, 6 English and 1 German.

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

4

SUBMITTED: September 16, 1959

Card 2/2

S/137/61/000/012/127/149
A006/A101

AUTHORS: Orin, A.V., Moiseyev, A.I., Shmatov, V.T.

TITLE: Internal friction and small amounts of admixtures in metals

PERIODICAL: Referativnyy zhurnal. Metallurgiya, no. 12, 1961, 38, abstract 12Zh283 ("Tr. In-ta fiz. metallov, AN SSSR", 1960, no. 23, 163-173)

TEXT: This is a review. The authors analyze data on the connection of internal friction with the presence of small amounts of admixtures. An analysis is made of internal friction in interstitional solid solutions; internal friction connected with relaxation along the grain boundaries, and internal friction caused by the presence of dislocations. The conclusion is drawn that with the aid of methods for the investigation of internal friction, it is possible: 1) to estimate the amount of small admixtures in pure metals, and in some cases, their concentration; 2) to determine diffusional parameters of atoms of admixtures at low temperatures; 3) to study internal adsorption of atoms of admixtures on structural heterogeneities (grain boundaries, domains, dislocations,

Card 1/2

Internal friction ...

slip traces, etc); 4) to study processes proceeding in the metal with time (ordering, aging, relaxation, etc.). There are 122 references.

V. Stepanov

[Abstracter's note: Complete translation]

Card 2/2

S/126/61/012/004/014/021
E032/E535

AUTHORS: Shmatov, V.T. and Grin', A.V.

TITLE: High-temperature internal friction in metals

PERIODICAL: Fizika metallov i metallovedeniye, v.12, no.4, 1961, 600-606

TEXT: The investigation relates to the high temperature internal friction background as well as to the peak of internal friction at grain boundaries. The first is attributed to non-equilibrium changes in the concentration of vacancies in the body of the grain, whilst the latter is associated with similar changes in the concentration of vacancies at grain boundaries. The authors support the view that the rapid increase in internal friction at high temperatures can be associated with vacancies whose number is known to increase very rapidly with increasing temperature. They assume that the internal friction background is due to non-equilibrium changes in the number of vacancies during periodic deformation of the specimen. Thus, it is well known that the concentration of vacancies in a metal is a function of state. While the specimen is tested for internal friction, the applied periodic deformation changes its state and therefore there should

be an attendant periodic change in the number of vacancies. However, the process of change in the number of vacancies takes a certain time (relaxation time) introducing a lag between this process and the applied deformation. Thus, the deformation will be a non-equilibrium one and will give rise to dissipation of the energy of mechanical vibrations, i.e. to internal friction. Standard thermodynamic calculations lead the present authors to the conclusion that the non-equilibrium change in the concentration of vacancies during periodic deformation of the specimen will give rise to a very nearly exponential increase in the internal friction, beginning at a temperature at which the number of vacancies becomes sufficiently large and will not result in an internal friction peak within a certain temperature range. This is consistent with the known behaviour of the internal friction background in metals at high temperatures. On the other hand, the peak of internal friction at grain boundaries is associated with changes in the concentration of vacancies at these boundaries. Thus, during periodic deformation the grain boundaries will absorb vacancies from the body of the grain and partially re-eject them into the

body, depending on the nature and period of deformation. Any lag between the variation in the concentration of vacancies and the periodic deformation will give rise to damping of the vibrations, i.e. to internal friction. This mechanism is identical to that put forward by the present authors in Ref.13 (PMM, 1959, 8, 829) for elucidating the nature of the impurity peak of internal friction at grain boundaries, the only difference being that in the present case the impurities are replaced by the vacancies. Again, thermodynamic calculations involving the relaxation time of elastic moduli are used to develop quantitative relationships for this effect. It is shown that the relaxation time has a much stronger dependence on the number of grains per unit of volume than the height of the peak ($q^{-5/3}$ as compared with $q^{1/3}$). This is in qualitative agreement with the measurements of T. S. Ke (Ref.28: Phys.Rev., 1947, 72, 41) on aluminium and those of W. Koster et al. (Ref.6: Zs. Metallkunde, 1956, 47, 224 and Ref.18: Ibid, 1955, 46, 84) on gold and copper. There are 28 references: 8 Soviet-bloc and 20 non-Soviet-bloc. The English-language references read as follows: Ref.2: Weertman T.,

Salkovitz E. Acta met., 1955, 3, 1; Ref.3: Hiku Y. J.Phys.Soc. Japan, 1958, 13, 1138; 1959, 14, 590; Ref.4: Beshers D.J.Appl.Phys., 1959, 30, 252; Ref.27: Feltham P., Copley G. Acta met., 1958, 6, 539.

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

SUBMITTED: February 20, 1961

VOLODARSKIY, B.Ya.; FLOROV, R.S.; GRIN', A.V.; GOL'DSHTEYN, M.I.

Crane beams from 15GF steel. Prom. stroi. 42 no.8:41-43 '65.
(MIRA 18:9)

ACC NR: AP7002715 (A) SOURCE CODE: UR/0126/66/022/006/0938/0941

AUTHOR: Blyum, E. E.; Grin', A. V.; Gol'dshteyn, M. I.; Luchinskaya, E. P.

ORG: Ural Scientific Research Institute of Ferrous Metals (Ural'skiy NII chernykh metallov)

TITLE: Investigation of the hardening of low-alloy steel by vanadium nitrides

SOURCE: Fizika metallov i metallovedeniye, v. 22, no. 6, 1966, 938-941

TOPIC TAGS: ~~tensile~~ metallurgic low alloy steel, mechanical property, tensile test, testing machine, electron microscope, manganese steel, vanadium, metal hardening / 15G2 manganese steel, 15G2AF manganese steel, IM-4R ~~tensile~~ metallurgic testing machine, UEMV-100 electron microscope

ABSTRACT: The nature of the hardening of low-alloy manganese steels 15G2 and 15G2AF (0.17% C, 1.75% Mn, 0.20% Si, 0.038% N, 0.02% Al, 0.040% S, 0.020% P) treated with nitrogen and vanadium (0.01, 0.04, 0.10, 0.19, 0.23, 0.30%) is investigated and the dependence of its mechanical properties on normalizing temperature and V content is established. Melts of the steels were produced by using low-carbon steel as the charge and adding to it, in the furnace, nitrided electrolytic Mn containing 2.5% N. Six 10-kg ingots, to each of which a different amount of ferrovanadium was added, were obtained from each melt. The ingots were cut into

Card 1/3 UDC: 669.15:539.4

ACC NR: AP7002745

rods measuring 14x14 mm and subjected to recrystallization annealing at 950°C. Mechanical properties were determined after normalizing from various temperatures within the range of 920-1150° C. Tensile tests of specimens of 6 mm diameter were carried out in an IM-4R machine. Impact strength was investigated at temperatures of from +20 to -60°C. The specimens were also electronmicroscopically examined with the aid of an UEMV-100 microscope and the phase composition of the isolated particles trapped by the carbon replica was determined with the aid of electron diffraction patterns. Thermokinetic diagrams were plotted to elucidate the effect of V and N on the kinetics of austenite decomposition, this decomposition itself being investigated by the dilatometric method at 950°C. Findings: the hardness and ultimate strength and yield point of all the investigated steels increase with increase in normalizing temperature, and this increase is the higher the greater the V content of the steel is (up to 0.10-0.20% V). As the normalizing temperature increases, the amount of decomposition products increases, this being due to the dissolution of vanadium nitrides in the austenite and increase in its stability on cooling. Treatment of 15G2 steel with N and V markedly increases the stability of supercooled austenite and reduces its transformation temperature both in the pearlitic and intermediate regions. Electronmicroscopic and electron-diffraction-pattern examination shows that following normalizing from 920°C comparatively large undissolved particles of vanadium nitrides remain in the steel, whereas at normalizing from higher temperatures these particles get dissolved in the austenite and segregate in fine-disperse form on cooling; such a segrega-

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ACC NR: AP7002715

tion enhances the microhardness of ferrite to 175 from 135 kg/mm^2. Thus, the increase in the strength of 15G2AF steel following its normalizing from 1050°C is attributable to the segregation of fine-disperse vanadium nitrides in the structure of this steel as well as to the presence of decomposition products in the intermediate stage. Orig. art. has: 5 figures.

SUB CODE: 13, 20/ SUBM DATE: 28Oct65/ ORIG REF: 002/ OTH REF: 004

Card 3/3

GRIN, B.I., prim. dr.

Comment on prof. J.Fleger's article on the control of endemic syphilis in Bosnia. Med. arh., Sarajevo 8 no.5:59-82 Sept-Oct 54.

1. Centralni kosni venericni dispanzer u Sarajevu - sef prim. dr. B.I.Grin.
(SYPHILIS, prev. & control
Yugosl., Bosnia)

GRIN, E.I.; OZEGOVIC, L.; NADAZDIN, M.

Serum proteins in dermatophyte infections of the scalp. Acta med. iugoslavl. 15 no.1:105-116 '61.

1. Institute of Dermato-Venerology "Dr. SimoMilosevic" Sarajevo.
(BLOOD PROTEINS) (DERMATOMYCOSES blood)
(SCALP dis)

SRIM, Ernest J

SURNAME (in caps); Given Names

Country: Yugoslavia

Academic Degrees: Prim Dr

Affiliation: Institute for Dermatovenerology (Zavod za dermato-venerologiju), Sarajevo

Source: Belgrade, Narodno Zdravlje, Vol XVII, No 5, May 1961, 150-154

Data: "The Problem and Control of Mycotic Diseases."

COUNTRY : YUGOSLAVIA

CATEGORY :

JRN. JOUR. : RZBiol., No. , 1959, No. 10260

AUTHOR : Grin Ernest L., Ozegovic Ladislav

INST. : Scientific Society of NR BiH

TITLE : Microsporum Gypseum as a Human Parasite and Saprophyte Isolated from the Soil

SRC, PUB. : Radovi. Naucn. drustvo NR BiH, 1957, 3, 5-14

ABSTRACT : In 5 out of 120 soil samples collected in regions of Bosnia which have an endemic distribution of ringworm M. gypseum was isolated. Other causal organisms of ringworm were not found in the soil. A case is described where M. gypseum was isolated in a 9 year old boy (in addition to 22 cases where M. gypseum was isolated in people which have been described previously in Yugoslavia). The nature of the growth of the saprophytic form of the fungus (from soil or culture) and the parasitic form (on hair) after

CARD: 1/2

76

[redacted] :
CATEGORY :

ABS. JOUR. : RZBiol., No. 1959, No. 10260

AUTHOR :
INST. :
TITLE :

ORIG. PUB. :

ABSTRACT : its introduction into the soil were compared. The saprophytic form grows well in sterile and non-sterile soils; the parasitic form is markedly depressed in non-sterile soil; the fungus continues to develop only on that portion of infected hair which is not covered with soil and which projects out over it. From the author's resumé.

CARD: 2/2

GRIN,E.I.; OZEGOVIC,L.

A new method for the isolation of dermatophytes from human and animal pathological material. Higijena,Beogr. 11 no.1:23-25 '59.
(RINGWORM diag.)

GRIN, E. I., prof., dr.

Current treatment and control of mycotic diseases of the hair bed. Med. glas. 16 no.5:197-202 My '62.

1. Zavod za kozne i venericne bolesti "Dr Simo Milosevic" u Sarajevu (Upravnik: prof. dr E. I. Grin)

(HAIR dis) (MYCOSES ther) (GRISEOFULVIN ther)

S

STERN, P.; GRIN, E.I.; BOKONJIC, M.

Deseril in the treatment of scleroderma and related indurative dermatoses. Bul sc Youg 7 no.6:163 D '62.

1. Medicinski fakultet, Sarajevo.

GRIN, E.I.; DENIC, M.

Investigations of human blood griseofulvin levels and their relation to the curative effect in tinea capitis. Acta med. Iugosl. 19 no.1:62-69 '65.

GRIN, Ernest, prof. dr.; KARLOVAC, Ksenija

Study of the sensitivity of N. gonorrhea to penicillin and streptomycin. Med. arh. 19 no.2:5-14 Mr-Ap'65.

1. Zavod za kozne i venericne bolesti "Dr. Simo Milosevic" u Sarajevu (Direktor: Prof. dr. Ernest Grin).

GRIN', E.L., aspirantka

Yello forage lupine as companion crop. Izv. TSKhA no.2:183-190 '60. (MIRA 14:4)
(Lupine) (Companion crops)

GRIN, F.A.

DECEASED
c1961

1961/3

SEE ILC

BOTANY

GRIN', E. L., Cand Agr Sci -- (diss) "Yellow fodder lupine in mixed sowing." Moscow, 1960. 18 pp; (Moscow Order of Lenin Agricultural Academy im K. A. Timiryazev); 150 copies; price not given; (KL, 17-60, 162)

GRIN, G.

Measuring devices for loose bulk. Sov. torg. 33 no.5:51-55 My '60.
(MIRA 13:11)
(Weights and measures)

GRIN, G.

Equipment and machinery for the stacking of goods in warehouses. Sov. torg. 34 no.11:56-59 N '60. (MIRA 13:11)
(Warehouse--Equipment and supplies)

GRIN, G.B., inzh.

Optimal regime of water release from the Volgograd Reservoir.
Gidr. i mel. 17 no.2:17-24 F '65. (MIRA 18:5)

1. Goszemvodkhoz RSFSR.

28(5) SOV/115-59-3-19/29

AUTHOR: Grin, G. L., and Zemel'man, M.A.

TITLE: A Pulse Number Test Transmitter for Checking Counter Units of Discrete Action Measuring Instruments (Obraztsovyy datchik chisla impul'sov dlya poverki schetnykh skhem izmeritel'nykh priborov diskretnogo deystviya)

PERIODICAL: Izmeritel'naya tekhnika, 1959, Nr 3, pp 42-43 (USSR)

ABSTRACT: The readings of electronic counters are usually accepted as being absolutely true. However, inaccuracies may occur which are not always noticed visually. For checking industrial discrete action measuring instruments with numerical reading (having electro-mechanical, gas-discharge or vacuum elements) having an upper limit of the frequency range of not more than 20-30 kc, a pulse number test transmitter was developed and built by the electronic instrument laboratory of VNII Komiteta standartov, mer i izmeritel'nykh priborov (All-Union Scientific Research In-

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stitute of the Committee of Standards, Measures and Measuring Instruments). This device produces a pre-determined number of pulses of both polarities of different length, amplitude and pulse frequency. The number of pulses to be transmitted is controlled by the operator. This device, called ODChI (obraztsovyy datchik chisla impul'sov) is a photo-electronic device, consisting of an optical-mechanical unit with a rotating disk, and electronic control unit and a pulse sequence transmitter unit. The optical-mechanical unit consists of a rotating disk of 250 mm diameter having 300 rectangular openings near its rim and one close to its center. The light falling on two photoelements is interrupted by the rotating disk. The photoelements work on two channels. During one rotation of the disk, a series of pulses is created in the first channel by the openings near the rim, and one pulse by the opening near

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the center of the disk in the second channel. The electric motor which drives the disk develops a maximum of 6,000 rpm which corresponds to 30,000 pulses per second. The length of the pulses can be varied from 1 to 30 microseconds with an amplitude of up to 80 v. It is difficult to obtain a higher frequency with this method. The electronic control unit is also divided into two channels. The second channel serves for forming rare pulses and contains a level trigger for converting the bell-shaped pulses from the photo-stages into rectangular ones, which are delayed by a blocking generator for exciting the next stage. Further there are a kipp relay and a trigger controlling the gate circuit. The gate circuit passes or blocks the passage of the working signal in dependence on the control signal. The channel I contains analogous pulse shaping elements. Any type of rectifier producing a stabilized

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voltage may be used for the power supply. The accuracy of the ODChI was determined by oscillographs. It was used as a test device for the state tests of the scaler BK-3 and other electronic counting devices. Technician S.A. Zhurbenko participated in the development of the device. There are 2 diagrams.

9(2), 28(2) SOV/115-59-9-34/37

AUTHOR: Grin, G.L.

TITLE: The Czecho-Slovak Exhibition of Measuring Instruments and Electronics

PERIODICAL: Izmeritel'naya tekhnika, 1959, Nr 9, pp 60-61 (USSR)

ABSTRACT: This article contains a review of exhibits shown at the Czechoslovak Exhibition of Measuring Instruments and Electronics. The vibratory apparatus Turbo-4 and the electron microscope of the Tesla plant in Brno were already shown at the Brussels World Fair, where they both received gold medals. The K552 electron-ray oscilloscope produced by the "Krizik" plant with a 120 mm screen was not less interesting. The following instruments are mentioned in the article: VM_{353} nuclear particle counter; VM269 audio generator; 12XG014 audio frequency generator (Tesla); 12XG017 infra-low frequency generator; 12XN012, 12XN013, 12XN023 level meters; 12XV000; 12XJ009, measuring bridge; 12XX004, modulation meter; 12XX029

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slovak SOV/115-59-9-34/37

The Czecho-/Exhibition of Measuring Instruments and Electronics

distortion measuring instrument; 12XX011A timer; electric power meters of the "Krizik" plant, which also produced ferroscope F563; electric measuring instruments by the plant "Metra", microammeter DLL, QSLK and other instruments; products of the plants "Elektrochas", "Meopta", "Dyustra", "Regula" and Kovostav. In the neighboring hall, products of the Czech electronic and radio industry were shown, kinescopes, magnetrons, transistors, X-ray tubes, klystons, TV camera tubes, TV sets, tape recorders, portable and car radios.

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06197
SOV/115-59-11-25/36

AUTHOR: Grin, G.L.

TITLE: Methods for Designing Electronic Measuring Devices with Discrete Action and Digital Reading and Their Comparative Evaluation

PERIODICAL: Izmeritel'naya tekhnika, 1959, Nr 11, pp 54-61

ABSTRACT: The author reviews the principal methods used in building electronic digital instruments in the USSR and in the USA. He divides the various systems used into a) sequential counting systems, b) converters with digit coding, c) systems based on electron ray coding tubes. These systems are compared according to their properties: operating speed, accuracy, sensitivity threshold and degree of design complication. A Soviet-made electronic voltmeter (measuring range 0.2 + 100 v, error ± 0.26%, time for one measurement 1 sec; data were furnished by the SAM plant in Penza) is compared with the 211 voltmeter produced by Delaware Products and the 310 voltmeter produced by Franklin. The Russian VTs-1 voltmeter is also mentioned. There are 4 circuit dia-

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Methods for Designing Electronic Measuring Devices with Discrete Action and Digital Reading and Their Comparative Evaluation

grams, 5 block diagrams, 5 tables, 4 graphs and 13 references, 10 of which are American and 4 Russian.

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AUTHORS: Abramzon, E. L., Grin, G. L., Pelika, A. Ya., Podlazov, S. S.

TITLE: An Electronic Automatic Coordinate Measuring Instrument for a Heavy Boring Machine

PERIODICAL: Izmeritel'naya tekhnika, 1960, No. 7, pp. 20 - 24

TEXT: An instrument was developed at the Osoboye konstruktorskoye byuro Mosgorsovnarkhoza (Special Design Office of the Mosgorsovnarkhoz) for the electronic measurement of the motion of a boring bar relative to the boring bench in horizontal and perpendicular direction. This instrument chiefly consists of 2 circular inductive pickups and an electronic dekatron impulse counter. One pickup is mounted on the spindle head and the shaft of the pickup is rotated during the vertical motion of the spindle head. The second pickup is mounted on the horizontal guides. The modes of operation of these 2 pickups (Fig. 1) are discussed in detail. They consist of crown-like serrated bodies, which are mounted on the movable and fixed parts of the machine opposite to each other. The

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magnetic flux between them, which is produced by coils, changes with the relative motion of these crowns. The measurement of the magnetic-flux changes and thus, of the motions is performed electronically, and the differential circuit shown in Fig. 2, as well as the block diagram in Fig. 3 are discussed in detail. The motion in the two directions perpendicular to each other is determined by the trigger circuit shown in Fig. 4, in accordance with the scheme shown in Fig. 5. The counter is discussed with the aid of Fig. 6. The voltage is stabilized by 2 electronic stabilizers and one ferroresonance stabilizer. There are 6 figures.

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GRIN, G.L.

Active devices in precision bridge circuits. Izm.tekh. no.1: 56-59 Ja '63. (MIRA 16:2)

(Bridge circuits)

L 19037-63 EWT(d)/BDS AFFTC/ASD/ESD-3/IJP(C)
ACCESSION NR: AP3005784 S/0115/63/000/008/0042/0045

AUTHOR: Grin, G. L.

TITLE: Method for accurate measurement of mean value of a-c voltage in infralow frequency band

SOURCE: Izmeritel'naya tekhnika, no. 8, 1963, 42-45

TOPIC TAGS: a-c voltage measurement, infralow frequency

ABSTRACT: The theory of a new device for measuring a-c voltages at a few cps frequency and a description of experiments done with it are given in the article. The device includes a high-speed electron d-c digital voltmeter and a special rectifier. A capacitor accumulates a d-c voltage equal to the mean value of the measurand a-c voltage. The accumulation is effected by a key that passes positive half-cycles of the measurand to an integrating circuit. The accumulated d-c voltage is measured by the digital voltmeter in the spacing intervals between the

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positive half-cycles. Both phase-sensitive and phase-insensitive measurements are possible. A six D205 silicon-diode circuit is used as a key. Tests of a laboratory model showed that an error of 0.3-0.5% is attainable at 0.1-100 cps. The measuring time was 60-80 cycles of the test voltage. The scale span was 1-10 v. The device is intended for checking infralow-frequency voltmeters. Orig. art. has: 5 figures, 13 formulas and 1 table.

ASSOCIATION: VNII Gosudarstvennogo komiteta standartov (All-Union Scientific-Research Institute, State Committee of Standards)

SUBMITTED: 00 DATE ACQ: 11Sep63 ENCL: 00

SUB CODE: EE NO REF SOV: 002 OTHER: 001

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GRIN, G.L.

Method for precise measurement of the mean value of alternating voltage in subsonic frequency range. Izm. tekh. no.8:42-45 Ag '63. (MIRA 16:10)

GRIN, G.L.

Equipment defects in the device for measuring the mean voltage value of subsonic frequencies. Izm. tekh. no.10:43-46 O '63. (MIRA 16:12)