KOZHEVNIKOVA, Ye.P. (Sverdlovsk); UZHANSKIY, Ya.G., professor, zaveduyushchiy.

Effect of the higher nervous function on the development of experimental neoplasms. Arkh.pat. 15 no.1:22-27 Ja-F '53. (MLRA 6:5)

1. Kafedra patologicheskoy fiziologii Sverdlovskogo gosudarstvennogo meditsinskogo instituta. (Tumors) (Central nervous system)

UZHANSKIY, Ya.G., professor, predsedatel' pravleniya; TOLSTOUKHOVA, L.I., dotsent, sekretar'.

At the Ural branch of the All-Union Society of Pathophysiologists; on the organization and the first conference of the Ural branch of the All-Union Society of Pathophysiologists. Arkh.pat. 15 no.2:90-92 Mr-Ap '53. (MLRA 6:5)

1. Ural'skiy filial Vsesoyuznogo obshchestva patofiziologov. (Ural Mountain Region--Physiology, Pathological) (Medical societies)

UZHANSKIY, Ya.G., professor, predsedatel'; TOLSTOUKHOVA, L.I., dotsent, sekretar'.

Second conference of the Ural Branch of the All-Union Society of Pathophysiologists. Arkh.pat. 15 no.3:88-90 My-Je '53. (MLRA 6:11)

1. Pravleniye Ural'skogo filiala Vsesoyuznogo obshchestva patofiziologov. (Ural Mountain region--Pathology--Societies) (Societies--Pathology--Ural Mountain region) (Ural Mountain region--Physiology--Societies) (Societies--Physiology--Ural Mountain region)

UZHANSKII, IA.

RT-1371 ('Ural pathophysiologists investigate problems of regional pathology)
Patofiziologi Urala izuchaiut vo rosy kraevoi patologii.
MEDITSINS II RABOTNIK, 17(15): 4, 19 February 1954

PEREL'MAN, L.R. (Leningrad); UZHANSKIY, Ya.G.(Sverdlovsk)

Discussion on T.M.Turpaev's article, Method of registration of tonus of the bronchial muscles. Fiziol. zhur. 40 no.3:387-388 My-Je '54. (MLRA 7:7)

(BRONCHI, physiology,
*tonus of bronchial musc., registration)

UZHANSKIY, Ya. G.

TURPAYEV, T.M.

Answer to L.R.Perel'man and IA.G.Uzhanskii. Fiziol. zhur. 40 no.3:388 My-Je '54. (MLRA 7:7)
(BRONCHI)

KOZHEVNIKOVA, Ye.P., kandidat meditsinskikh nauk; NODOV, A.I., professor-doktor meditsinskikh nauk; UZHANSKIY, Ya.G., professor-doktor meditsinskikh nauk.

Morphological studies on experimental silicosis in rats. Sbor. rab. po sil. no.1:130-132 '56. (MLRA 10:2)

1. Sverdlovskiy Gosudarstvennyy meditsinskiy institut.
(LUNGS--DUST DISEASES)

UZHANSKIY, Ya.G. (Sverdlovsk)

Regulation of regeneration of the blood and ways in which it can be studied. Arkh.pat. 18 no.6:29-35 '56. (MLRA 9:12)

1. Iz kafedry patologicheskoy fiziologii (zav. - prof. Ya.G.Uzhanskiy) Sverdlovskogo meditsinskogo instituta.
(BLOOD, physiology,
regen., method of studies (Rus))

UZHANSKIY, Y. G.

T

USSR/Human and Animal Physiology. Blood.

Abs Jour: Ref Zhur-Biol., No 8, 1958, 36273.

Author : Uzhanskii, Y G.
Inst :
Title : Total Blood Volume Determination and its Significance in the Study of the Mechanism of Hemopoiesis.

Orig Pub: Tr. Vses Konferentsii po med. radiol eksperim. med. radiol. Medgiz, 1957, 237-239.

Abstract: The method of total blood volume determination by injection of radioactive phosphorus is described. The radioactivity was measured in 0.1 ml of a suspension of erythrocytes (E). One ml of suspension was injected intravenously in rabbits and 5 minutes later the radioactivity was measured in 0.1 ml of blood. The total blood volume is equal to the ratio

Card : 1/3

22

T

USSR/Human and Animal Physiology. Blood.

Abs Jour: Ref Zhur-Biol., No 8, 1958, 36273.

of the value of injected activity to the value of the resulting activity in 1 ml of blood. The absolute E count in the blood was calculated from values obtained for the E count in 1 mm^3 and the total blood volume. The assumption of an increased destruction of E during the posthemorrhagic period was confirmed. New E. formation is stimulated by the products of E breakdown. In order to study the effect of a higher O^2 concentration on hemopoiesis (H), rabbits were placed in special chambers for periods of 6-10 hours daily for a period of 12-20 days. H in normal rabbits decreased under the effect of a higher O^2 intake, the E count decreased; in anemic rabbits - vice-versa. Following denervation of the sinocarotid and aortic areas the author noted an initial anemia, followed by poly-

Card : 2/3

Abs Jour: Ref Zhur-Biol., No 8, 1958, 36273.

cythemia, findings similar to those noted in blood loss. Therapeutic sleep under normal conditions inhibits H, but when applied in conjunction with pathogenic factors it is followed by more intensive blood regeneration.

Card : 3/3

UZHANSKIY, Ya.G., prof., KACHANOVA, S.G., dots., TOLSTOUKHOVA, L.I., dots.

Fifth conference of the Ural branch of the All-Union Society of Pathophysiologists. Pat.fiziol. i eksp.terap 2 no.3:60-62 My-Je '58 (MIRA 11:7)

(PHYSIOLOGY, PATHOLOGICAL)

UZHANSKIY, Ya.G., prof. (Sverdlovsk)

Problem of autoregulation of erythropoiesis. Arkh.pat. 21 no.6:3-13 '59. (MIRA 12:12)

1. Iz kafedry patologicheskoy fiziologii Sverdlovskogo meditsinskogo instituta.

(ERYTHROCYTES
erythropoiesis, autoregulation, review, (Rus))
(NERVOUS SYSTEM, physiol.
autoregulation of erythropoiesis, review (Rus))
(HEMOPOIESIS, physiology,
same)

UZHANSKIY, Ya.G.; PAVLOVA, I.V.; Prinimali uchastiye: MORDOVSKIY, G.G.; KIPRIANOVA, N.I., studentka (Sverdlovsk)

Signs of autoagression in the mechanism of blood regeneration. Pat.fiziol.i eksp.terap. 4 no.4:52-57 Jl-Ag '60. (MIRA 14:5)

1. Iz kafedry patofiziologii (zav. - prof. Ya.G.Uzhanskiy) Sverdlovskogo meditsinskogo instituta.
(HEMORRHAGE) (ERYTHROCYTES) (ANTIGENS AND ANTIBODIES)

UZHANSKIY, Ya.G., prof.

"Problems of leukosis and immunohematology." Reviewed by IA.G. Uzhanskii. Biul. Uch. med. sov. 2 no.1:44-45 Ja-F '61. (MIRA 14:10)

(LEUKEMIA) (BLOOD--EXAMINATION)

UZHANSKIY, Ya.G. (Sverdlovsk)

Some problems in pathological physiology at the 8th European Congress of Hematologists. Pat.fiziol.i eksp.terap. 6 no.2:83-85 Mr-Ap '62. (MIRA 15:8)

(HEMATOLOGY--CONGRESSES) (PHYSIOLOGY, PATHOLOGICAL)

UZHANSKIY, Ya.G., prof.; KACHANOVA, S.G., dotsent

Sixth Conference of the Ural Branch of the All-Union Society of Pathophysiologists. Pat. fiziol. i eksp. terap. 6 no. 6: 89-92 N-D '62. (MIRA 17:3)

1. Predsedatel'Ural'skogo filiala Vsesoyuznogo obshchestva patofiziologov (for Uzhanskiy). 2. Sekretar' Ural'ksogo filiala Vsesoyuznogo obshchestva patofiziologov (for Kachanova).

UZHANSKIY, Ya.G.; KACHANOVA, S.G.; TROFIMOVA, Z.G.

Brief news. Pat. fiziol. i eksp. terap. 8 no.1:91 Ja-F '64.
(MIRA 18:2)

UZHANSKIY, Ya.G.; KACHANOVA, S.G.; TIKHACHEK, Ye.S.

Conference of the Ural Interregional Society of Pathophysiologists.
Pat. fiziol. i eksp. terap. 9 no.2:87-89 Mr-Ap '65. (MIRA 18:5)

UZHDAVINI, E.R.

Natural conditioned digestive reflexes in foxes depending upon distance. Trudy Inst.fiziol. no.2:321-334 '53. (MLRA 7:5)

1. Laboratoriya ekologicheskoy fiziologii (zaveduyushchiy - A.D.Slonim). (Reflexes) (Foxes)

Trans: M-1151, 12 Jun '56 under title, "Connection of Distance with Natural Conditioned Alimentary Reflexes in Foxes", Trudy Inst Fiziol im. Pavlov.

UZHDAVINI, E. R.

"On the Formation of Natural Conditioned Food Reflexes in the Ontogeny in Dogs." Acad. Sci. USSR Inst. of Physiology imeni I. P. Pavlov, Laboratory of Economic Physiology, Leningrad, 1955. (Dissertation for the Degree of Candidate of Biological Sciences)

SO: Knizhnaya Letopis', No. 22, 1955, pp 93-105

FAYZIYEV, S.M.; UZHDAVINI, E.R.

Natural conditioned salivary reflexes in sheep. Trudy Inst. fiziol. 4:176-182 '55. (MLRA 9:4)

1.Laboratoriya ekologicheskoy fiziologii. Zaveduyushchiy A.D.Slonim.
(Conditioned response) (Salivary glands) (Sheep)

UZHDAVINI, E.R.

Inborn food reflexes in puppies. Opyt izuch.reg.fiziol.funk. 4: 101-111 '58. (MIRA 12:4)

1. Laboratoriya ekologicheskoy fiziologii (zaveduyushchiy - prof. A.D. Slonim) Instituta fiziologii imeni I.P. Pavlova AN SSSR.
(DOGS) (REFLEXES)

UZHDAVINI, E.R.

Formation of natural flood reflexes in dogs at early stages of ontogeny. Opyt izuch.reg.fiziol.funk. 4:112-123 '58. (MIRA 12:4)

1. Laboratoriya ekologicheskoy fiziologii (zaveduyushchiy - prof. A.D. Slonim) Instituta fiziologii imeni I.P. Pavlova AN SSSR.
(DOGS) (REFLEXES)

UZHDAVINI, E.R.; v rabote prinimala uchastiye KANTSEROVA, N.I., studentka.

Materials on a comparative physiology of salivary reflexes.
Trudy Inst. fiziol. 9:139-150 '60. (MIRA 14:3)

1. Laboratoriya ekologicheskoy fiziolgii (zaveduyushchiy - A.D. Slonim) Instituta fiziologii im. I.P.Pavlova.
(SALIVARY GLANDS) (REFLEXES)

GIMADEYEV, M. M.; GELLER, L. I.; UZHDAVINI, Ye. R.

Conference on the problems of industrial hygiene, occupational pathology and industrial toxicology in the petroleum and petrochemical industries. Gig. truda i prof. zab. no.3:55-57 '62. (MIRA 15:4)

(PETROLEUM INDUSTRY--HYGIENIC ASPECTS)

UZHDAVINI, E. R. (Ufa)

Toxicological characteristics of the tetramer of propylene. Gig. truda i prof. zab. no.4:48-49 '62. (MIRA 15:4)

1. Ufimskiy nauchno-issledovatel'skiy institut gigiyeny i profzabolevaniy.

(PROPENE—TOXICOLOGY)

UZHDAVINIS, A. Y.

PHASE I BOOK EXPLOITATION SOV/4981

Soveshchaniye po teorii veroyatnostey i matematicheskoy statistike, Yerevan, 1958

Trudy Vsesoyuznogo soveshchaniya po teorii veroyatnostey i matematicheskoy statistike, Yerevan, 19-25 sentyabrya 1958 g. (All-Union Conference on the Theory of Probability and Mathematical Statistics. Held in Yerevan 19-25 September, 1958. Transactions) Yerevan, Izd-vo AN ASSR, 1960. 291 p. Errata slip inserted. 2,500 copies printed.

Sponsoring Agency: Akademiya nauk Armyanskoy SSR.

Editorial Staff: G.A. Ambartsumyan, B.V. Gnedenko, Ye.B. Dynkin, Yu.V. Linnik and S. Kh. Tumanyan; Ed. of Publishing House: A.G. Slkuni; Tech. Ed.: M.A. Kaplanyan.

PURPOSE: The book is intended for mathematicians.

COVERAGE: The book contains 41 articles submitted to the Conference and dealing with the theory of probability and mathematical statistics. Some of the articles are the papers read at the Conference and edited for publication, while others outline the theses of papers which appeared or are scheduled to appear, wholly or in part, in other publications; in some cases, such publications are quoted. A list of the papers whose contents were published elsewhere is included and the places of publication are indicated. Individual articles examine theories of mass service, spectral instruments, numbers, games, and certain functions, and discuss the theorems of Shannon, Markov's chains, and certain processes, quantities, and functions. Such items as the method of least squares, the stochastic, Markov's and diffusion processes, measures and their applications, a scheme of Bernoulli experiments, Markov-type random fields, visible distribution of stars, Brownian motion, capacity of radio channels, and defective products are considered. No personalities are mentioned. References accompany some of the articles.

Smirnov, N.V. Asymptotic Cardinality of Some Nonparametric Criteria Concerning Displacement. (Theses) 98

Sarmanov, O.V. On Maximum Coefficient of Correlation. (Theses) 101

Zinger, A.A. New Results Concerning Independent Statistics. (Theses) 103

Khalayevskiy, O.V. On the Theory of the Method of Least Squares When Weights are Unknown 106

Ambartsumyan, G.A. On Quantity of Information About an Unknown Probability in the Scheme of Bernoulli's Experiments 112

Tumanyan, S.Kh. On the Statistical Criterion, χ^2, as Applied to the Problem of Two Samples 121

Ambartsumyan, V.A. On Fluctuations in the Visible Distribution of Stars 139

Brodi, S.M. On One Problem in the Theory of Mass Service 145

Kovalenko, I.N. On the Restoration of Additive Type of Distribution by the Sequence of Series of Independent Observations 148

Kloss, B.M. Random Quantities of Bicompact Semigroups. (Theses) 160

Kubilyus, I.P., Yu.V. Linnik, and A.Y. Uzhdavinis. Some New Results in the Probabilistic Theory of Numbers, and Simulation of Brownian Motion. (Theses) 162

Dobrushin, R.L., Ya.I. Khurgin, and B.S. Tsybakov. Approximate Computation of the Carrying Capacity of Radio Channels with Random Parameters 164

Kordonskiy, Kh.B. Distribution of the Number, X, of Defective Products in Lots 172

Khalfin, L.A. On Theoretical Informational Approach to the Theory of Spectral Instruments 187

Romanovskiy, I.B. On Probability Problems Leading to Dynamic Programing 206

Card 6/8

UZHDAVINIS, R.V. [Uzdavinys, R.]

Simultaneous distribution of values of additive arithmetic functions from polynomials with integral coeficients. Liet ak darbai B no.1: (EEAI 9:10) 5-29 '60.

1. Institut fiziki i matematiki AN Litovskoy SSR.
(Functions) (Polynomials)
(Number, Theory of)

20. Uzhdavinis, R. V. On the Problem of Distribution of Additive Arithmetical Functions of Integer Polynomials 125

MARKOV PROCESSES

21. Blagoveshchenskiy, Yu. N. On Diffusion Processes With a Small Variance 131

22. Girsanov, I. V. Ito's Stochastic Equations and Some of Their Generalizations 133

23. Kalmykov, G. I. On Semiordered Markov Processes 143

24. Nagayev, S. V. Some Problems of the Theory of Markov Processes With Discrete Time 145

25. Sarmanov, O. V. On One Method of Investigating Stationary Markov Processes 149

Transactions of the 6th Conf. on Probability Theory and Mathematical Statistics and of the Symposium on Distributions in Infinite-Dimensional Spaces held in Vil'nyus, 5-10 Sep '60. Vil'nyus Gospolitizdat Lit SSR, 1962. 493 p. 2500 copies printed

KRAKHMALOV, Z.; UZHEGOV, G.

Work experience of the excavator operator I.F.Netaev. Sbor.mat. o nov. tekh. v stroi. 15 no.7:6-9 Jl '53. (MLRA 6:7)
(Excavation) (Netaev, I.F.)

BURBEL', A.N., inzhener; UZHEGOV, G.T.

Work experience of excavator and scraper operators of the Stalingrad hydroelectric power project. Biul.stroi.tekh. 10 no.13:12-13 Ag '53.
(MLRA 6:10)

(Earthmoving machinery) (Stalingrad hydroelectric power station)

UZHEGOV, T., podpolkovnik

With the force of public opinion. Komm. Vooruzh. Sil 4 no.4:91-92 F '64. (MIRA 17:9)

BILYK, P., podpolkovnik; UZHFGOV, T., podpolkovnik

The social science teacher's vocation. Komm. Voorush. Sil 46 no.6:50-55 Mr '65. (MIRA 18:11)

UZHEVA, I. G.

The Committee on [illegible] science and inventions announces that the following scientific works, [illegible] tific books, and textbooks have been submitted for competition for [illegible] for the years [illegible] and [illegible]. ([illegible], Moscow, No. [illegible], [illegible] Feb [illegible])

Name	Title of Work	Nominated by
Zenkevich, L. A. Birshteyn, B. A. Karnevich, A. F. Yablonskaya, Ye. A. Belyayev, G. M. Spasskiy, N. N. Uzheva, I. G.	"Acclimatization of Nereis in the Caspian Sea"	Ministry of the Food Products Industry USSR

SO: W-30484, 7 July 1954

BELYAYEV, Dmitriy Vasil'yevich; VORONKOV, N.A., inzh., retsenzent; UZHEVSKIY, G.S., inzh., retsenzent; SHEYN, Ya.P., inzh., red.; KL'KIND, L.M., red.izd-va; KARASEV, A.I., tekhn.red.

[Metallurgy of tin; manual for the training of qualified workers in industry] Metallurgiia olova; uchebnik dlia podgotovki kvalifitsirovannykh rabochikh na proizvodstve. Moskva, Gos.nauchno-tekhn.izd-vo lit-ry po chernoi i tsvetnoi metallurgii, 1960. 94 p. (MIRA 13:5)
(Tin--Metallurgy)

UZHICHNER, R.

Meeting with a writer. Prom.koop. no.1:34 Ja '56. (MLRA 9:6)
(Ignatov, Petr Karpovich, 1894-)

UZHIK,G.S.

Mechanical hitching assembly for trailers. Sel'khoz-mashina no.6:19-21 Je '55. (MLRA 8:8)
(Harvesting machinery)

LITVINENKO, L.B., kand.sel'skokhoz.nauk; UZHIK, G.S., inzh.

Universal crane-type hay stacker. Trakt.i sel'khozmash. 31 no.9:31-32 S '61. (MIRA 14:10)

1. Khar'kovskaya stantsiya Ukrainskogo nauchno-issledovatel'skogo instituta mekhanizatsii i elektrifikatsii sel'skogo khozyaystva.
(Loading and unloading) (Hay--Harvesting)

UZHIK, G., inzh.

Exchangeable combine trailer for gathering broken corn stalks. Tekh. v sel'khoz. 20 no.7:25-26 Jl '60. (MIRA 13:9)

1. Khar'kovskaya opytnaya stantsiya Ukrainskogo nauchno-issledovatel'skogo instituta mekhanizatsii i elektrifikatsii sel'skogo khozyaystva.
(Corn (Maize)--Harvesting)

UZHIK, G. V.

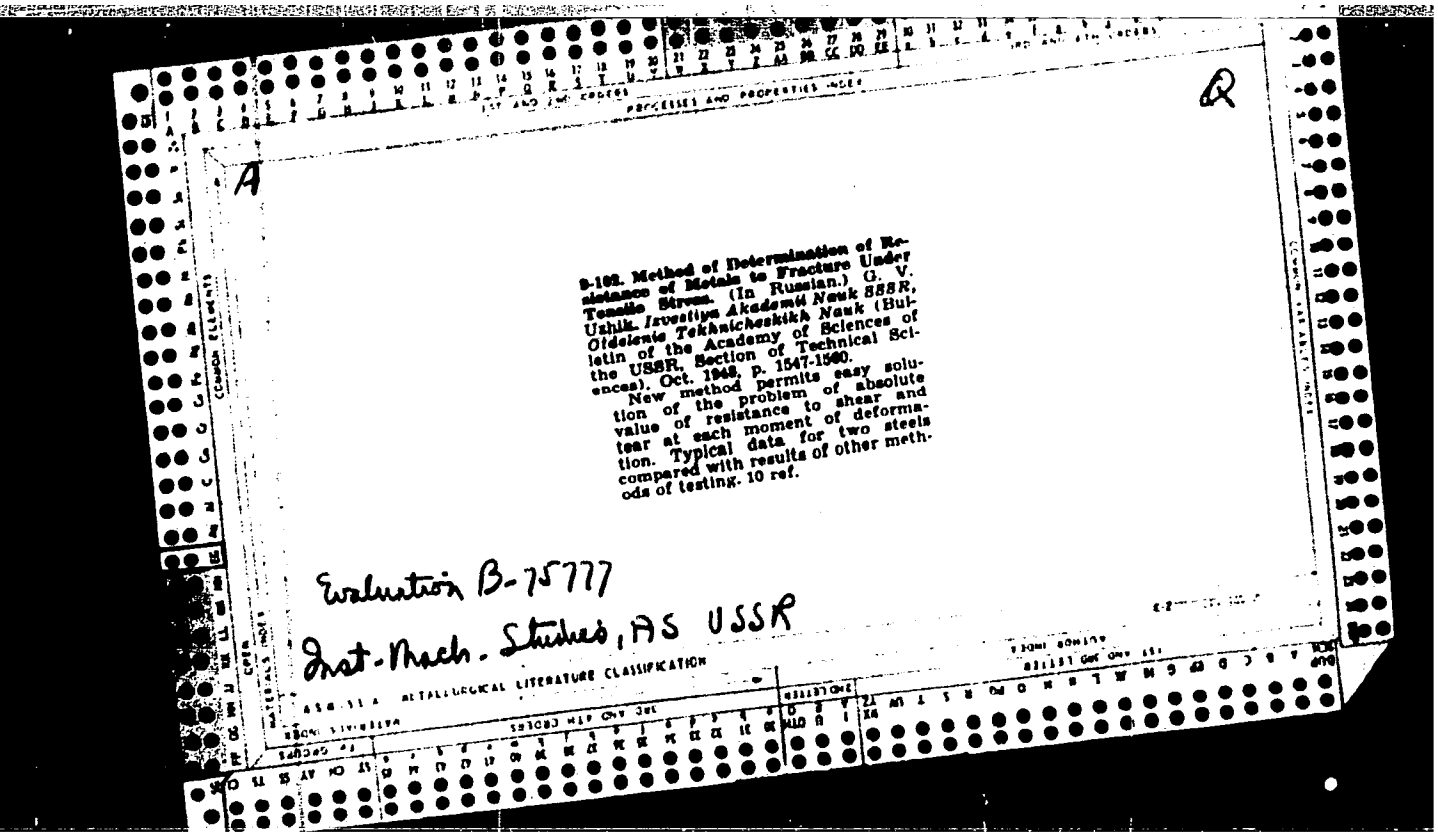
Metody ispytanii metallov i detalei mashin na vynoslivost'. Moskva, 1948. 262 p., diagrs.

Bibliography: p.254-259.

Title tr.: Methods of testing the strength of metals and machine parts.

TA460.U9

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



B-102. Method of Determination of Resistance of Metals to Fracture Under Tensile Stress. (In Russian.) G. V. Uzhik. *Izvestiya Akademii Nauk SSSR, Otdeleniie Tekhnicheskikh Nauk* (Bulletin of the Academy of Sciences of the USSR, Section of Technical Sciences). Oct. 1948. p. 1547-1560.

New method permits easy solution of the problem of absolute value of resistance to shear and tear at each moment of deformation. Typical data for two steels compared with results of other methods of testing. 10 ref.

Evaluation B-75777

Inst. Mech. Studies, AS USSR

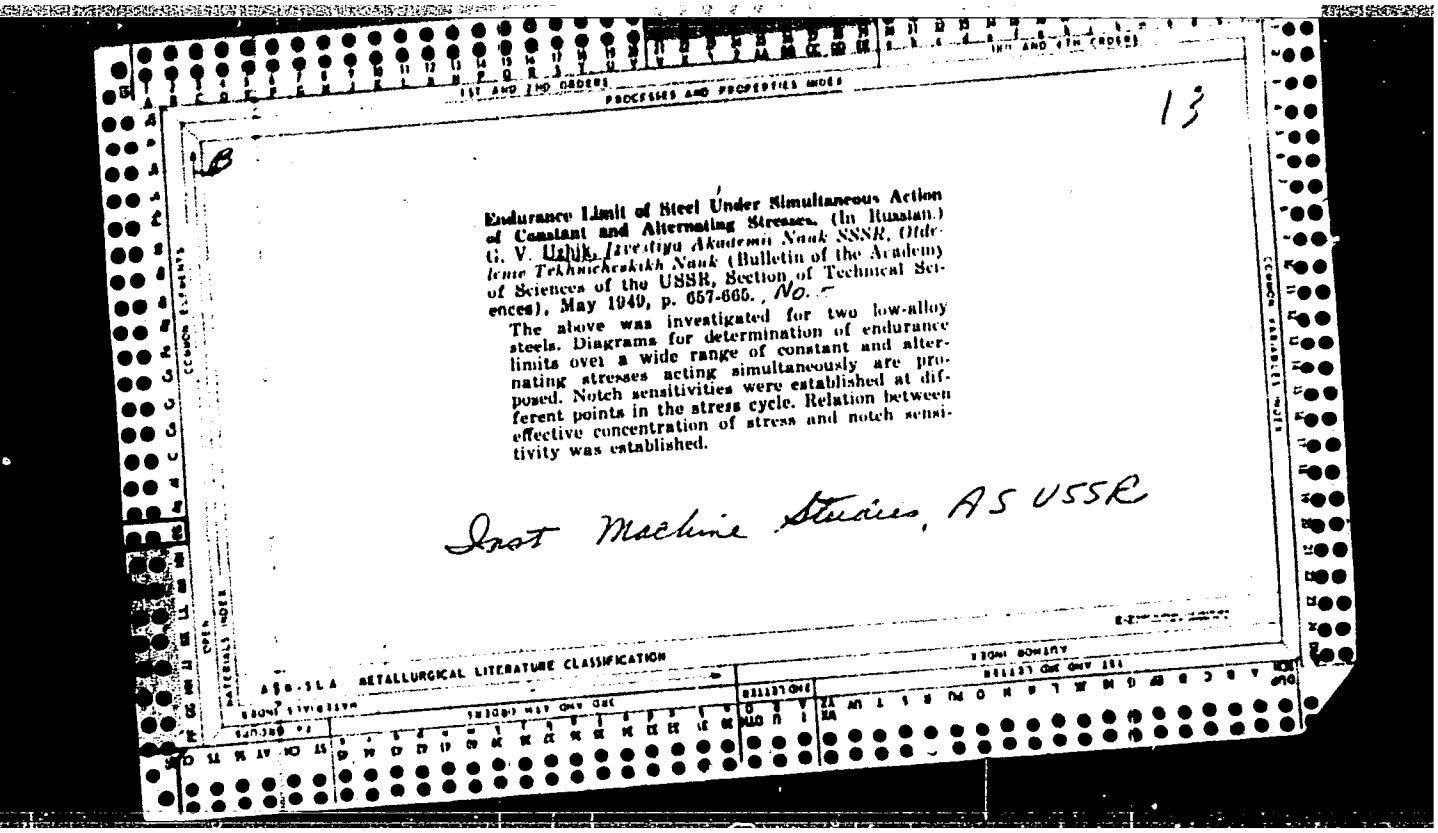
UZHIK, G. V.

Effekt kontsentratsii napriazhenii pri asimmetrichnykh tsiklakh nagruzov. (Vestn. Mash., 1949, no.4, p. 5-9)

Effects of stress concentration under asymmetrical cyclical loads.

DLC: TN4.74

SO: Manufacturing and Mechanical Engineering in the Soviet Union, Library of Congress, 1953.



PROCESSES AND PROPERTIES INDEX

13

Endurance Limit of Steel Under Simultaneous Action of Constant and Alternating Stresses. (In Russian.) G. V. Uzhik, *Izvestiya Akademii Nauk SSSR, Otdelenie Tekhnicheskikh Nauk* (Bulletin of the Academy of Sciences of the USSR, Section of Technical Sciences), May 1949, p. 657-665. No.

The above was investigated for two low-alloy steels. Diagrams for determination of endurance limits over a wide range of constant and alternating stresses acting simultaneously are proposed. Notch sensitivities were established at different points in the stress cycle. Relation between effective concentration of stress and notch sensitivity was established.

Inst Machine Studies, AS USSR

A56-SLA METALLURGICAL LITERATURE CLASSIFICATION

UZHIL, G. V.

PA 161T99

USSR/Metals - Theory of Strength Oct 49

"On Fundamentals of the Theory of Strength and Plasticity," G. V. Uzhik, Inst of Mach Studies, Acad Sci USSR, Cen Sci Res Inst of Ferrous Metal, 22½ pp

"Iz Ak Nauk SSSR, Otdel Tekh Nauk" No 10

Suggests new criterion of strength -- resistance of materials to break, which characterizes ability of materials to resist destruction at stage of elastic deformation. Analyzes new characteristic and proves it is a constant independent of stressed state.

161T99

USSR/Metals - Theory of Strength (Contd) Oct 49

Submitted by Acad I. P. Bardin and Acad Ye. A. Chudakov.

161T99

UZHIK, G. V.

Feb 49

USSR/Engineering
Elasticity
Stress Analysis

"The Unity of Strength and Pliability Conditions,"
G. V. Uzhik, 4 pp

"Dok Ak Nauk SSSR" Vol LXIV, No 4

States that one important factor has been neglected in calculating conditions necessary for transfer to boundary state. This is the resistance of a material to break, i.e., the material's ability to withstand breakdown or elastic deformation. Attempts to determine this value. Submitted 24 Nov 48.

27/49T55

M

Theory of the Load-Carrying Capacity of a Metal. G. V. Uzhik (*Doklady Akad. Nauk S.S.S.R.*, 1949, **68**, (1), 61–64; *Appl. Mechanics Rev.*, 1950, **3**, 406).—[In Russian]. It is shown analytically that the ultimate load P_p sustained by a tensile specimen with a deep circumferential groove may be substantially increased by appropriate mechanical working of the outer layer of the metal in the area of stress concentration. Based on his previously published theoretical development (see preceding abstract), U. presents a family of theoretical load curves for a specimen of 18 mm. dia. having a V-groove 4 mm. deep. He shows that if the shear strength of the material in an outer layer of thickness t is reduced by working this layer, for small values of t (to ~0·03a, where $2a$ is specimen dia. at the groove), P_p drops; but with increased depth of working P_p increases until at the optimum point (t = 0·40a, shear strength ratio, worked to unworked metal, = 0·322), P_p is doubled. This effect is the more pronounced the closer to unity is the ratio of tensile to shear strength in the unworked material. This ratio was 1·5 in the given example. Experimental results are not given, but it is indicated that experiment substantiates the above theory.

Copy. 1357

PA 3/50T84

USSR/Physics - Elastic Deformation 11 Sep 49
Metals - Elastic Deformation

"One Notable Peculiarity of Multifold, Nonuniform Compression," G. V. Uzhik, 3 pp

"Dok Ak Nauk SSSR" Vol LXVIII, No 2

Determines certain conditions where it is possible, in the stage of elastic deformation, to subject a material to a very considerable multifold, non-uniform compression without danger of break. Moreover, value of $t_{max}/(\sigma_1)-(\sigma_3)/2)$, where σ_1 and σ_3 are the compression stresses/ may be raised to amount necessary to overcome material's

3/50T84

USSR/Physics - Elastic Deformation (Contd) 11 Sep 49

shear resistance, no matter how great this resistance is. Submitted by Acad Ye. A. Chudakov, 11 Jul 49.

3/50T84

UZHIK, G. V.

UZHIK G. V., TA 172T47

USSR/Metals - Plasticity 21 Oct 49
Brittleness

"New Criterion for Brittleness and Plasticity of Metals," G. V. Uzhik.

"Dok Ak Nauk SSSR" Vol LXVIII, No 6, pp 1037-1039

Defines 2 states of material by ratio of resistance to rupture to resistance to shear for material. If ratio >1 material is in brittle state, and if ratio <1 material is in plastic state. This ratio not only defines state, but determines deg of friability or plasticity of material. Submitted by Acad I. P. Bardin 27 Aug 49.

[redacted] 172T47

Evaluation B-75777

UZHIK, G. V.

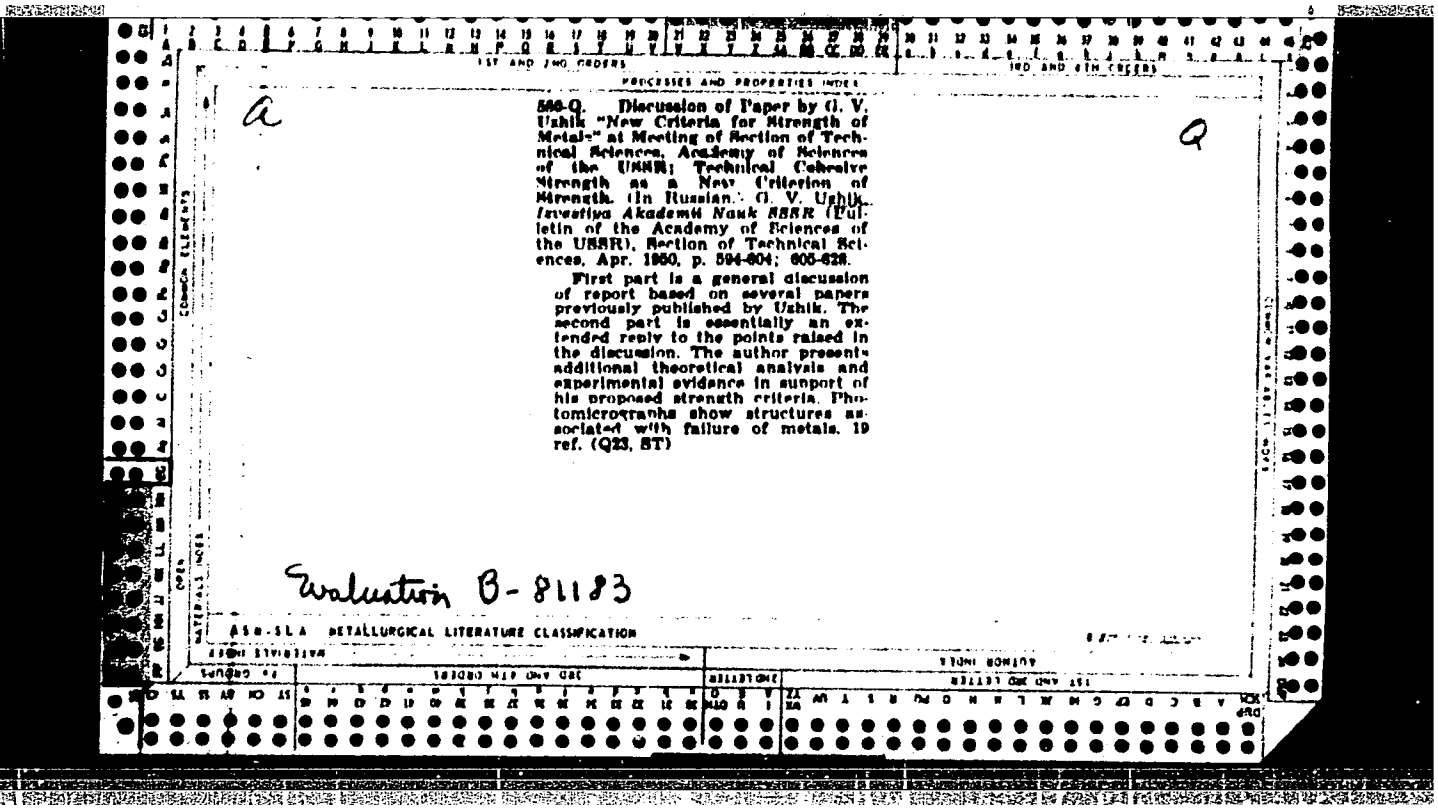
Soprotivlenie otryvu i prochnost' metallov. Moskva, Izd-vo Akademii nauk SSSR, 1950. 254 p., illus, tables.

Bibliography: p.251-252.

Title tr.: Strength of metals in relation to their technical cohesive strength.

TA460.U94

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



PROCESSES AND PROPERTIES INDEX

a

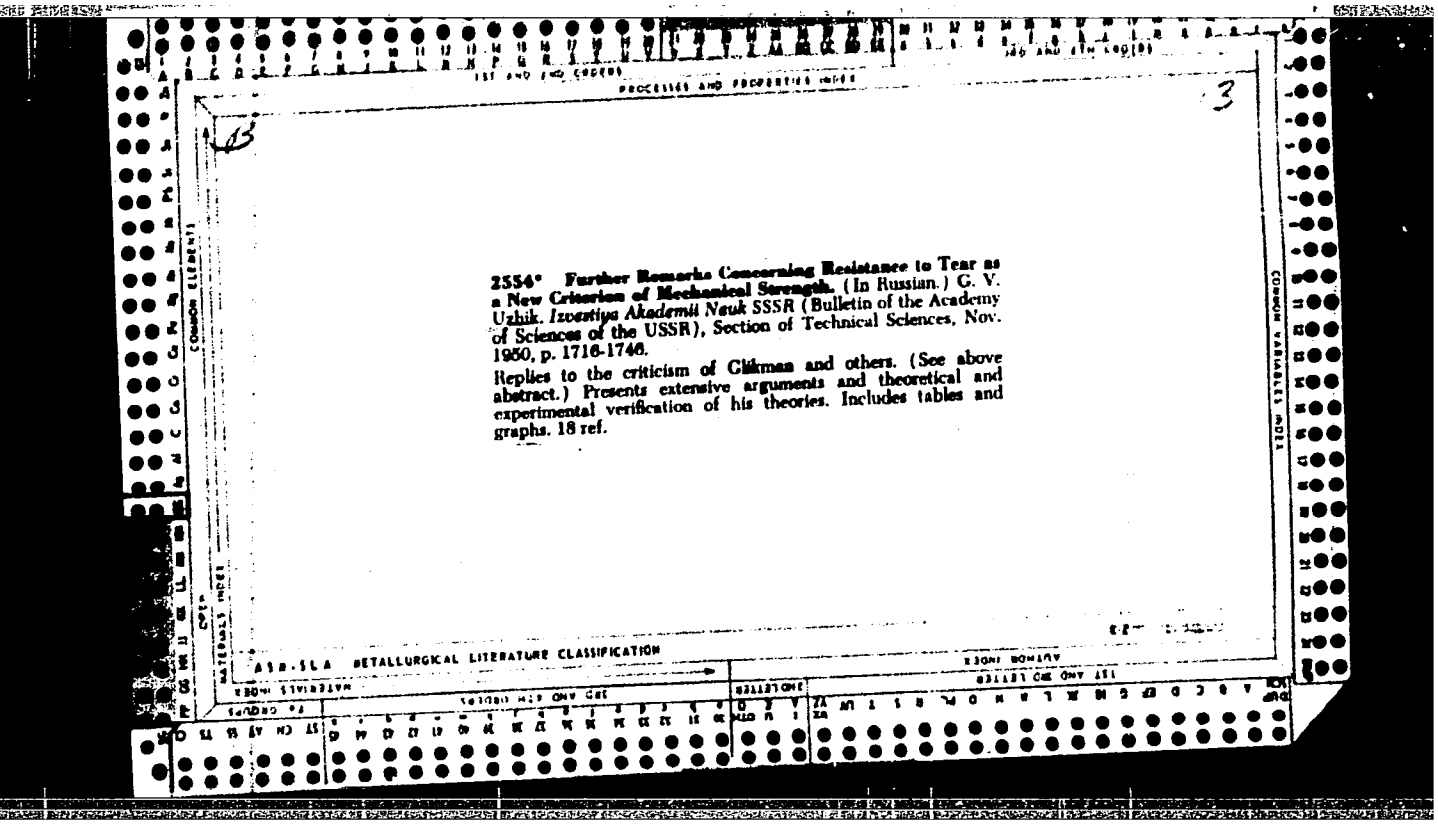
500-Q. Discussion of Paper by G. V. Uzhik "New Criteria for Strength of Metals" at Meeting of Section of Technical Sciences, Academy of Sciences of the USSR; Technical Cohesive Strength as a New Criterion of Strength. (In Russian.) G. V. Uzhik. *Izvestiya Akademii Nauk SSSR* (Bulletin of the Academy of Sciences of the USSR), Section of Technical Sciences, Apr. 1950, p. 594-604; 605-628.

First part is a general discussion of report based on several papers previously published by Uzhik. The second part is essentially an extended reply to the points raised in the discussion. The author presents additional theoretical analysis and experimental evidence in support of his proposed strength criteria. Photomicrographs show structures associated with failure of metals. 19 ref. (Q23, ST)

q

Evaluation B-81183

ASM-SLA METALLURGICAL LITERATURE CLASSIFICATION



2554* **Further Remarks Concerning Resistance to Tear as a New Criterion of Mechanical Strength.** (In Russian.) G. V. Uzhik. *Izvestiya Akademii Nauk* SSSR (Bulletin of the Academy of Sciences of the USSR), Section of Technical Sciences, Nov. 1950, p. 1716-1746.

Replies to the criticism of Glikman and others. (See above abstract.) Presents extensive arguments and theoretical and experimental verification of his theories. Includes tables and graphs. 18 ref.

UZHIK, G. V.

Prochnost' metallov i vliianie kontsentr tsii napriazhenii pri izgibe s krucheniem v usloviiakh simmetrichnykh tsiklov peremennykh nagruzok. (Vestn., Mash., 1951, no.7, p. 5-14)

Includes bibliography.

Strength of metals and effect of stress concentration during bending-torsion under symmetrical cycles of variable loads.

DLC: TN4.V4

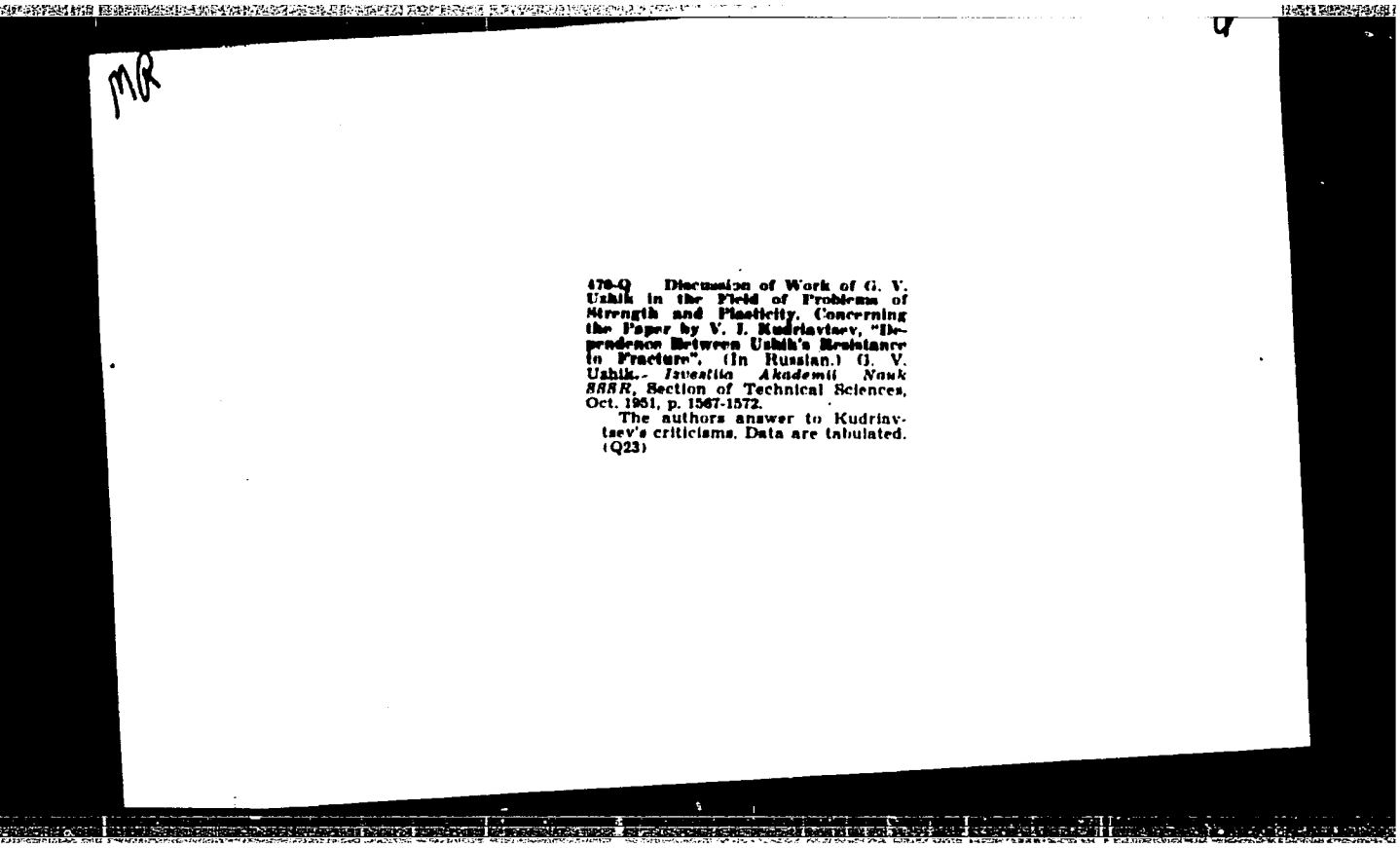
SO: Manufacturing and Mechanical Engineering in the Soviet Union, Library of Congress, 1953.

MR

4

469-Q. **Brittle Fracture of Metals.** (In Russian.) G. V. Uzhik. *Izvestiia Akademii Nauk SSSR*, Section of Technical Sciences, Sept. 1951, p. 1399-1414.

An answer to comments by N. N. Davidenkov on a previous article by the author. Stresses in notched bars and similar questions are discussed. 30 ref. (Q26)



MR

Q

470-Q Discussion of Work of G. V. Uzhik in the Field of Problems of Strength and Plasticity. Concerning the Paper by V. I. Kudriavtsev, "Dependence Between Uzhik's Resistance to Fracture". (In Russian.) G. V. Uzhik.- *Izvestiia Akademii Nauk SSSR*, Section of Technical Sciences, Oct. 1951, p. 1567-1572.

The authors answer to Kudriavtsev's criticisms. Data are tabulated. (Q23)

MA

Q

471-Q. **Concerning N. P. Shchapov's Letter.** (In Russian.) G. V. Uzhik... *Izvestiia Akademii Nauk SSSR*, Section of Technical Sciences, Oct. 1951, p. 1574-1578.

Answer to Shchapov's criticism of the author's theory of strength. (Q23)

UZHIK, G. V.

178T78

USSR/Metallurgy - Steel, Compression Strength 1 Jan 51

"Particular Resistance of Metals to Repeated (Noncontact) Compression," E. A. Chudakov, G. V. Uzhik

"Dok Ak Nauk SSSR" Vol LXXVI, No 1, pp 37-40

For optimum use constr steel should have cross section with compression strength higher than its tensile strength. Method could not be generalized, but in particular cases results proved high compression strength. Asym shape of parts found to be the most appropriate.

178T78

UZHIK, G.V.

Conclusions of the commission on durability at the Presidium of the Academy of Sciences of the U.S.S.R., based on the discussions of Uzhik's works. Izv. AN SSSR Otd. tekh. nauk No. 5, 1952.

Monthly List of Russian Accessions, Library of Congress, November 1952, Unclassified.

UZHIK, G. V.

3 D, NA/LB

13068. (Strength of Metals and Effect of Stress Concentration in Bending With Torsion in Conditions of Non-symmetrical Cycles of Alternating Load.) Prochnost' metallov i vliianie kontsentratsii napriazhenii pri izgibe s kruchenlem v usloviiakh nesimmetrichnykh tsiklov peremennykh nagruzok. G. V. Uzhik. *Vestnik Mashinostroeniia*, v. 34, no. 4, Apr. 1954, p. 11-14.

Formula for fatigue limit. Tables, graphs, photographs. 4 ref.

USSR/Engineering - Stress analysis

Card 1/1 Pub. 22 - 5/56

Authors : Uzhik, G. V.

Title : Resistance of plastic metals to the brittle destruction

Periodical : Dok. AN SSSR 99/5, 685-687, Dec 11, 1954

Abstract : Methods of determining the brittle breaking-points of plastic metals (silicon steel) at normal temperatures are discussed in the light of the expression for brittleness: $\frac{\tau_{max}}{\sigma_i} < \frac{\tau_s}{R\sigma}$, which indicates two possibilities for determining a brittle breaking-point, $R\sigma$, namely, either by changing the load characteristic through a decrease of the τ_{max}, or by changing the physical properties of a metal through an increase in $\frac{\tau_s}{R\sigma}$. The author used the first method and experimentally proved that the brittle breaking-point of metals could be determined at normal temperatures. Five USSR references (1933-1951). Diagrams; illustrations.

Institution : The Institute of Machine Engineering of the Acad. of Scs. of the USSR

Presented by: Academician S. A. Khristianovich, May 29, 1954

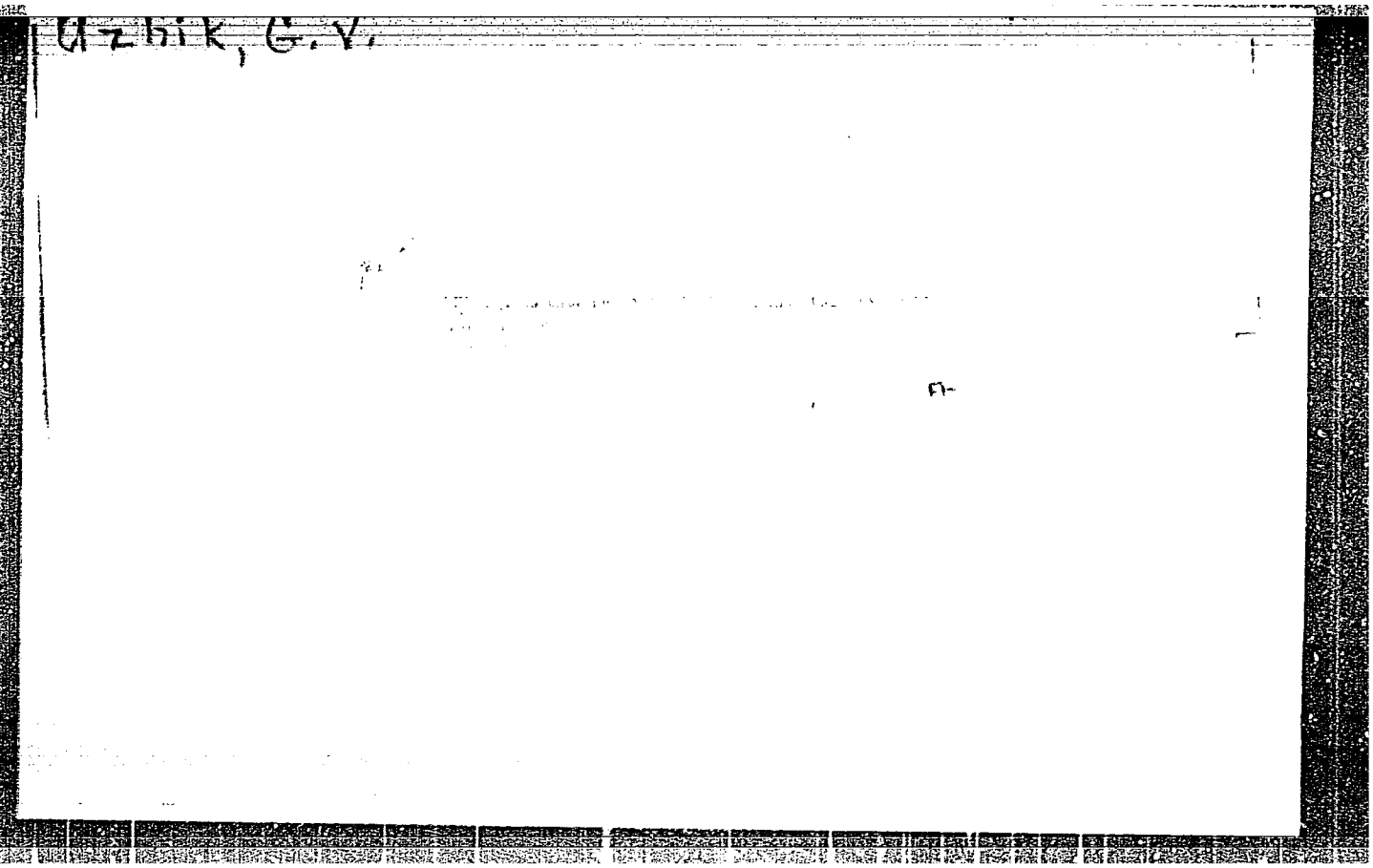
UZHIK, G. V.

USSR

62

The strength and plasticity of metals at low and extra low temperatures. G. V. Uzhik. *Izvest. Akad. Nauk S.S.S.R., Otdel. Tekh. Nauk* 1955, no. 1, 57–66.—Description is given of an app. constructed for the detn. of shear-strength changes at temps. down to the b.p. of H. The deformation curves during loading permit observations of changes in plasticity and the conversion of the plastic to the elastic states, and the detn. of the tensile strength of a no. of metals (Armco iron, cast iron, several grades of steel, including a Cr-Ni steel, bronze, duraluminum) at −196° and −253°. Structural steels retain some plasticity at −196°, but break elastically with very small plastic deformation at −253°. Low-tempered steel (200°) of low plasticity at room temp. becomes brittle at −196° (elongation = 2%). Cast iron, possessing practically no plasticity at room temp., retains its tensile strength unchanged at −253°. The plasticity of nonferrous alloys and austenite steels is but slightly affected at −253°, but their resistance to shear and tensile strength are substantially increased. A table gives changes in the yield point of a no. of structural materials.

W. M. Sternberg



UZHIK,G.V., doktor tekhnicheskikh nauk

Study of problems of metal fatigue (at the international conference in Stockholm). Vest.AN SSSR 25 no.9:62-65 S'55. (MLRA 8:12)
(Stockholm--Metals--Fatigue)

Uzhik, G. V.

USSR/ Engineering - Deformation tests

Card 1/1 Pub. 128 - 3/28

Authors : Uzhik, G. V., Dr. of Mech. Sc., Prof.

Title : Limit resistance of plastic metals to breaking through brittleness

Periodical : Vest. mash. 35/6, 13 - 17, June 1955

Abstract : Various types of steels were tested at normal and -253° temperatures to determine the yield strength and causes of breaking and deformation of plastic metals through brittleness. Individual tests are briefly described, and technical data is given. Nine references: 8 USSR and 1 British (1933-1955). Tables; graphs; drawing; illustration.

Institution : .....

Submitted : .....

UZHIK, G. V.

Mechanical aspect of size effect on fatigue of metals, a paper presented at International Conference on Fatigue of Metals, London, Sep. 56.

DSI. No, 103

UZHIK, G.V.

Category : USSR/Solid State Physics - Phase Transformation in Solid Bodies E-5

Abs Jour : Ref Zhur - Fizika, No 2, 1957 No 3856

Author : Uzhik, G.V. Zaykova A.A.
Inst : Institute of Machine Science, Academy of Sciences USSR
Title : On the Mechanical Nature of Temper Brittleness

Orig Pub : Metallovedeniye i obrabotka metallov, 1956, No 4, 26-34

Abstract : Explanation of the mechanical nature of temper brittleness and the cause of the transition of the material at a certain tempering temperature into a brittle state. The investigation was made on 30 KhGS steel. It is shown that the mechanical nature of the temper brittleness lies principally in the different ability of the steels to form the initial plastic deformation in the brittle and viscous states under conditions that are created after the start of the damage, i.e., after the appearance of the cracks, and in connection with this in the different ability of the material in the brittle and viscous state to resist the development of the already initiated damage. Under conditions when $\tau_{max}/6 < 0.5$, the resistance to shear and the time interval required

Card : 1/2

Category USSR/Solid State Physics Phase Transformation in Solid Bodies E-9

Abs Jour : Ref Zhur - Fizika No 2 1957 No 3856

to form the initial plastic deformation in brittle steels increase to such an extent, that σ_{max} has a chance to increase to the value of the resistance to brittle damage even before the termination of the process of the formation of plastic deformation.

Card : 2/2

UZHIK, G.V., doktor tekhnicheskikh nauk.

Strength of metals at low temperatures. Vest.AN SSSR 26 no.8:9-14 Ag '56. (Metals at low temperatures) (MLRA 9:9)

UZHIK, Georgiy Viktorovich; LOZINSKIY, M.G., doktor tekhnicheskikh nauk, otvetstvennyy redaktor; KOPNOV, Ye.V., redaktor izdatel'stva; KASHINA, P.S., tekhnicheskiy redaktor

[Strength and plasticity of metals at low temperatures] Prochnost' i plastichnost' metallov pri nizkikh temperaturakh. Moskva, Izd-vo Akad. nauk SSSR, 1957. 191 p. (MLRA 10:5)
(Metals at low temperatures)

UZHIK G. V.

AUTHOR: Serensen, S. V., Member of the AS, Ukrainian SSR 30-1-29/39

TITLE: A Meeting of the French Society of Metallurgists (Sessiya Frantsuzskogo obshchestva metallurgov)

PERIODICAL: Vestnik AN SSSR, 1958, Vol. 28, Nr 1, pp. 107-108 (USSR)

ABSTRACT: The meeting took place in Paris from October 7 - 11, 1957. Problems of material fatigue were discussed, with French, English, Italian, Russian, American and Swedish scientists taking part. The processes in fatigued steel were determined by means of measurements of the magnetic resistance. Problems of fatigue with increased temperatures were discussed. Experiments with motor elements, auto--chassis and riveted airplane constructions were discussed. The Soviet scientists reported on fatigue problems:
S. V. Serensen (Fatigue of Cast Iron in Connection with the Character of State of Stress and Structure),
G. V. Uzhik (On the Influence of the Concentration of Tensional Stress on Fatigue),
A. G. Nikonov (On the Fatigue Phenomena in Rolling with Sliding),
I. A. Oding (On the Structure Theory of Creeping).

Card 1/2

A Meeting of the French Society of Metallurgists 3-1-25/39

AVAILABLE: Library of Congress

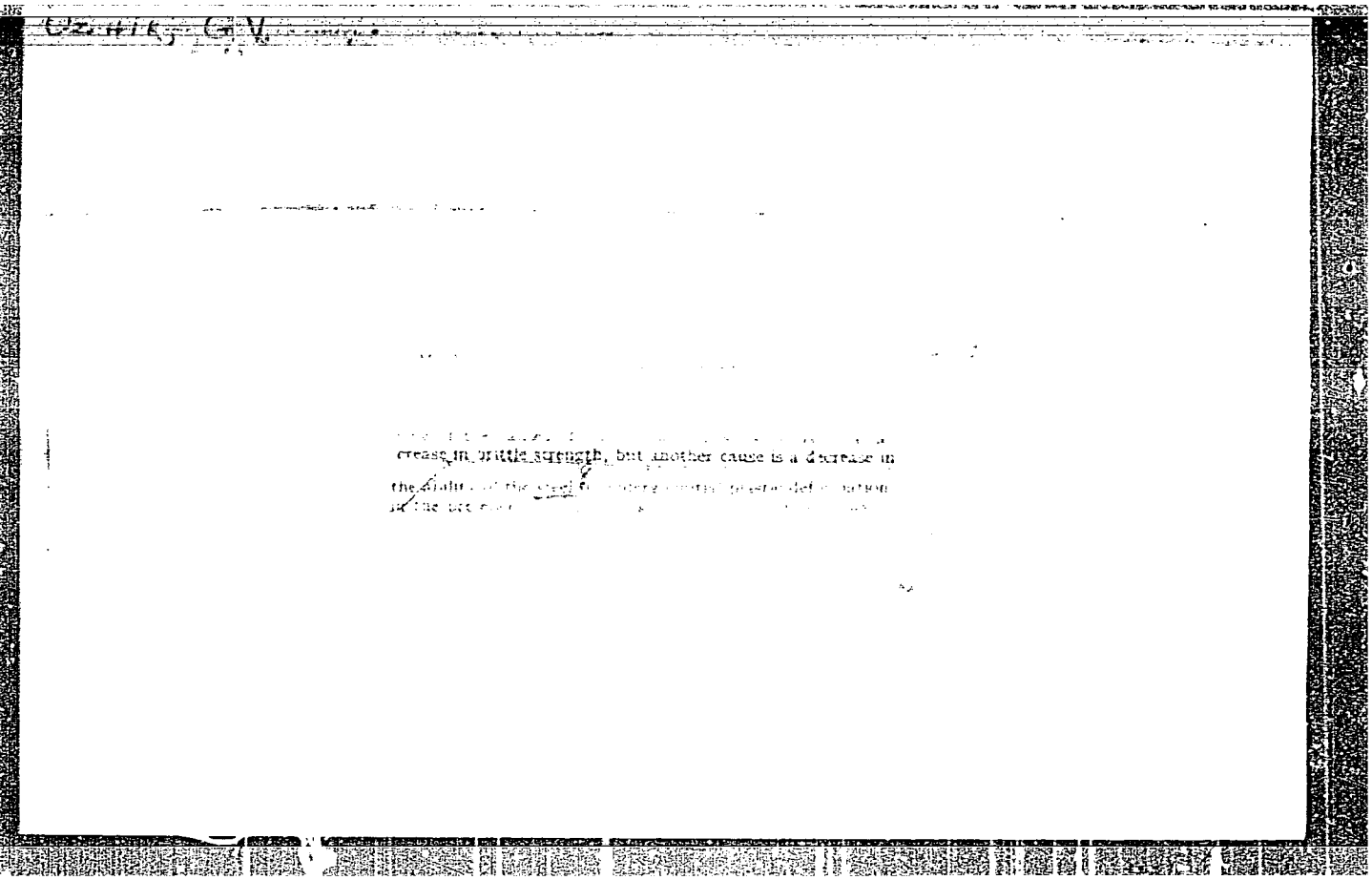
1. Metallurgy-France

Card 2/2

UZHIK, G. V. Prof. and VOLOSHENKO-KLIMATOVSKIY, Y. Y.

"The Elastic-Plastic Strain of Steels under Longitudinal Impact," paper submitted at the Conference on the Properties of Materials at High Rates of Strain, London, 30 Apr-2 May 1957

Mechanical Inst., AS USSR



crease in brittle strength, but another cause is a decrease in

UZHIK, G. V.

"The Fragile Rupture of Plastic Metals in Relation to the State of Strain." Section I).

paper ~~scheduled for~~ presented on at Annual Autumn Meeting of French Society of Metallurgy, Paris, France , 20-25 Acto 58.

ABSTRACT - 1207344

25(6) PHASE I BOOK EXPLOITATION SOV/1671

Uzhik, Georgiy Viktorovich, Doctor of Technical Sciences, Professor

Prochnost' metallov v mashinostroyenii (Strength of Metals in Machine Building) Moscow, Trudrezervizdat, 1958. 73 p. (Series: Novaya tekhnika i peredovyye metody truda) 10,000 copies printed.

Scientific Ed.: G.M. Shuval, Engineer; Ed.: E.M. Kontsevaya; Tech. Ed.: Yu. N. Gorokhov.

PURPOSE: The booklet is intended for instructors and foremen of labor reserve schools. It may also be useful to engineering workers and specialists in industry.

COVERAGE: The booklet is a popular presentation of the fundamentals of strength of metals as applied in machine building. Types of loads under which metal parts work are discussed. Various metal-testing methods are given and machines and instruments

Card 1/3

used in testing operations are described. No personalities are mentioned. There are 6 Soviet references.

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AVAILABLE: Library of Congress

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Card 3/3

UZHIK, G.V.

24(6) PHASE I BOOK EXPLOITATION SOV/2385

Akademiya nauk SSSR

Nekotoryye problemy prochnosti tverdogo tela; sbornik statey (Some Problems in the Strength of Solids; Collection of Articles) Moscow, Izd-vo AN SSSR, 1959. 386 p. Errata slip inserted. 2,000 copies printed.

Ed. of Publishing House: V. I. Aver'yanov; Tech. Ed.: R. S. Pevzner; Editorial Board: A.F. Ioffe, Academician; G. V. Kurdyumov, Academician; S. N. Zhurkov, Corresponding Member, USSR Academy of Sciences; B. P. Konstantinov, Corresponding Member, USSR Academy of Sciences; F. F. Vitman, Doctor of Physical and Mathematical Sciences, Professor (Resp. Ed.); L. A. Glikman, Doctor of Technical Sciences, Professor; N. A. Zlatin, Doctor of Physical and Mathematical Sciences; V. A. Stepanov, Doctor of Technical Sciences; Ya.B. Fridman, Doctor of Technical Sciences, Professor; B. S. Ioffe, Candidate of Technical Sciences (Deputy Resp. Ed.).

PURPOSE: This book is intended for construction engineers, technologists, physicists and other persons interested in the strength of materials.

COVERAGE: This collection of articles was compiled by the Otdeleniye fiziko-matematicheskikh nauk AN SSSR (Department of Physical and Mathematical Sciences) and the Fiziko-tekhnicheskiy institut AN SSSR (Institute of Applied Physics, Academy of Sciences, USSR) in commemoration of the 80th birthday of Nikolay Nikolayevich Davidenkov, Member of the Ukranian Academy of Sciences, founder and head of the Otdel prochnosti materialov (Department of the Strength of Materials) at the Institute of Applied Physics, Academy of Sciences, USSR, founder of the Fakul'tet fizicheskogo metallovedeniya (Department of Physical Metallurgy) at the Leningradskiy politekhnicheskiy institut (Leningrad Polytechnic Institute), recipient of the Stalin Prize (1943), the Order of the Red Banner of Labor (1945) and the Order of Lenin (1953). The articles deal with the strength of materials, phenomena of imperfect elasticity, temper brittleness, hydrogen embrittlement, cold brittleness, influence of deformation speed on the mechanical properties of materials, fatigue of metals, and general problems of the strength, plasticity, and mechanical properties of nonmetals. Numerous personalities are mentioned in the introductory profile of Professor Davidenkov. References are given at the end of each article.

Moroz, L.S., and Yu.D. Khesin. Investigation of the Hydrogen Embrittlement of Two-Phase Titanium Alloys 140

Potak, Ya.M., and O.P. Bruslantseva. Hydrogen Embrittlement of Steel and the Influence of Mechanical Testing Conditions on Its Occurrence 152

Sokolkov, Ye.N., V.D. Sadovskiy, and S.N. Petrova (Institute for Metal Physics, Ural Branch, Academy of Sciences, USSR, Sverdlovsk) Structure of Austenite Grain Boundaries and the Temper Brittleness of Structural Steel 165

Ageyev, N.V., and V.A. Trapeznikov (Institut metallurgii AN SSSR, g. Moskva - Metallurgical Institute, Academy of Sciences, USSR, Moscow). Influence of the Degree of Purity on Cold Brittleness and Other Properties of Chromium 172

Markov, V.G., P.O. Pashkov, and Ye.D. Teplova. Cold Hardening of Pearlitic Steel With an External Layer of Austenitic Steel Alloy 179

Sakharov, P.S. (Industrial'nyy institut imeni Kuybysheva, g. Kuybyshev - Industrial Institute imeni Kuybyshev, Kuybyshev). Effect of the Cooling Rate and Some Other Factors on Rupture Strength of Chromium-Aluminum Steel 187

Shevandin, Ye.M. (deceased), I.A. Razov, and A.V. Yeflmov. Influence of the Scale Factor During Plastic Deformation and Rupture of Steels of Varying Strength 194

Vitman, F.F., and V.A. Stepanov (Institute of Applied Physics, Academy of Sciences, USSR, Leningrad). Influence of Deformation Rate on the Deformation Resistance of Metals at Impact Speeds of 10^{-6} - 10^{2} m/sec 207

Zlatin, N.A. (Institute of Applied Physics, Academy of Sciences, USSR, Leningrad) Role of Compressibility in the Dynamic Deformation of Plastic Bodies 222

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Uzhik, G.V., and Yu.Ya. Voloshenko-Klimovitskiy (Institute of Mechanical Engineering, Academy of Sciences, USSR, Moscow) Resistance to Initial Plastic Deformation During Impact Stress Under Low-temperature Conditions 238

Glikman, L.A., and V.P. Tekht. Physical Nature of Metal Fatigue. 246

Kudryavtsev, I.V., and N.M. Savvina (TsNIITMASh - Central Scientific Research Institute of Technology and Machinery). Fatigue Strength of Large Plates 256

Card 7/10

85921

S/124/60/000/010/004/004
A005/A001

18.8200

Translation from: Referativnyy zhurnal, Mekhanika, 1960, No. 10, p. 172, # 13[illegible]

AUTHORS: Uzhik, G.V., Voloshenko-Klimovitskiy, Yu.Ya.

TITLE: The Initial and Plastic Deformation Resistances at Impact Tension Under Low Temperature Conditions

PERIODICAL: V sb.: Nekotoryye probl. prochnosti tverdogo tela. Moscow-Leningrad, AN SSSR, 1959, pp. 238-245

TEXT: Strain diagrams are presented of specimens of steel 45 and Armco-iron under impact loading with rates of 3.6 - 8.7 m/sec at +20 and -196°C. The diagrams were plotted according to the refined method of correlating the experimental graphs of path versus time and stress versus time. The load corresponding to the yield point (0.2%) coincides practically with the maximum value recorded by oscillograms for impact loads both at +20°C and -196°C. The ratio of the rated values of the dynamical and statical yield points are the following:

Card 1/2

85921
S/124/60/000/010/004/004
AC05/AC01

The Initial and Plastic Deformation Resistances at Impact Tension Under Low Temperature Conditions

	t°C	at 3.6 m/sec	at 8.7 m/sec
steel 45	+20	1.49	2.00
	-196	2.77	3.17
iron	+ 20	2.16	2.71
	-196	3.64	4.00

There are 8 references.

S.V. Zhuravlev

Translator's note: This is the full translation of the original Russian abstract.

Card 2/2

SOV/179-59-1-15/36

AUTHORS: Koshelev, P. F. and Uzhik, G. V. (Moscow)

TITLE: Investigation of Plastic Deformation in Regions of Stress Concentration by the Etching Method (Issledovaniye plasticheskoy deformatsii v mestakh kontsentratsii napryazheniy metodom travleniya)

PERIODICAL: Izvestiya Akademii nauk SSSR, Otdeleniye tekhnicheskikh nauk, Mekhanika i mashinostroyeniye, 1959, Nr 1, pp 111-118 and 4 plates (USSR)

ABSTRACT: The application of the etching method (Ref.1) to notched and stressed specimens of Armco iron is described and the results illustrated by numerous photographs (plates: Figs.2-8 and Figs.14-15). The etch figures were obtained on cylindrical specimens in tension and on prismatic specimens in bending. It is concluded that the method is applicable to one-, two-, and three-dimensional loading; the nature of the plastic deformation in the stress concentration regions is demonstrated at normal and at low temperatures. There are 17 figures and 8 references, of which 1 is German, 2 are Soviet and 5 are English.

SUBMITTED: June 12, 1958.

Card 1/1

UZHIK, G.V.

UZHIK, G.V., prof., doktor tekhn. nauk.

Present methods of testing materials for durability in machinery construction [continuation]. Politekh. obuch. no.1:20-30 Ja '58. (MIRA 10:12)
(Materials--Testing) (Machinery industry)

KOSHELEV, P.F. (Moskva); UZHIK, G.V. (Moskva)

Using the etching method in investigating plastic deformations in stress-concentration areas. Izv.AN SSSR.Otd.tekh.nauk.Mekh. i mashinostr. no.2:111-118 Ja-F '59. (MIRA 12:5)
(Deformations (Mechanics)--Testing)

14 (10)

AUTHOR: Uzhik, G. V.

SOV/20-126-1-10/62

TITLE: Compound Beams (Bars) as a Means of Increasing the Load Capacity and Preventing Brittle Fracture in the Points of Stress Concentration (Sostavnyye balki (sterzhni) kak sredstvo povysheniya nesushchey sposobnosti i predotvrashcheniya khrupkogo razrusheniya v mestakh kontsentratsii napryazheniya)

PERIODICAL: Doklady Akademii nauk SSSR, 1959, Vol 126, Nr 1, pp 41-43 (USSR)

ABSTRACT: The existence and the dimensions of the zone of brittleness on the surface of fracture permit an indirect conclusion of an increase in the intensity of the three-dimensional expansion in the zone of stress concentration at an increase in the thickness of the bars or in the width of the cross section of the plates. To solve this problem the author carried out the following experiments: 1) Bars of the same width (16 mm), and different thickness (1, 3, 5, 7.5, 10, 15, 20, 24 mm) were made of normalized steel 45. Holes (vytochki) of equal depth (t = 3.7 mm) and curvature (ρ = 0.3 mm) were made on the right and left of each bar. Starting with a thickness of 5 mm, noticeable inclusions of brittleness were

Card 1/4

observed, after the fracture, on the fractured surface of the bars. At an increase in thickness to 10 mm, the zone of brittle fracture comprised a little more than half of the total fractured surface. At a further increase in thickness to 15 mm, however, the brittle zone nearly extended over the whole fractured surface. These observations speak for a rapid increase in the intensity of the three-dimensional expansion at a comparatively low increase in density. A figure shows the diagrams of bending of the plates with one-sided indentation which have cross sections of different widths at the same height. The sudden decrease in load visible in the bending diagram at the attainment of the maximum is a reliable characteristic of brittle fracture. The bending diagrams mentioned permit the following conclusion to be made: In those cases where the width of the cross section in the surrounding of the stress concentrator attains the critical value (at the exceeding of which the brittle fracture is otherwise unavoidable), the brittle fracture can be avoided in the following way (whereby the load capacity of the cross section rises): For

this purpose, the compact cross section must be replaced by a compound cross section of the same dimensions. This cross section, with respect to its width, is composed of individual elements with a small space between them. A numerical example is indicated. The use of composed (with respect to the width) cross sections (which are particularly justified in stress concentrations) can be especially efficient in such constructions which are not only exposed to static or shock loads but also to variable loads with asymmetric cycles. In this case, the compound cross sections prevent the danger of a sudden brittle fracture because of an incidental high overload in the earliest stage of a fatigue fracture. There are 2 figures and 10 references, 8 of which are Soviet.

ASSOCIATION: Institut mashinovedeniya Akademii nauk SSSR (Institute of Machine Construction of the Academy of Sciences, USSR)

report presented at the 1st All-Union Congress of Theoretical and Applied Mechanics, Moscow, 27 Jan - 3 Feb '60.

UZHIK, G. V.

"Theory of Enbrittlement of Plastic Metals."
Report submitted for the Conference on Design and
Strength Analysis, Hungarian Acad. Sci.,Oct. 1961.

UZHIK, G. V.

"Theoretical Mechanics on Brittleness of Ductile Metals"

Paper presented at Conference on Dimensioning and Strength Calculation, Budapest, 24-28 Oct 61

ZHITOMIRSKIY, V.K. [translator]; KOLTOVYY, B.I. [translator]; UZHIK, G.V., prof., red.; SIDOROV, V.Ya., red.; BELEVA, M.A., tekhn. red.

[High temperatures in aircraft structures; articles translated from the English] Problemy vysokikh temperatur v aviatsionnykh konstruktsiiakh; sbornik statei. Moskva, Izd-vo inostr. lit-ry, 1961. 595 p. (MIRA 14:12)

(High temperatures) (Thermal stresses) (Airplanes)

S/124/62/000/007/021/027
D234/D308

12.8200

AUTHOR: Uzhik, G. V.

TITLE: Brittle failure of plastic metals during cyclic overloading

PERIODICAL: Referativnyy zhurnal, Mekhanika, no. 7, 1962, 31, abstract 7V190 (Ustalostn. prochnost' mater. i elem. Mater. konf. v Varshave 12-14 maya 1960 g, Warsaw, 1961, 44-49)

JB

TEXT: The author considers brittle failure during bending of plates in connection with stress concentration and transition to plane deformation. It is suggested that the type of deformation should be judged according to the character of the deformation graph taken during bending. It is shown that during transition through a certain plate thickness, critical for the given material, there is a transition to brittle failure if sufficiently sharp notches are made. According to this the author explains brittle failure during cyclic overloading, when a developed fatigue crack

Card 1/2

S/124/62/000/007/021/027
D234/D308

Brittle failure of ...

plays the part of a notch, and he gives recommendations for estimating the effect of asymmetry of the cycle on the type of failure. [Abstracter's note: Complete translation.]

/B

Card 2/2

18.1111 1416 1496, 1045

22579
S/133/61/000/001/013/016
A054/A033

AUTHORS: Uzhik, G.V., Gal'perin, M. Ya., Koshelev, P.F., Livshits, G. L., and Terent'yeva, Ya. K.

TITLE: The Mechanical Properties of Low-alloy Steels (Plates)

PERIODICAL: Stal', 1961, No. 1, pp. 68 - 73

TEXT: The application of low-alloy high-strength steels instead of the standard Ст.3сп (St.3sp) and Ст.3кп (St.3kp) carbon steels makes it possible to reduce the weight of the structures by about 15 - 20%. To determinate the mechanical properties of these types of steels at low temperatures (-70°, -196°C) tests were carried out with the 19Г (19G); 09Г2 (09G2); 14Г2 (14G2); 15ГС (15GS) 12ХГН (12KhGN) grade steels produced by the Al'chevskiy metallurgicheskiy zavod (Al'chev Metallurgical Plant), and the "Krasnyy Oktyabr" Plant, having the following chemical composition:

Table 1:
1 - chemical composition of investigated melts
2 - steel grade (Number of melts)
3 - plate thickness, mm

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S/133/61/000/001/013/016
A054/A033

The Mechanical Properties of Low-alloy Steels (Plates)

(1) Химический состав исследованных плавок, %

(2) Марка стали (номер плавки)	(3) Толщина листа мм	C	Si	Mn	Ni	Cr	Cu	P	S	Al	Ti
19Г (4516)	9	0,16	0,27	0,89	—	—	0,020	0,035	0,019	—	—
12ХГН(2507)	12	0,15	0,22	1,22	1,04	0,36	0,07	0,027	0,030	0,03	0,03
14Г2 (1585)	20	0,14	0,27	1,38	0,14	0,26	0,15	0,037	0,020	—	—
14Г2 (3184)	20	0,18	0,33	1,62	0,12	0,21	0,13	0,034	0,023	—	—
15ГС (3184)	20	0,12	0,55	1,22	0,11	0,16	0,11	0,032	0,018	—	—
15ГС (3186)	20	0,16	0,72	1,32	0,17	0,29	0,14	0,030	0,016	—	—
09Г2	11	0,11	0,35	1,59	0,05	Следы TRACES	0,07	0,012	0,032	0,03	Следы

The steels were tested for tensile strength in the temperature range between +20° and -196°C, for notch impact strength and static bending, (+20°, -70°C), moreover for fatigue, (flat specimens bent in one plane, at +20°C, cylindrical specimens with bending and torsion). The tensile strenth tests were carried out on a 30 -ton multipurpose hydraulic test machine, in which the speed of the upper grip is 0.8 mm/min, the lower grip being stationary; the coolant used up to -70°C was ethyl alcohol, and up to -196°C liquid N. Prior to immersion each specimen was held at the test-temperature for 30 minutes. The notch impact strength tests were

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made with 10x10x55 mm samples with Mesnager notches. An MK-30 (MK-30) type drop test machine was employed, as prescribed by ГОСТ (GOST 1524-42). For static bending the 30-ton multipurpose test machine was also used; the bending was plotted (scale 24:1) by a special device. Fatigue tests at room temperature with flat specimens were carried out with the МУК (MUK)-100 type machine (for plain bending in one plane with a load frequency of 1500/min) while cylindrical samples were tested for the fatigue on НУ (NU) type machines (3000 loadings/min). Samples of various thickness, with polished and unground surfaces, with and without notches were studied. Strength and ductility: The relationship between strength, ductility and temperature for the various steel grades is shown in table 2, while figure 1 represents the dependence of the $\frac{\sigma_{0.2t}}{\sigma_{0.2}}$ (a) and $\frac{\sigma_{Bt}}{\sigma_B}$ (b) ratios on temperature. The strength limit of the tested steels increases approximately in the same way to -70°C, but increases intensively mainly in the 19G type steel at -196°C. The transition of the material from the plastic into the brittle condition is characterized by the gradual change of the differences $(\sigma_B - \sigma_{0.2})$ and $(S_k - \sigma_{0.2})$ under the effect of the temperature reduction, (Fig. 2). The smaller the difference the nearer the material is to brittleness. At -196°C the plasticity of 19G, 12KhGN, 14G2 and 15GS steels decreases considerably, mainly that of the 14G2 type. Elongation per unit length and la-

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teral compression are characteristic for the metal with regard to change in ductility and its ability to maintain ductility even at low temperatures, which eliminates the risk of brittle fracture (mainly under dynamic load). These properties do not change in 19G and 12KhGN grade steels and only slightly in 14G2 and 15GS. The most sudden decrease in notch impact strength at temperatures between +20°C and -70°C could be observed in 14G2 and 15GS (a_k < 1 kgm/sq cm), most probably due to the heat condition of rolling. The smallest drop in this property (a_k = 2.6 kgm/sq cm) was found for 09G2 steel. The trend to brittle fracture was tested by brittle loading (Fig. 4). The diagram plotted for prismatic samples with Mesnager notches proves that the highest resistance against brittle fracture up to -70°C is shown by 09G2 steel. 12KhGN is not highly resistant against brittle failure at -70°C, 14G2 loses its toughness already at -30°C, 15GS also tends to produce elastic-plastic deformations at all temperatures. Table 3 clearly shows that 14G2 has the strongest trend to brittle failure, between +20° and -70°C (due to a higher carbon content), while the highest degree of failure resistance can be found in 09G2. In the fatigue tests the results were affected by the surface of the samples. In rough flat samples of 12KhGN steel the fatigue limit is 31.8% lower than in samples having a smooth surface. Polished cylindrical samples have a higher fatigue limit than polished flat samples. The highest fatigue limit

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was found in 15GS steel (melt 3186), while at room temperature there was hardly any difference in fatique limit between the grades 14G2, 15GS and 19G, both for polished and notched surfaces. Notched samples (with stress concentration on the surface) have the highest fatigue limit when made of 19G steel, (Fig. 7). There are 7 figures, 4 tables and 2 references: 1 Soviet, 1 Non-Soviet .

Table 2:

Indices of mechanical properties of low-alloy steels for tensile tests
1 - steel grade; 2 - test temperature

Показатели механических свойств низколегированных сталей при испытаниях на растяжение

(1) Марка стали ([C], %)	(2) Температура испытания °C	$\sigma_{0,2}$ кг/мм²	σ_B кг/мм²	a_k кг/мм²	δ_5 %	ψ %
19Г (19G)	+ 20	34,9—35,9	52,1—53,3	87,8—99,2	27,7—28,6	47,8—51,2
	— 20	38,8—39,0	57,5—58,0	96,0—98,8	29,5—33,6	49,2—51,0
	— 40	41,4—41,8	59,0—59,3	96,9—100,8	29,8—31,5	48,9—50,8
	— 70	44,0—44,3	61,9—62,4	100,4—103,3	30,0—32,5	47,3—48,6
	—196	88,5—88,8	93,9—94,2	118,2—118,9	20,6—22,2	21,5—23,5
	+ 20	44,5—45,9	63,2—63,5	93,1—94,0	20,2—22,3	40,3—41,2
	— 20	46,5—47,4	67,2—67,3	98,9—99,9	22,3—24,3	39,1—39,5

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UZHIK, G.V.

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AUTHOR: Užik, G. W.

TITLE: Brittle failure of ductile metals during cyclic loading

PERIODICAL: Referativnyy zhurnal, Metallurgiya, no. 2, 1962, 26, abstract 2I153 ("Wytrzymałość smęczeniowa tworzyw i elementów metalowych", Warszawa, 1961, 164 - 166, Polish)

TEXT: The author studied the causes of arising brittle failure in ductile metals under cyclic load conditions in the presence of stress concentration. The larger the cross sectional size of the part (specimen) the greater the danger of developing a three-axial strained state in the crack area (notch) and the higher the potential deformation energy. The presence of 3-axial strained state and high potential deformation energy produce conditions which promote brittle failure. Results are given of fatigue tests made with specimens of different cross section with notches and with artifically produced fatigue cracks of different depth. An analysis of the results shows that brittle failure can occur already at the initial stage of fatigue failure. The degree of preliminary plastic deformation depends then on the extent of the surface affected by the expanding fatigue crack

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Brittle failure of ductile metals...

In respect to the area of the total section. However, this deformation is very low even at a relatively small surface of the fatigue crack and amounts to 3 - 5% of the total section. The possibility of brittle failure during cyclic loading depends on the section width. Apparently, there is a critical width, which is different for different materials, in the presence of which (or below) slow plastic failure takes place under the effect of cyclic load. Below the critical width, the system of strained state in the issue area of the fatigue crack corresponds to a 2-axial strained state, and above this value to a 3-axial one. The critical width may change depending on the magnitude of the potential deformation energy stored in the deformed system by the moment of beginning failure. Brittle failure is least probable at a symmetrical stress cycle. The probability of brittle failure increases with a greater asymmetry of the cycle. There are 9 references.

V. Matorin

[Abstracter's note: Complete translation]

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UZHIK, G.V., prof.

New research on the strength of materials. Vest. AN SSSR 31 no.10:112-117 O '61. (MIRA 14:9)
(Strength of materials)